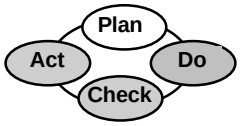
EPA United States Environmental Protection Agency

An Organizational Guide to Pollution Prevention



Legal and Other Requirements

Setting the legal framework for your EMS

Legal requirements include:

- Federal requirements
- State and local requirements
- Standards in locations where you sell products/services
- Permit conditions

Other requirements might include (for example):

- Company-specific codes
- International Chamber of Commerce (ICC) Charter for Sustainable Development
- American Chemistry Council's (ACC) Responsible Care
- American Petroleum Institute's Strategies for Today's Environmental Partnership (API STEP)
- Other industry codes or programs to which your organization voluntarily subscribes.

KEY STEPS

- ☑ Identify Requirements
- ☑ Analyze Impacts
- ☑ Communicate
- ☑ Act

In order to comply with laws and regulations that apply to your organization, you must first know **what the rules are** and **how they affect** what you do. As discussed earlier, compliance with legal requirements is one of the "three pillars" upon which your environmental policy should be based. The potential costs of non-compliance (possible damage to the environment, revenue loss and impact on public image, for example) can be very high.

Thus, an effective EMS should includes processes to:

- **identify** and **communicate** applicable legal and other requirements, and;
- **ensure** that these requirements are factored into the organization's management efforts.

New or revised legal requirements might require modification of your environmental objectives or other EMS elements. By **anticipating new requirements** and making changes to your operations, you might avoid some future compliance obligations and their costs.

Getting Started

Your EMS should include a procedure for **identifying, having access to and analyzing** applicable legal and other requirements. "Other requirements" might include industry codes of practice or similar requirements to which your organization might subscribe.

Identifying applicable regulations, interpreting them, and determining their impacts on your operations can be a time-consuming task. Fortunately, there are many methods for obtaining information about applicable laws or regulations. These methods include:

- commercial services (with updates offered on-line, on CD-ROM or in paper form);
- regulatory agencies (federal, state and local);
- trade groups / associations;
- the Internet (see USEPA web site at *www.epa.gov*);
- public libraries;
- seminars and courses;
- newsletters / magazines;
- consultants and attorneys; and
- customers, vendors and other companies.

Small business assistance programs exist in every state. Under the Clean Air Amendments of 1990, each state environmental regulatory agency has established

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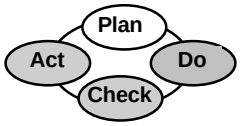
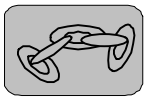


For more information on EMS and compliance, see "Improving Environmental Performance and Compliance: Ten Elements of Effective Environmental Management Systems" (see Appendix F for details)



- ***Environmental Policy***
- ***Objectives & Targets***
- ***Training & Awareness***
- ***Communication***
- ***Operational Controls***

See Appendix A for information on resources for tracking environmental laws and regulations.

technical and compliance assistance programs to help companies comply with air quality rules. In some cases, these programs have expanded into other environmental "media", such as water and waste management. In addition, National Compliance Assistance Centers can provide compliance assistance for certain industry sectors (see Appendix F for more information).

Once applicable requirements have been identified and analyzed for potential impacts, **communicate** these requirements (and plans for complying with them) to employees, on-site contractors and others, as needed. Communicating "other applicable requirements" (as well as their impacts on the organization) is an important but often overlooked step. Keep in mind that different people may have different information needs.

As with many EMS elements, this is **not a "one time" activity**. Since legal and other requirements change over time, your process should ensure that you are working with up-to-date information.

Resources to identify and track environmental laws and regulations are described in the **Tool Kit** (Appendix A).

Commonly Applicable Federal Environmental Laws in the US

Clean Air Act (CAA) [40 CFR Parts 50-99]	Establishes ambient and source emission standards and permit requirements for conventional and hazardous air pollutants.
Clean Water Act (CWA) [40 CFR Parts 100-145, 220-232, 410-471]	Establishes ambient and point source effluent standards and permit requirements for water pollutants, including sources that discharge directly to a waterbody or to a public sewer system.
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) [40 CFR Parts 150-189]	Establishes a program for Federal review of, registration and control of pesticides.
Resource Conservation and Recovery Act (RCRA) [40 CFR Parts 240-299]	Establishes regulations and permit requirements for hazardous waste management. Also, creates standards for underground storage tanks that hold oil or hazardous substances.
Toxic Substances Control Act (TSCA) [40 CFR Parts 700-799]	Regulates the use, development, manufacture, distribution and disposal of chemicals. Certain chemicals (such as PCB's) are subject to specific management standards.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as "Superfund") [40 CFR Parts 300-311]	Establishes a program for cleaning up contaminated waste sites and establishes liability for clean-up costs. Also, provides reporting requirements for releases of hazardous substances
Emergency Planning and Community Right-To-Know Act (EPCRA) [40 CFR Parts 350-374]	Establishes a program (also known as the "Toxic Release Inventory") to inform the public about releases of hazardous and toxic chemicals. Reporting requirements apply to companies that use, process or store specific chemicals over specified quantities.
Hazardous Materials Transportation Act (HMTA) [49 CFR Parts 100-180]	Establishes standards for the safe transportation of hazardous materials.

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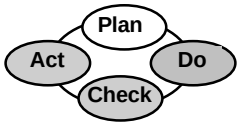

Capture the Learning: Legal & Other Requirements Worksheet

Do we have an **existing process** for identifying applicable legal and other requirements? If yes, does that process need to be revised? In what way?	
Who needs to be involved in this process within our organization? What should their responsibilities be?	
What **sources of information** do we use to identify applicable legal and other requirements? Are these sources adequate and effective? How **often do we review** these sources for possible changes?	
How do we ensure that we have **access** to legal and other requirements? (List any methods used, such as on-site library, use of web sites, commercial services, etc.)	
How do we **communicate information** on legal and other requirements to people within the organization who need such information?	
Who is **responsible** for analyzing new or modified legal requirements to determine how we might be affected?	
How will we keep information on legal and other requirements **up-to-date**?	
Our next step on legal and other requirements is to …	

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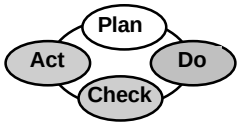


Objectives and Targets

Establishing goals for environmental management

Objectives and targets help an organization **translate purpose into action.** These environmental goals should be factored into your strategic plans. This can facilitate the integration of environmental management with your organization's other management processes.

You determine what objectives and targets are appropriate for your organization. These goals can be applied organization-wide or to individual units, departments or functions -- depending on where the implementing actions will be needed.

In setting objectives, keep in mind your environmental **policy,** including its three "pillars." You should also consider your significant environmental **aspects**, applicable **legal and other requirements**, the **views of interested parties**, your **technological options**, and **financial, operational,** and **other organizational considerations**.

Environmental Objective:

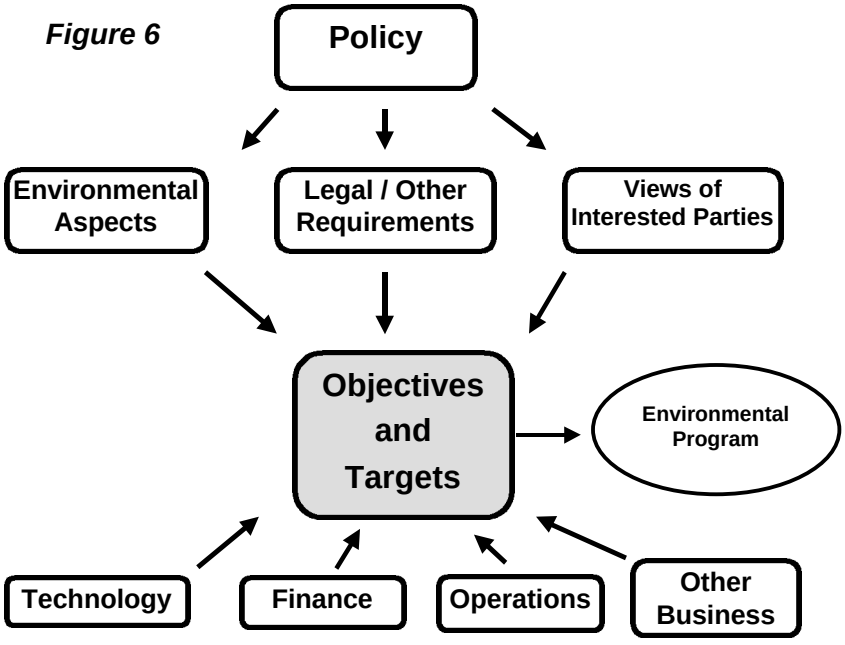
"Overall environmental goal, arising from the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable."

ISO 14001

Environmental Target:

"Detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives?

Figure 6



There are no "standard" environmental objectives that make sense for all organizations. Your objectives and targets should reflect what your organization does, how well it is performing and what it wants to achieve.

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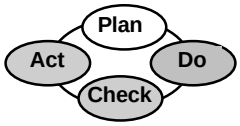
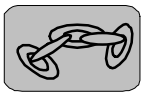


Factors to consider in setting objectives and targets

- ☑ *ability to control*
- ☑ *ability to track / measure*
- ☑ *cost to track / measure*
- ☑ *progress reporting*
- ☑ *links to policy commitments*

A sample process tool and procedure for setting objectives and targets are included in the Tool Kit (Appendix A).



- ***Environmental Policy***
- ***Environmental Aspects***
- ***Legal & Other Requirements***
- ***Structure & Responsibility***
- ***Operational Control***
- ***Monitoring & Measurement***
- ***Management Review***

Hints:

- Setting objectives and targets should involve **people in the relevant functional area(s)**. These people should be well positioned to establish, plan for, and achieve these goals. **Involving people** helps to **build commitment.**
- Get **top management buy-in** for your objectives. This should help to ensure that adequate resources are applied and that the objectives are integrated with other organizational goals.
- In **communicating objectives to employees,** try to link the objectives to the **actual environmental improvements** being sought. This should give people something tangible to work towards.
- Objectives should be **consistent** with your overall mission and plan and the key commitments established in your **policy** (pollution prevention, continual improvement, and compliance). Targets should be sufficiently clear to answer the question: "Did we achieve our objectives?"
- Be **flexible** in your objectives. Define a desired result, then let the people responsible determine **how** to achieve the result.
- Objectives can be established to **maintain** current levels of performance as well as to **improve** performance. For some environmental aspects you might have both maintenance and improvement objectives.
- Communicate your **progress** in achieving objectives and targets across the organization. Consider a regular report on this progress at staff meetings.
- To obtain the **views of interested parties**, consider holding an open house or establishing a focus group with people in the community. These activities can have other payoffs as well.
- How many objectives and targets should an organization have? Various EMS implementation projects for small and medium-sized organizations indicate that it is best to start with a limited number of objectives (say, three to five) and then expand the list over time. **Keep your objectives simple** initially, gain some early successes, and then build on them.
- Make sure your objectives and targets are **realistic.** Determine how you will **measure progress** towards achieving them.
- Keep in mind that your **suppliers** (of service or materials) can help you in meeting your objectives and targets (e.g., by providing more "environmentally friendly" products).

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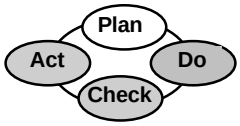

Comparing Objectives and Targets - Some Examples

Objectives	Targets
Reduce energy usage	• Reduce electricity use by 10% in 2001 • Reduce natural gas use by 15% in 2001
Reduce usage of hazardous chemicals	• Eliminate use of CFCs by 2002 • Reduce use of high-VOC paints by 25%
Improve employee awareness of environmental issues	• Hold monthly awareness training courses • Train 100% of employees by end of year
Improve compliance with wastewater discharge permit limits	• Zero permit limit violations by the end of 2001

☆☆ *POLLUTION PREVENTION* ☆☆

Pfizer Global Research & Development (formerly Warner-Lambert Parke-Davis) has a pollution prevention program that shows that improving the environment and the bottom line can go hand-in-hand. For example:

- By replacing chillers and redesigning chilling systems to be more efficient, the company has realized $250,000 in energy savings. Also, because the company is more energy efficient, it has reduced emissions from its local power supplier.
- By redesigning and modifying its dust collection system, the company replaced its 100-hp motors with 40 hp motors, without compromising the effectiveness of the dust collection system. This project lowered the company's operating costs and reduced emissions at the local power plant.

☆☆ *POLLUTION PREVENTION* ☆☆

Some Motorola manufacturing sites have reduced their water consumption and wastewater discharges by greater than 95% by installing ion exchange technology and employing better operating techniques. These changes have lowered usage of water treatment chemicals and have resulted in considerable cost savings.

EPA's Performance Track program requires organizations to consider the following factors in setting *measurable* objectives and targets:

- **Prevention of noncompliance,**
- **Prevention of pollution at the source**
- **Minimization of cross-media pollutant transfers, and**
- **Environmental performance improvement.**

Participating organizations also must show *continued improvement* in specific environmental categories, such as energy use, water discharges, or waste generation, among others.

See Appendix B for more information.

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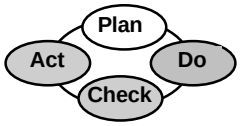

Capture the Learning: Objectives and Targets Worksheet

Do we have an **existing process** for setting and reviewing environmental objectives and targets? If so, does that process need to be revised? In what way(s)?	
Who needs to be involved in this process within our organization? Should any outside parties be involved?	
When is the **best time** for us to implement this process? Can it be **linked** to another existing organizational process (like our annual or strategic planning process?)	
What are our **existing environmental goals**? How were these developed? Who was involved? What **factors** were considered in setting these goals?	
Who are our **interested parties**? How do we **obtain their views**? **How effective** has our process been?	
How can we effectively and efficiently **track our progress** and **communicate the results**? **Who** is in the best position to do this?	
Our next step on environmental objectives and targets is to …	

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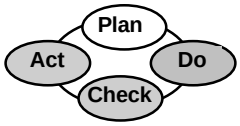
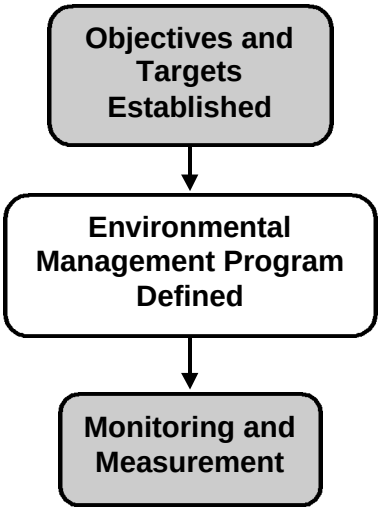


Environmental Management Program(s)

A road map for achieving environmental goals



So far, this Guide has focused on the **foundations** of an EMS -- the planning elements. An important part of this planning effort is defining what your organization intends to achieve in the environmental area. To achieve your objectives and targets, you need an **action plan --** also known as an environmental management program.

Your environmental management program should be **linked directly to your objectives and targets** — that is, the program should describe **how** the organization will **translate its goals and policy commitments into concrete actions** so that environmental objectives and targets are achieved.

To ensure its effectiveness, your environmental management program should define:

- the **responsibilities** for achieving goals *(who will do it?)*
- the **means** for achieving goals *(how will they do it?)*
- the **time frame** for achieving those goals *(when?)*

Keep in mind that your program should be a **dynamic** one. For example, consider modifying your program when:

- objectives and targets are modified or added;
- relevant legal requirements are introduced or changed;
- substantial progress in achieving your objectives and targets has been made (or has not been made); or
- your products, services, processes, or facilities change or other issues arise.

Your action plan need **not** be compiled into a single document. A "**road map**" to several action plans is an acceptable alternative, as long as the key responsibilities, tactical steps, resource needs and schedules are defined adequately in these other documents.

This program should **not** be developed in a vacuum — it should be **coordinated or integrated with other organizational plans, strategies, and budgets**. For example, if you are planning for a major expansion in one of your service operations, then it makes sense to look at the possible environmental issues associated with this operational expansion at the same time.

At St. Joseph's Mercy Hospital (in Michigan), mercury was in widespread use. The Hospital had a contract with a professional environmental response company to clean up and dispose of any discarded equipment and waste that resulted from mercury spills. Mercury was identified as an environmental aspect during EMS implementation, leading to the development of a Mercury Reduction Initiative. This Initiative is expected to save the Hospital as much as $20,000 per year.

Hints:

- **Build** on the plans and programs you have now for compliance, health & safety or quality management.
- **Involve your employees** early in establishing and carrying out the program.
- Clearly **communicate** the expectations and

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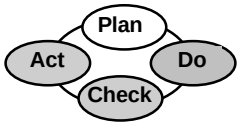
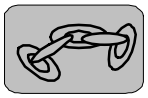


"Before, we focused on compliance issues without the benefit of an EMS. Now, we have a strategic plan in place to look beyond legal requirements and save money. It makes my job easier when I can prove my department does not have to be a cost center."

Charlie Saunders, EMS Manager, Pfizer Global Research & Development

responsibilities defined in the program to those who need to know.

- In some cases, your environmental management program may encompass a number of existing **operating procedures or work instructions** for particular operations or activities. In other cases, new operating procedures or work instructions might be required to implement the program.
- Re-evaluate your action plan when you are considering changes to your products, processes, facilities or materials. Make this re-evaluation part of your **change management process**.
- **Keep it simple** (see sample tool, below) and **focus on continual improvement** of the program over time.
- There may be real **opportunities** here! Coordinating your environmental program with your overall plans and strategies may position your organization to exploit some significant cost-saving opportunities.



- ***Objectives & Targets***
- ***Structure & Responsibility***
- ***Communication***
- ***Operational Control***
- ***Monitoring & Measurement***

Figure 7: Environmental Management Program (Sample Form)

Objective / Target #1: _____					
Action Items	Priority	Responsibilities	Schedule	Resources Needed	Comments

*A full-size copy of this form and another sample form are provided in the **Tool Kit** (see Appendix A).*

☆☆ *POLLUTION PREVENTION* ☆☆

March Coatings operated a de-ionization unit to purify water for its coating process. While effective, the unit required 39,000 pounds of hydrochloric acid to operate. Concerns about potential spills and worker health & safety impacts led the company to replace the de-ionizer with a reverse osmosis unit, which completely eliminated the use of hydrochloric acid.

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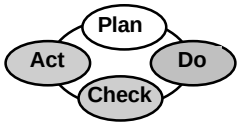

Capture the Learning: Environmental Management Programs Worksheet

Do we have an **existing process** for establishing environmental management programs? If yes, does that process need to be revised? In what way?	
What environmental management programs do we have **in place now**?	
What is the **basis** for our environmental management programs (for example, do they consider our environmental objectives, our environmental policy commitments and other organizational priorities)?	
Who needs to be involved in the design and implementation of these programs within our organization?	
When is the **best time** for us to establish and review such programs? Can this effort be **linked** to an existing organization process (such as our budget, planning or auditing cycles?)	
How do we ensure that **changes to products, processes, equipment and infrastructure** are considered in our programs?	
How will we otherwise keep our programs **up-to-date**?	
Our next step on environmental management programs is to …	

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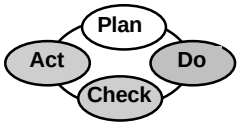

Structure and Responsibility

Aligning your resources to succeed

"Resources include human resources and specialized skills, technology, and financial resources."

- ISO 14001

For an EMS to be effective, roles and responsibilities must be clearly defined and communicated. The commitment of all employees is needed for an EMS to live up to its full potential.

Top management plays a key role by **providing resources** needed to implement the EMS. This is one of the most important jobs of top management (see "Finding Resources" on next page). In some organizations, "top management" might be a single individual, while in others it might be a group of people (such as a board of directors).

An effective management system needs an advocate. Thus, top management should **appoint a management representative**. This representative (1) ensures that the EMS is established and implemented; (2) reports on its performance over time; and (3) works with others to modify the EMS as needed. The management representative can be the same person who serves as the project champion (as discussed in Section 3), but this is not mandatory. A business owner, plant or shop manager, or any number of other people might serve as an effective EMS management representative.

Characteristics of a good management representative:

- **Knowledgeable**
- **Assertive**
- **Independent**

More organizational advantages of small business:

- ☑ shorter lines of communication
- ☑ less complex organization
- ☑ limited delegation
- ☑ simpler access to management

Small and medium-sized organizations may have **advantages** over larger ones in structuring their resources for environmental management. Because personnel and other resources are generally more limited in smaller organizations, people often "wear more than one hat" and have experience in performing multiple functions. An individual responsible for environmental management in a smaller organization also might be responsible for quality, health & safety, facilities, or other functions. In such cases, integrating environmental responsibilities with other functions can be greatly simplified.

Getting Started:

The following questions can help you determine the right organizational structure for environmental management:

- ***What is the scope of our environmental management program?*** What capabilities do we need? Who will help to make the EMS effective? What training or other resources do we need?
- ***What are our significant environmental aspects and compliance needs?*** What operations / activities need to be controlled? Who needs to be involved to ensure that controls are implemented?

Getting Started

Look at:

- ☑ Program Scope
- ☑ Environmental Aspects
- ☑ Objectives
- ☑ Previous audits
- ☑ Other systems

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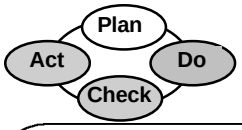


Consider integrating EMS with your existing:

- ☑ information systems
- ☑ purchasing controls
- ☑ quality procedures
- ☑ work instructions
- ☑ training programs
- ☑ communication efforts
- ☑ reporting systems
- ☑ recruitment, appraisal and disciplinary processes

What are the results of previous audits or other assessments? What does this information tell us about the effectiveness of our organizational structure and how it might be improved?

- ***What are the current responsibilities for environmental management?*** How can we enhance ownership of environmental management across the organization? How can other functions support the EMS? (See next page.)
- ***What are our objectives and targets, including those related to compliance and pollution prevention?*** How will the organizational structure help up achieve these goals?
- ***What quality management and / or other existing management systems exist?*** What roles and responsibilities exist in these management systems? Do opportunities for system integration exist?

*See **Appendix C** for information on process mapping*

Consider **flow charting** your existing environmental management activities. This can help you understand how these processes work and the final product can be a great communication and training tool. Flow charts also can be useful to look at processes such as chemical purchasing and distribution, employee training, and preventive maintenance, among others. **Appendix C** provides information on process mapping.

Hints:

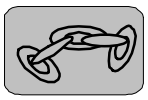
- Build **flexibility** into your organizational structure. Recognize that environmental (and other) management needs will change over time.
- **Communicate** to people what their roles are (as well as the roles of others). One tool for communicating these responsibilities is a **responsibility matrix.** (See the **Tool Kit** in Appendix A for an example of such a matrix.)

Appendix A provides a sample responsibility matrix

More information on resources is found in Appendix F of this Guide

Finding Resources

In most cases, developing and maintaining an EMS will not require large capital outlays. What an EMS will require is **time**. Many smaller organizations find they can make effective use of interns or temporary employees to perform potentially time-consuming EMS development tasks (such as collecting data, drafting procedures, etc.). This allows in-house personnel to focus on more complex EMS development tasks. Also, look for areas where environmental management can support other organizational functions (and vice-versa — see next page).



- ***Objectives & Targets***
- ***Training & Awareness***
- ***Communication***
- ***Management Review***

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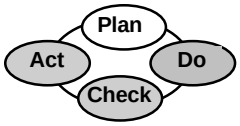

How Various Functions Can Support Your EMS

Functions	How They Can Help (Possible Roles)
Purchasing	• Develop and implement controls for chemical / other material purchases
Human Resources	• Define competency requirements and job descriptions for various EMS roles • Train temporary workers and contractors; maintain training records • Integrate environmental management into reward, discipline and appraisal systems
Maintenance	• Implement preventive maintenance program for key equipment • Support identification of environmental aspects
Finance	• Track data on environmental-related costs (such as resource, material and energy costs, waste disposal costs, etc.) • Prepare budgets for environmental management program • Evaluate economic feasibility of environmental projects
Engineering	• Consider environmental impacts of new or modified products and processes • Identify pollution prevention opportunities
Top Management	• Communicate importance of EMS throughout organization • Provide necessary resources • Track and review EMS performance
Quality	• Support document control, records management and employee training efforts • Support integration of environmental and quality management systems
Line Workers	• Provide first-hand knowledge of environmental aspects of their operations • Support training for new employees

For EPA's Performance Track program, organizations must provide appropriate incentives for personnel to meet EMS requirements.
See Appendix B for more information.

See the EPA/NSF project report*, Implementing an EMS in Community-Based Organizations* for more ideas on how organizations with limited resources can implement an EMS. Download the report free of charge at www.nsf-isr.org or www.epa.gov.

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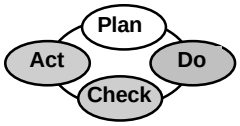

Capture the Learning: Structure & Responsibility Worksheet

How do we **define roles, responsibilities and authorities** for environmental management now? Is this process **effective?**	
Who is / should be our EMS **Management Representative**? Does this individual have the necessary authority to carry out the responsibilities of this job?	
Are our key roles and responsibilities for environmental management **documented** in some manner? If so, how (e.g., job descriptions, organizational charts, responsibility matrix, etc.)?	
How are EMS roles and responsibilities **communicated** within our organization?	
How do we ensure that **adequate resources** have been allocated for environmental management? How is this process **integrated** with our overall budgeting process? How are environmental expenditures **tracked**?	
How will we keep this information **up-to-date**?	
Our next step on structure and responsibility is to …	

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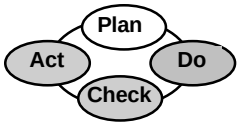


Training, Awareness and Competency

Building internal capabilities

Implementing and maintaining an EMS involves <u>everyone</u>

Here are two excellent reasons for training employees about environmental management and your EMS:

- Every employee can have potential **impacts** on the environment, and
- Any employee can have **good ideas** about how to improve environmental management efforts.

Each person and function within your organization can play a role in environmental management. For this reason, your training program should cast a wide net. Every employee and manager should be aware of the environmental policy, the significant environmental impacts of their work activities, key EMS roles and responsibilities, procedures that apply to their work and the importance of conformance with EMS requirements. Employees also should understand the **potential consequences** of <u>not</u> following EMS requirements (such as spill, releases, fines or other penalties).

Reasons for <u>Training</u>:

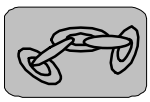
- ☑ motivation
- ☑ awareness
- ☑ commitment
- ☑ skills / capability
- ☑ compliance
- ☑ performance

All personnel should receive <u>appropriate</u> training. Such training should be **tailored** to the different needs of various levels or functions in the organization. However, training is just one element of establishing **competence,** which is typically based on a combination of education, training, and experience. For certain jobs (particularly tasks that can cause significant environmental impacts), you should establish criteria to measure the competence of individuals performing those tasks.

An example of a trainin log is provided in the Tool Kit (see Appendix A)

Getting Started:

- A critical first step in developing your training program is **assessing your training and skill needs**. In assessing these needs, you should consider both **general** and **specific** needs (e.g., "What EMS procedures affect Joe's daily work and what happens if they aren't followed?" "What environmental impacts might Joe's work cause?" "What broader understanding of environmental issues and our EMS does Joe need?")



- ***Environmental Aspects***
- ***Legal/Other Requirements***
- ***Structure & Responsibility***
- ***Operational Control***
- ***Records***

- Look at the **training you conduct already**, for compliance with environmental and health and safety regulations and other purposes. You may find that your existing training efforts go a long way towards satisfying the requirements for the EMS. Competence might be established on the basis of regulatory-required training, in some instances.

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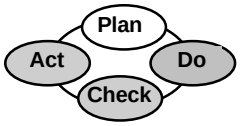

Milan Screw Products found that it could provide a great deal of its training during "brown bag" lunches, during which employees bring their lunches, participate in a training session, and remain "on the clock" for the lunch period.

Key Steps in Developing a Training Program

Step 1:	Assess training needs & requirements
Step 2:	Define training objectives
Step 3:	Select suitable methods and materials
Step 4:	Prepare training plan (who, what, when, where, how)
Step 5:	Conduct training
Step 6:	Track training (and maintain records)
Step 7:	Evaluate training effectiveness
Step 8:	Improve training program (as needed)

Hints:

- Because of the level of effort involved in training, this is one EMS element where you don't want to start from scratch. Many employees may be qualified on the basis of their experience and previous training. (Keep in mind that all training should be documented.) Since some employees might require training on how to operate equipment safely, **on-the-job training** certainly can play an important role. **Computer-based training** also may be an option, especially for employees who spend much of their time in the field.

- **Plan and schedule** training opportunities carefully. While finding enough time for training can be a challenge, you might find creative ways to make "more time" (see "tip", above left). Use safety meetings, staff meetings, and tool box meetings to provide training and reinforce key messages.

- New employees can pose a significant training challenge. Consider developing an EMS training package for **new employee orientation**. Even better, videotape one of your current EMS training courses to show to new employees.

- In reviewing training needs, don't forget to consider the qualifications and training needs of your **environmental manager** and your **trainers**. Professional certification programs may be appropriate for certain functions.

- If the organization uses **temporary or contract workers**, assess their training needs as well.

- Factor EMS skills requirements into your **recruiting**, **selection**, and new employee **orientation** processes.

Training Resources:

- ☑ internal trainers / experts
- ☑ consultants
- ☑ community colleges
- ☑ vendors / suppliers
- ☑ customers
- ☑ technical / trade / business associations
- ☑ self-study or study groups
- ☑ training consortia (teaming with other local companies)
- ☑ computer-based training

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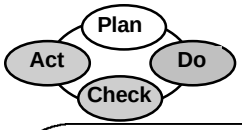

When Training Might Be Needed:

- ☑ New employee is hired
- ☑ Employee is transferred to a new job
- ☑ Individual doesn't follow procedure / instruction
- ☑ Procedures are changed
- ☑ New process, material or equipment is introduces
- ☑ Company changes objectives and/or targets
- ☑ New regulation affects organization's activities
- ☑ Job performance must be improved

- Establishing **competency** for various tasks can be a challenge. Competency criteria for jobs that can cause significant environmental impacts should be as objective as possible.

  One informal method for assessing competency is to question employees in critical functions as to how they perform various aspects of their jobs (e.g., "Show me how you..."). Use responses to determine whether they have the requisite skills and understanding to perform the job safely. This can help you gauge whether additional training might be needed.

- Consider visual **"job aids"** to supplement training or help establish competence. Examples of job aids include written or pictorial job procedures, decision tables or flow charts posted at the workstation.

- Finally, some organizations have been successful in **blending environmental awareness training into existing safety training** programs. This can be particularly effective where safety training is mandated (i.e., by regulation or other organizational requirements) and has strong management support.

A Few Thoughts About Adult Learning

- Adults need the opportunity to integrate new ideas with what they already know.
- Information that conflicts sharply with existing beliefs or has little conceptual overlap with what is already known is acquired more slowly.
- Adults prefer self-directed learning and want to have a hand in shaping the training program.
- Adults have expectations. It is important to clarify these up-front.
- Adults prefer active participation to straight lecture.

- Adapted from "Adults Learning: What Do We Know For Sure" (Training Magazine, June 1995)

For EPA's Performance Track, organizations must provide specific training for employees whose responsibilities relate directly to achieving objectives and targets and legal compliance.
See Appendix B for more information.

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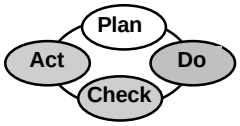

Capture the Learning: Training, Awareness & Competence Worksheet

Do we have an **existing process** for environmental training? If so, does that process need to be revised? In what way(s)?	
What types of training do we provide now (e.g., new employee orientation, contractor training, safety training)? How would EMS-related training fit with our existing training program?	
Who is responsible for training now? Who else might need to be involved within our organization?	
How do we determine **training needs** now? (List methods used) Are these processes effective?	
Who is **responsible** for ensuring that employees receive appropriate training? How do we **track training** to ensure we are on target?	
How do we **evaluate training effectiveness?** (List methods used, such as course evaluation, post-training testing, behavior observation)	
How do we **establish competency**, where needed? (List methods used, such as professional certifications) What are the **key job functions and activities** where we need to ensure environmental competency?	
Our next step on training, awareness & competence is to …	

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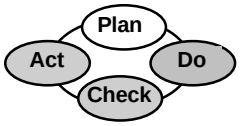

Communications

Maintaining the flow of information

Consider communication strategies for:

- ☑ neighbors
- ☑ community groups
- ☑ other interest groups
- ☑ local officials
- ☑ regulatory agencies
- ☑ emergency responders

The importance of employee involvement in developing and implementing your EMS has been discussed earlier. In addition, there may be parties with an interest in your environmental performance and management efforts outside the organization. Effective environmental management requires effective communications, both internally **and** externally.

Effective communications will help you:

- motivate your workforce;
- gain acceptance for your plans and efforts;
- explain your environmental policy and EMS and how they relate to the overall organizational vision;
- ensure understanding of roles and expectations;
- demonstrate management commitment;
- monitor and evaluate performance; and,
- identify potential system improvements.

Pfizer Global Research & Development (formerly Warner-Lambert Parke-Davis) *has hosted local community leaders, state agencies, and federal agencies, to share its environmental activities and programs and to obtain feedback.*

Effective **internal** communication requires mechanisms for information to flow top-down, bottom-up and across functional lines. Since employees are on the "front lines," they can be an excellent source of information, issues, concerns and ideas.

Proactive, two way communication with external parties is also important for an effective environmental management system. Taking steps to obtain the views of these stakeholders, which can include neighbors, customers, community groups, and regulators, will help you better understand how your organization is perceived by others. These stakeholders can also bring important environmental issues to your attention that should be addressed in your EMS. Your should also condiser ways to get specific advice from these stakeholders when developing critical elements of your EMS such as setting objectives and targets. Involving these parties, however, does not mean you should cede control of your EMS to them, but rather use their input to make your EMS stronger and more responsive to community concerns. Doing so will usually provide long-term benefits to your organization.

Thus, an effective EMS should include procedures for:

- communicating internally (between levels and functions within the organization), and
- soliciting, receiving, documenting and responding to external communications.

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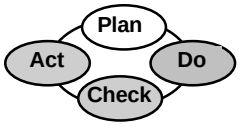


Getting Started:

The first step in designing a communications program is determining **your key audiences**. Make a list of internal and external audiences.

Milan Screw Products' *staff interviewed neighbors, customers, suppliers, and employees' family members to obtain the views of external parties.*

Once you have identified the audiences, determine **what** you need to communicate to them. (What do they need to know about your products, operations or management efforts? What are their concerns?)

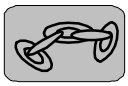
A sample procedure for external communication is provided in the Tool Kit (see Appendix A)

Next, decide **how** you can best reach them. Appropriate communication methods might vary from audience to audience. Start by looking at your **existing methods** for communicating, both internally and externally. These might include:

Internal Methods	External Methods
• newsletters	• open houses
• intranet	• focus or advisory groups
• staff meetings	• web site or e-mail list
• employee meetings	• press releases
• bulletin boards	• annual reports
• brown bag lunches	• advertising
• training	• informal discussions

Hints:

- Determine how **proactive** your external communications strategy should be. Select an approach that fits your organization's culture and strategy. Consider, for example, whether reporting on environmental performance and progress might give you a competitive edge.
- While a proactive external communications program may require some resources, many organizations find that a proactive communication strategy can be beneficial. Weigh the costs and benefits for yourself, but keep in mind that you might have many interested audiences.



- ***Environmental Policy***
- ***Environmental Aspects***
- ***Objectives & Targets***
- ***Structure & Responsibility***
- ***Monitoring & Measurement***
- ***Management Review***

- In communicating with employees, it is helpful to explain not only **what** they need to do but also **why** they need to do it. For example, when describing a requirement based on a regulation, explain the purpose behind the rule and why it is important. Also, make a clear connection between the requirement and how it applies to each person's job.
- Keep the message **simple,** clear, concise, and accurate.
- Managing responses to external inquiries does not have to be burdensome. Use a simple method, such as stapling an inquiry to its written response and then filing them together. The key is to be able to demonstrate that the organization has a process for gathering and responding to external inquiries.

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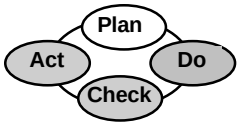

☆☆ ***POLLUTION PREVENTION*** ☆☆
and **Public Involvement**

Motorola has conducted Household Waste Electronics Recycling Days for local residents. Working in collaboration with local solid waste authorities, the Company has collected for recycle a variety of home electronic and entertainment equipment, small appliances and other products. At one of these events, over 21 tons of materials were collected and over 95% of these materials were recycled.

For EPA's Performance Track, organizations must commit to public outreach and performance reporting. Specifically, participating organizations must prepare an annual report on their EMS, a summary of progress on performance commitments, and of their public outreach activities.
See Appendix B for more information.

The community as part of the solution….

In an effort to involve stakeholders in the EMS process the Town of Londonderry, NH and the City of Lowell, MA engaged residents to collect information pertaining to environmental issues that affect their communities. For example, the Town of Londonderry, NH in conjunction with its household hazardous waste collection day, asked residents to complete a survey to prioritize community related environmental issues. The residents identified the fast pace at which the small community is growing as their top-priority issue. The City of Lowell, MA's wastewater treatment plant asked local residents to assist with efforts to address the plant's odor issues. A number of residents throughout the surrounding area recorded weather information on days the odor was prevalent. This information identified odor patterns which would aid the City's efforts to identify a solution to this problem.

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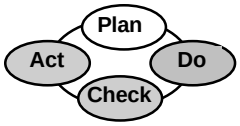

Capture the Learning: Communications Worksheet

Who are **our key external stakeholders**? How were these stakeholders **identified**?	
With regard to our organization, what are the **key concerns of these stakeholders**? **How do we know** this?	
What **community outreach efforts** are we making now (or have we made in the recent past)? How **successful** have these efforts been?	
What **methods** do we use for external communications? Which appear to be the most **effective**? Who has primary **responsibility** for external communications?	
How do we **gather and analyze information** to be communicated? Who has **responsibility** for this?	
How do we **communicate internally** (as well as with our suppliers and contractors)? What processes do we have to **respond to internal inquiries**, concerns and suggestions? **How effective** are these methods?	
Our next step on communication is to …	

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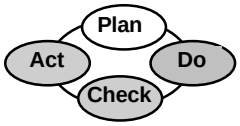


EMS Documentation

Describing the EMS and how the pieces fit together

To ensure that your EMS is well understood and operating as designed, you must provide adequate information to the people doing the work. There also may be external parties that want to understand how your EMS is designed and implemented, such as customers, regulators, lending institutions, registrars and the public. For these reasons, the various processes that make up your EMS should be documented.

Rule of thumb:

Try to keep the EMS description document (or manual) to no more than one page per EMS element

Easy to read and understand
equals
easy to implement

The EMS Manual (or description document)

A "road map" or description that summarizes how the pieces of the EMS fit together can be a very useful tool. This roadmap generally takes the form of an EMS manual.

An EMS manual is a series of explanations of the processes your organization implements to conform to the EMS criteria (such as the elements discussed in the Guide). While you don't need to maintain a single "manual" that contains all of your EMS documentation, you should maintain a summary of the EMS that:

- describes the system's **core elements** (and how the elements relate to each other), and
- provides **direction** to related documentation.

Other EMS Documentation

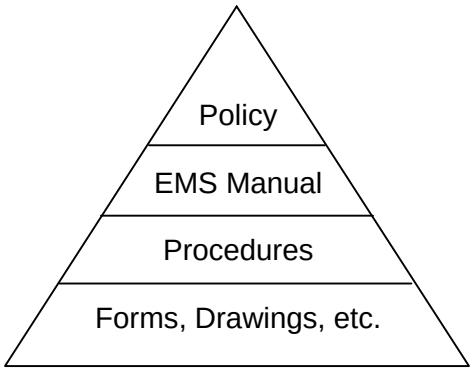
In addition to the EMS manual, your organization should maintain other documentation of its EMS.

First, you should document the processes used to meet the EMS criteria. (For example, "How do we identify environmental aspects?" "How do we implement corrective actions?") This documentation generally takes the form of system **procedures**. In addition, you might maintain area-or activity-specific documentation (such as work instructions) that instructs employees on how to carry out certain operations or activities.

EMS documentation is related to (but not the same as) EMS **records**. EMS **documentation describes** what your system consists of (i.e., what you do and how you do it), while EMS **records demonstrate** that you are doing what the documentation said you would do. Document control and records management are discussed later in this Guide.

One way to think about your EMS documentation is to use the figure shown at left, which also can be applied to quality or other management system documents.

Figure 8:
Hierarchy of EMS Documentation



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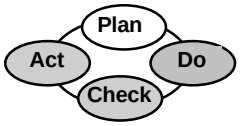


You can maintain EMS documentation either on paper or electronically. There may be some advantages to maintaining documents electronically, such as ease of updating, controlling access, and ensuring that all readers are using the most up-to-date versions of documents.

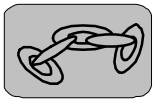
Hints:

- Keep EMS documentation **simple**. Choose a format that works best for your organization. Your manual does **not** need to describe every detail of your EMS. Instead, the manual can **provide references** to other documents or procedures.

Use flow charts or other graphics where they help explain the linkages from one system element to another

- Use the **results of your preliminary assessment** to prepare your EMS documentation. In the course of conducting this assessment, you should have collected or prepared useful material on how your organization satisfies the selected EMS criteria. The box below illustrates what constitutes EMS documentation.

- The usefulness of your EMS manual can be improved by including the organization's mission statement, vision or guiding principles (if these exist). These will improve understanding of the organization and **how the EMS supports** its overall goals.



- ***Environmental Policy***
- ***Environmental Management Programs***
- ***Document Control***
- ***Operational Control***

- An EMS manual can be a useful tool for explaining your EMS to new employees, customers and others. A sample outline for an EMS manual is provided in the **Tool Kit** (see Appendix A).

- EMS documentation should be updated as needed, based on any system improvements you put in place. However, if you put too much detail in an EMS manual, you might need to update the manual frequently (see first hint, above).

<u>What Constitutes EMS Documentation?</u> *Consider the following:*

- your environmental policy
- your organizational structure and key responsibilities
- a description or summary of **how** your organization satisfies EMS requirements (e.g., "How do we identify environmental aspects?". "How do we control documents?" How do we comply with legal requirements?")
- system-level procedures (e.g., procedure for corrective action)
- activity- or process-specific procedures / work instructions
- other EMS-related documents (such as emergency response plans, training plans, etc.)

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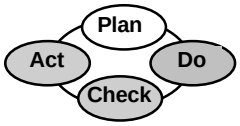

Capture the Learning: EMS Documentation Worksheet

Do we have **existing documentation of our EMS**? If yes, how is this EMS documentation **maintained** (electronically? In paper form?)	
Who is responsible for maintaining EMS documentation within our organization?	
Do we have an **EMS manual** or other summary document that describes the key elements of the EMS? If so, does this document describe the **linkages** among system elements?	
What does our EMS documentation consist of? (List components such as environmental policy, EMS manual, activity-level procedures or work instructions, emergency plans, etc.)	
Is our EMS documentation **integrated with other organizational documentation** (such as human resource plans or quality procedures)? If so, how do we ensure proper **coordination** between environmental and these other functions?	
How will we keep our EMS documentation **up-to-date**?	
Our next step on EMS documentation is to …	

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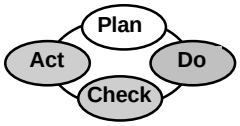

Document Control

Ensuring that everyone works with the right tools

Suggested elements of document control

- ☑ issue / revision date
- ☑ effective date
- ☑ approval (i.e., signature)
- ☑ revision number
- ☑ document number (or other identifier
- ☑ copy number
- ☑ cross references

People in your organization probably use various documents (procedures, work instructions, forms, drawings and the like) as they perform their duties. To ensure that personnel are **consistently** performing their jobs in the right way, the organization must provide them with the proper tools. In the context of an EMS, the "tools" needed are correct and up-to-date procedures, instructions and other documents. Without a mechanism to manage these EMS documents, the organization cannot be sure that people are working with the right tools.

To ensure that everyone is working with the proper EMS documents, your organization should have a **procedure** that describes how such documents are controlled. Implementation of this procedure should ensure that:

- EMS documents can be **located** *(we know where to find them),*
- they are periodically **reviewed** *(we check to make sure they are still valid),*
- current versions are **available** where needed *(we make sure the right people have access to them*), and
- obsolete documents are **removed** *(people don't use the wrong documents by mistake).*

Document control should address:

- *Preparation*
- *Issuance / distribution*
- *Revision*
- *Periodic review*
- *Disposition of obsolete documents*

Your procedure should designate **responsibility and authority** for preparing documents, making changes to them and keeping them up-to-date. In other words, you need to make it clear **who** can actually generate and change documents and **the process for doing so**.

Key Questions:

Is everyone working with the same set of documents?

Do people who need access have access?

Getting Started:

- EMS document control requirements are almost a mirror image of the ISO 9001 requirements. Organizations that have or are developing an ISO 9001 management system can enjoy some advantages here.
- Even if your organization doesn't have an ISO 9001 system, you might be better off than you think. Your organization probably has document controls in place for **other purposes** (such as finance, human resources or purchasing). Assess how well these controls work and if they can be adapted for your EMS.

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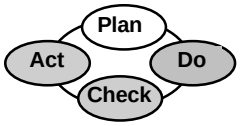
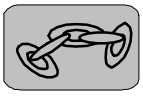


Hints:

- Don't make your procedure more complicated than it needs to be. While larger organizations often have complex processes for document control, smaller organizations can use simpler processes.
- **Limiting distribution** can make the job easier. Could everyone have access to one or a few copies? Determine **how many copies you really need** and where they should be maintained for **ease of access**.
- If the people that need access to documents are connected to a **local area network** or have access to the organization's **internal web site**, consider using a paperless system. Such systems can facilitate control and revision of documents considerably. There also are a number of **commercial software packages** that can simplify the document control effort.
- Prepare a **document control index** that shows all of your EMS documents and the history of their revision. Include this index in your manual. Also, if multiple paper copies of documents are available at the facility, prepare a **distribution list**, showing who has each copy and where the copies are located.
- As your procedures or other documents are revised, **highlight** the changes (by underlining, boldface, etc.). This will make it easier for readers to find the changes.



- ***EMS Documentation***
- ***Operational Control***
- ***Records***

*The **Tool Kit** contains a sample index of EMS-controlled documents (see Appendix A).*

What EMS documents should be controlled? Consider the following:

- ☑ Environmental policy
- ☑ Objectives and targets
- ☑ Roles, responsibilities and authorities
- ☑ EMS description document ("manual")
- ☑ System-level procedures
- ☑ Process- or activity-level procedures / work instructions
- ☑ Related plans (such as emergency response plans)

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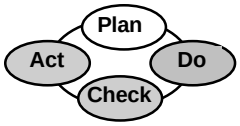

Capture the Learning: Document Control Worksheet

Do we have an **existing process** for controlling EMS documents? If yes, does that process need to be revised? In what way?	
Who needs to be involved in this process within our organization?	
Who needs **access** to controlled copies of EMS documents? How do we ensure that they have access?	
How do we ensure that EMS documents are **periodically reviewed and updated** as necessary?	
Who has authority to **generate** new documents or **modify** existing ones? How is this process managed?	
How are **users alerted** to the existence of new EMS documents or revisions to existing ones?	
How do we ensure that **obsolete** documents are not used?	
Is our EMS document control process **integrated with other organizational functions** (such as quality)? If so, how do we ensure proper **coordination** between environmental and other functions?	
Our next step on document control is to …	

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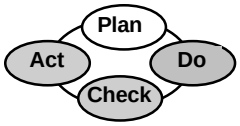
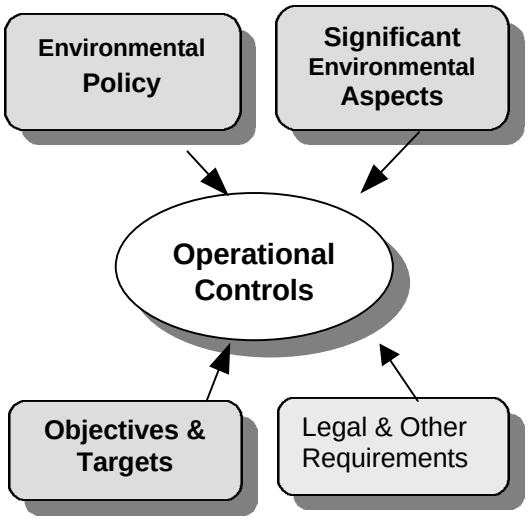


Operational Control

Building environmental performance into operations and activities

Figure 9



To ensure that you satisfy the commitments in your environmental policy, certain operations and activities must be controlled. Where operations or activities are complex and/or the potential environmental impacts are significant, controls should include documented procedures. Procedures can help your organization to manage its **significant environmental aspects**, ensure regulatory **compliance** and achieve **environmental objectives**. Procedures can also play a prominent role in employee **training**.

Documented procedures should be established where the absence of procedures could lead to **deviations from the environmental policy** (including the commitments to compliance and pollution prevention) or from your **objectives and targets**. Determining **which operations** should be covered by documented procedures and **how** those operations should be controlled is a critical step in designing an effective EMS. Keep in mind that you might need operational controls in order to manage significant aspects or legal requirements, regardless of whether you established objectives and targets for each of them.

In determining which operations and activities need to be controlled, look beyond routine production or service. Activities such as **equipment maintenance**, management of on-site **contractors**, and services provided by **suppliers or vendors** could affect your organization's environmental performance significantly.

Examples of activities and operations that might require operational controls:

- ☑ management / disposal of wastes
- ☑ approval of new chemicals
- ☑ storage & handling of raw materials and chemicals
- ☑ equipment servicing
- ☑ wastewater treatment
- ☑ operation of paint line
- ☑ operation of plating system
- ☑ management of contractors

Getting Started:

- Start by looking at the **environmental aspects** and **legal requirements** that you identified earlier. Identify the **operations** and other activities that are related to these significant impacts and legal requirements, then consider what types of controls might be needed to manage these aspects and compliance requirements. If you have **flow charts** of these processes (or can develop them), this may simplify the identification of the process steps where some type of control might be appropriate.

- Prepare draft procedures and review them with the people who will need to **implement** them. This will help to ensure that the procedures are appropriate, realistic and practical. Don't be surprised if reviewers come up with a simpler way to achieve the same results!

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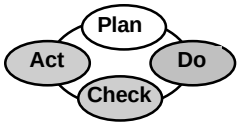

Hints:

- Review procedures you already have in place to **comply with** environmental and health & safety **regulations.** Some of these may be adequate to control significant impacts (or could be modified to do so). Develop a chart to keep track of what controls are needed, such as:

Operation or Activity	Procedure is needed (none exists)	Procedure exists, but is not documented	Procedure exists and is documented	No procedure is needed
1	**X**			
2		**X**		
3		**X**		
4			**X**	

- **Rules of Thumb**: In general, the more highly skilled and trained your employees are, the less critical documented work instructions become. As work becomes more complex or as the potential impact on the environment increases, the more important these documented work instruction will be.

- Once you have identified operations that require control, consider what kinds of maintenance and calibration may be appropriate. **Maintenance** of equipment that could have significant environmental impacts or result in non-compliance should be considered, and the need for a plan to manage such maintenance should not be overlooked. An elaborate preventive or predictive maintenance program is **not** needed in all cases. Assess your existing maintenance program and its effectiveness before making significant changes.

Factors that could affect the need for documented procedures

- ☑ risk of activity
- ☑ complexity of activity / methods
- ☑ degree of supervision
- ☑ skills / training of workforce

Hints on Writing Procedures

- Understand the existing process. Start with a flow chart, if one is available. Build on informal procedures where possible.
- Focus on steps needed for consistent implementation.
- Use a consistent format and approach.
- Review draft procedures with employees that will have to implement them. (Better yet, enlist employees to help write them.)
- Keep procedures simple and concise. Excessive detail does not provide better control and can confuse the user.

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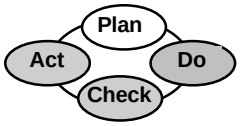
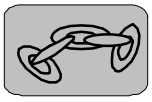


- Some of your identified environmental aspects may relate to the chemicals, raw materials, or other goods and services you obtain from **vendors/suppliers**. Likewise, the activities of your **contractors** can affect your environmental performance. **Communicate your expectations** (including any relevant procedures) to these business partners.



- ***Policy***
- ***Environmental Aspects***
- ***Legal/Other Requirements***
- ***Objectives & Targets***
- ***Training***
- ***Monitoring & Measurement***

- While the development of procedures can be time-consuming, organizations have come up with creative ways to reduce the burden. For example, consider using a college intern or temporary employee to interview employees "on the line", collecting information on what employees do and how they do it.

- If your organization uses a "work team" concept, ask the work teams to draft procedures for their work areas (or to modify existing procedures for EMS purposes).

☆☆ *POLLUTION PREVENTION* ☆☆

Rochester Midland Corporation, a manufacturer of cleaning and other chemical products, formed a partnership with a cleaning contractor that uses Rochester Midland's products, the owners of a building where the products are used, and building tenants, to lessen the risks associated with cleaning products. The partners began by developing common goals, identifying alternative cleaning products and processes, and identifying opportunities to reduce risks to building occupants and cleaning staff. Over a two-month period, they were able to: reduce chemical exposures; improve tenant satisfaction; improve communication, awareness, and training; achieve a 50% reduction in cleaning products; and achieve measurable cost savings.

For EPA's Performance Track program, organizations must have operation and maintenance programs for equipment and operations that relate to legal compliance and significant environmental aspects.
See Appendix B for more information.

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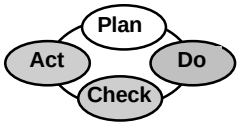

Capture the Learning: Operational Controls Worksheet

Have we **identified operations and activities** associated with significant environmental aspects, legal requirements and environmental objectives? If not **how will this be accomplished**? Who should be **involved**?	
What operations and activities are associated with **significant environmental aspects**?	
What operations and activities are associated with **legal requirements**?	
What operations and activities are associated with environmental **objectives and targets**?	
How are the above operations and activities **controlled**? (list methods)	
How do we know whether these **controls are adequate** (i.e., to manage significant aspects, to ensure compliance, to achieve objectives?	
How do we **train** employees and contractors on relevant operating controls?	
If **new controls** are needed (or **existing ones need to be revised**), what is our **process** for doing so? Who needs to be **involved** in this process?	
Our next step on operational control is to …	

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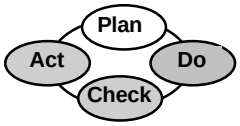

Emergency Preparedness and Response

Minimizing the impacts of uncontrolled events

Despite an organization's best efforts, the possibility of accidents and other emergency situations still exists. Effective **preparation and response** can reduce injuries, prevent or minimize environmental impacts, protect employees and neighbors, reduce asset losses and minimize downtime.

Don't think only about response – focus on how to prevent accidents in the first place

An effective emergency preparedness and response program should include provisions for:

- **assessing the potential** for accidents and emergencies;
- **preventing** incidents and their associated environmental impacts;
- plans / procedures for **responding** to incidents;
- periodic **testing** of emergency plans / procedures; and,
- **mitigating impacts** associated with these incidents.

Review prior accidents and incidents as one guide to where future incidents may occur.

Consistent with the focus on continual improvement, it is important to **review** your emergency response performance **after an incident** has occurred. Use this review to determine if more training is needed or if emergency plans / procedures should be revised.

USEFUL INFORMATION SOURCES:

- Material safety data sheets
- Plant layout
- Process flow diagrams
- Engineering drawings
- Design codes and standards
- Specifications on safety systems (alarms, sprinklers, etc.)

Getting Started:

- This is another area where you should not have to start from scratch. Several environmental and health and safety **regulatory programs** require emergency plans and/or procedures. Look at what you have now and assess how well it satisfies the items discussed above.
- Two planning components that many organizations overlook are how they **identify the potential for accidents** and emergencies and how they **mitigate the impacts** of such incidents. A cross-functional team (with representatives from engineering, maintenance and environmental health & safety, for example) can identify most potential emergencies by asking a series of "what if" questions related to hazardous materials, activities, and processes employed at the site. In addition to normal operations, the team should consider start-up and shutdown of process equipment, and other abnormal operating conditions.

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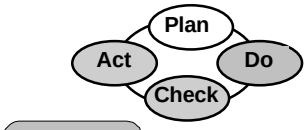

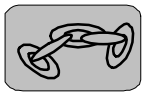

- ***Environmental Aspects***
- ***Legal/Other Requirements***
- ***Training & Awareness***
- ***Communication***
- ***Document Control***

- Ask yourself: Does **everyone** (including new employees) know what to do in an emergency? How would contractors or site visitors know what to do in an emergency situation?
- Communicate with **local officials** (fire department, hospital, etc.) about potential emergencies at your site and how they can support your response efforts.

Hints:

- **Mock drills** can be an excellent way to reinforce training and get feedback on the effectiveness of your plans / procedures.
- **Post copies** of the plan (or at least critical contact names and phone numbers) around the site and especially in areas where high hazards exist. Include phone numbers for your on-site emergency coordinator, local fire department, local police, hospital, rescue squad, and others as appropriate.
- **Revise and improve your plan** as you learn from mock drills, training or actual emergencies.

Checklist for Emergency Preparedness and Response Plans
Does your plan describe the following:
☑ potential emergency situations (such as fires, explosions, spills or releases of hazardous materials, and natural disasters)?
☑ hazardous materials used on-site (and their locations)?
☑ key organizational responsibilities (including emergency coordinator)?
☑ arrangements with local emergency support providers?
☑ emergency response procedures, including emergency communication procedures?
☑ locations and types of emergency response equipment?
☑ maintenance of emergency response equipment?
☑ training / testing of personnel, including the on-site emergency response team (if applicable)?
☑ testing of alarm / public address systems?
☑ evacuation routes and exits (map), and assembly points?

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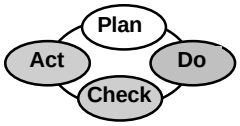

Capture the Learning: Emergency Preparedness & Response Worksheet

Have we **reviewed our operations and activities** for potential emergency situations? If not **how will this be accomplished**? Who should be **involved**?	
Do our existing emergency plans describe how we will **prevent** incidents and associated environmental impacts? If not **how will this be accomplished**? Who should be **involved**?	
Have we **trained personnel** on their roles and responsibilities during emergencies?	
What **emergency equipment** do we maintain? How do we know that this equipment is adequate for our needs?	
How do **contractors and other visitors** know what to do in an emergency situation?	
When was our last emergency **drill**? Is there a plan / schedule for conducting future drills?	
Have we established a **feedback loop** so we can learn from our experiences?	
Our next step on emergency preparedness & response is to …	

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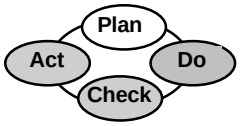

Monitoring and Measurement

Assessing how well the system is performing

"If you can't measure it, you can't manage it."

- **Peter Drucker**
Management Expert

An EMS without effective monitoring and measurement processes is like driving at night without the headlights on —you know that you are moving but you can't tell where you are going! Monitoring and measurement enables an organization to:

- **evaluate** environmental **performance**;
- **analyze root causes** of problems;
- **assess compliance** with legal requirements;
- **identify** areas requiring **corrective action**, and,
- **improve performance** and **increase efficiency**.

In short, **monitoring helps you manage your organization better**. Pollution prevention and other strategic opportunities are identified more readily when current and reliable data is available.

Which operations and activities can have significant environmental impacts?

What are the key characteristics of these operations and activities?

How do we measure these characteristics?

Your organization should **develop procedures** to:

- **monitor key characteristics** of operations and activities that can have significant environmental impacts and/or compliance consequences;
- **track performance** (including your progress in achieving objectives and targets);
- **calibrate and maintain** monitoring equipment; and,
- through internal audits, periodically **evaluate your compliance** with applicable laws and regulations.

Getting Started:

- Monitoring and measuring can be a resource-intensive effort. One of the most important steps you can take is to clearly **define your needs**. While collecting meaningful information is clearly important, resist the urge to collect data "for data's sake."

- Review the kinds of monitoring you do now for **regulatory compliance** and other purposes (such as quality or health and safety management). How well does this serve your EMS purposes? What additional monitoring or measuring might be needed?

- You can start **with a relatively simple** monitoring and measurement process, then build on it as you gain experience with your EMS.

Attributes of effective measurement programs

- ☑ simple
- ☑ flexible
- ☑ consistent
- ☑ ongoing
- ☑ produce reliable data
- ☑ communicate results

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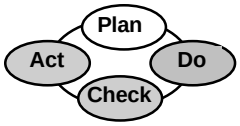

Hints:

- **Monitoring key process characteristics**: Many management theorists endorse the concept of the "**vital few**" — that is, that a limited number of factors can have a substantial impact on the outcome of a process. The key is to figure out what those factors are and how to measure them. Process mapping can help you determine what those factors might be.

EPA policies provide incentives for effective compliance management programs. See "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations" (http://es.epa.gov/oeca/finalpolstate.pdf) and "Small Business Compliance Policy" (http://es.epa.gov/oeca/sbcp2000.pdf)

- Most effective environmental measurement systems use a combination of **process** and **outcome** measures. Outcome measures look at results of a process or activity, such as the amount of waste generated or the number of spills that took place. Process measures look at "upstream" factors, such as the amount of paint used per unit of product or the number of employees trained on a topic. Select a combination of process and outcome measures that are right for your organization.

- **Equipment calibration**: Identify process equipment and activities that truly affect your environmental performance. As a starting point, look at those **key process characteristics** you identified earlier. Some organizations place critical monitoring equipment under a special calibration and preventive maintenance program. This can help to ensure accurate monitoring and make employees aware of which instruments are most critical for environmental monitoring purposes. Some organizations find it is more cost-effective to subcontract calibration and maintenance of monitoring equipment than to perform these functions internally.

Employees should have a mechanism to report regulatory violations (or other EMS issues) without fear of retaliation by their employer

- **Regulatory compliance**: Determining your compliance status on a regular basis is very important. You should have a procedure to systematically **identify, correct, and prevent** violations. Effectiveness of the compliance assessment process should be considered during EMS **management review**. EPA encourages "systematic discovery" of regulatory violations, which means detecting potential violations through environmental audits or compliance management systems that show due diligence in preventing, detecting and correcting violations.

- **Operational performance**: Consider what information you will need to determine if the company is implementing operational controls as intended. The example on Page 62 illustrates the relationship among monitoring and measurement, operational controls and significant environmental aspects.

Focus on things that you can do something about

- **Progress on meeting objectives**: You should measure progress on achieving objectives and targets on a regular basis and communicate the results of such measurement to top management. To measure progress in meeting objectives, select appropriate performance indicators (see below).

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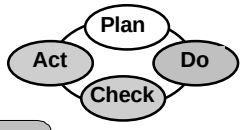

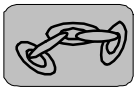

- ***Environmental Aspects***
- ***Legal/Other Requirements***
- ***Objectives & Targets***
- ***Operational Control***
- ***Corrective Action***
- ***Management Review***

- **Selecting performance indicators:** Performance indicators can help you to understand how well your EMS is working. Start by identifying a few performance indicators that are:
  - **simple** and understandable;
  - **objective**;
  - **measurable**; and
  - **relevant** to what your organization is trying to achieve (i.e., its objectives and targets)

  Data collected on performance indicators can be quite helpful during **management reviews**. So, select indicators that will provide top management with the information it needs to make decisions about the EMS.

  Make sure you can commit the necessary **resources** to track performance information over time. It is OK to **start small** and build over time as you gain experience in evaluating your performance. Keep in mind that **no single measurement** will tell your organization how it is doing in the environmental area.

The value of periodic monitoring:

St. Joseph's Mercy Hospital noticed an increase in its discharge of silver to the local wastewater treatment plant. They investigated what had changed at the Hospital and found that a new x-ray processor had been installed without a silver recovery system. Once the recovery system was installed, silver discharge levels returned to permitted levels.

- **Communicating performance**: People respond best to information that is meaningful to "their world." Putting environmental information in a form that is **relevant to their function** increases the likelihood they will act on the information. Be sure to link your measurement program with your **communications** program and other elements of the EMS (such as management reviews, as discussed later).

- **Compliance auditing guidance**: The USEPA has prepared guidance documents and protocols for conducting environmental compliance audits under a number of its regulatory programs. For more information, check the EPA web site at www.epa.gov/oeca/index.html.

☆☆ *POLLUTION PREVENTION* ☆☆

A Pitney Bowes Inc. facility formed a Zero Discharge Task Team to design projects to reduce emissions over a five-year period. Wastes were ranked ordered in terms of their potential risks to the environment and employee safety. Those with high rankings were evaluated on a priority basis. Through the implementation of many projects, the facility has reduced hazardous waste generation by 69%, EPCRA 313 air emissions by 98% and treated wastewater by 93%. Projects included finding substitutes for parts cleaning and degreasing, replacement of all cyanide processes, and installation of fume scrubbers on plating lines, among others.

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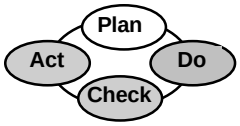

Figure 10:
Linking Monitoring Processes to Operational Controls: One Example

Operation with Significant Environmental Aspect	Operational Controls	Key Characteristics of Operation or Activity	Monitoring or Measurement Methods	Equipment Calibration Needs
Surface Coating Operation	• Approved list of coatings	• Type of coating	• Compare to approved list	• None
(significant aspect is VOC emissions)	• Coating work instruction	• Rate of application	• Measure quantity applied	• Flow meter
		• Frequency of application	• Use coating log book	• None
	• Permit report procedure	• Emissions of VOCs	• Calculate based on use	• Flow meter
Liquid Waste Storage	• Generator procedure	• Use of proper containers	• Inspections of storage area	• None
		• Segregation of incompatibles	• Inspections of storage area	• None
(significant aspect is potential for spills)	• Storage area procedure	• Availability of spill equipment	• Inspections of storage area	• None

Examples of EMS Performance Indicators

- ☑ Pounds of VOC emitted per unit of production
- ☑ Pounds of hazardous waste generated per year
- ☑ Percentage of employees completing environmental training
- ☑ Average time for resolving nonconformities
- ☑ Energy use per unit of production
- ☑ Percentage of solid waste recycled / reused

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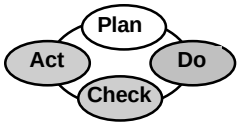

Capture the Learning: Monitoring and Measurement Worksheet

Have we **identified operations and activities** associated with significant environmental aspects, legal requirements and environmental objectives? If, not how will this be accomplished?	
What type(s) of monitoring and measurement do we need to ensure that **operational controls** are being implemented correctly?	
What type(s) of monitoring and measurement do we need to ensure that we are **complying** with **applicable legal requirements?**	
What type(s) of monitoring and measurement do we need to ensure that we are **achieving** our environmental **objectives & targets?**	
How do we identify the **equipment** used for any of the monitoring or measurement listed above? If not how will this be accomplished?	
How will we ensure that monitoring and measurement equipment is properly **calibrated and maintained**?	
What process do we have to periodically **evaluate compliance with legal requirements**? How effective is this process?	
Our next step on monitoring and measurement is to …	

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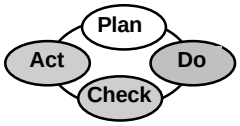

Nonconformance and Corrective / Preventive Action

Fixing EMS problems – and avoiding them in the future

Key Steps

- ☑ identify the problem
- ☑ investigate to identify the root cause
- ☑ come up with solution
- ☑ implement solution
- ☑ document solution
- ☑ communicate solution
- ☑ evaluate effectiveness of solution

No EMS is perfect. You will probably identify problems with your system (especially in the early phases) through audits, measurement, or other activities. In addition, your EMS will need to change as your organization changes and grows. To deal with system deficiencies, your organization needs a process to ensure that:

- **problems** (including nonconformities) are **identified** and **investigated**;
- root **causes** are **identified**;
- corrective and preventive **actions** are **identified** and **implemented**; and,
- **actions** are **tracked** and their **effectiveness is verified**.

EMS nonconformities and other system deficiencies (such as legal noncompliance) should be analyzed to detect patterns or **trends**. Identifying trends allows you to anticipate and **prevent** future problems.

Focus on correcting **and** preventing problems. Preventing problems is generally cheaper than fixing them after they occur (or after they reoccur). Start thinking about problems as **opportunities to improve!**

"Nonconformance" means…

- system does not meet the EMS criteria

-- or --

- implementation is not consistent with the EMS description

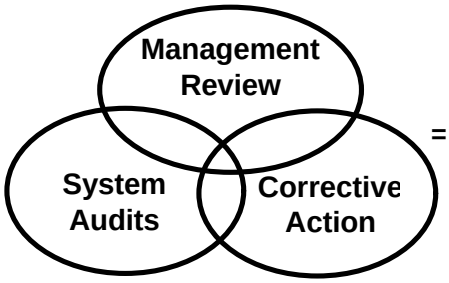

Figure 11:

= System Improvement

Hints:

- If your organization has an ISO 9001 management system, you should already have a corrective and preventive action process for **quality** purposes. Use this as a model (or integrate with it) for EMS purposes.
- Some organizations find that they can **combine** some elements of their management review and corrective action processes. These organizations use a portion of their management review meetings to review noncomformities, discuss causes and trends, identify corrective actions and assign responsibilities.

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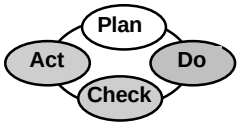
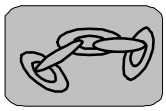


Why do EMS problems occur?
Typical causes include:

- ☑ poor communication
- ☑ faulty or missing procedures
- ☑ equipment malfunction (or lack of maintenance)
- ☑ lack or training
- ☑ lack of understanding (of requirements)
- ☑ failure to enforce rules
- ☑ corrective actions fail to address root causes of problems



- ***Legal & Other Requirements***
- ***Operational Control***
- ***Monitoring & Measurement***
- ***EMS Audits***
- ***Management Review***

- The amount of planning and documentation needed for corrective & preventive actions will vary with the **severity** of the problem and its potential environmental **impacts**. Don't go overboard with bureaucracy — simple methods often work quite effectively.

- Once you document a problem, the organization must be committed to **resolving it in a timely manner**. Be sure that your corrective & preventive action process specifies **responsibilities** and **schedules** for completion. Review your **progress** regularly and follow up to ensure that actions taken are effective.

- Make sure your actions are based on good information and analysis of causes. While many corrective actions may be "common sense," you need to **look beneath the surface** to determine **why** problems occur. Many organizations use the term "**root cause**" in their corrective and preventive action processes. While this term can be used to describe a very formal analysis process, it can also mean something simpler – looking past the obvious or immediate reason for a nonconformance to determine why the nonconformance occurred.

- **Rule of thumb**: Corrective actions should (1) resolve the immediate problem (2) consider whether the same or similar problems exist elsewhere in the organization, and (3) prevent the problem from recurring. The corrective action process also should define the responsibilities and schedules associated with these three steps.

- Initially, most EMS problems may be identified by your internal auditors. However, over the long run, many problems and good ideas may be identified by the people doing the work. **This should be encouraged**. Find ways to get employees involved in the system improvement process (for example, via suggestion boxes, contests or incentive programs).

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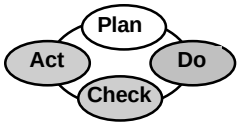

People doing the work are often in the best position to see problems and suggest solutions

The Tool Kit contains a sample corrective action procedure and tracking log (see Appendix A)

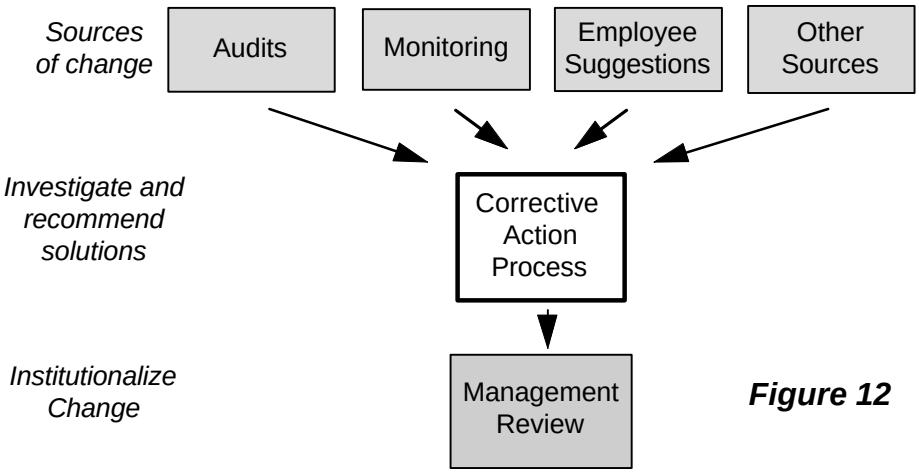

Figure 12

☆☆ *POLLUTION PREVENTION* ☆☆

By switching from a solvent-based paint that contained lead to a no lead, low-solvent, water-based paint, March Coatings dramatically decreased its volatile organic compound (VOC) air emissions from over 19 tons in 1995 to less than 6 tons in 1999 while simultaneously increasing production. The company went from being a large quantity generator of hazardous waste to small quantity generator status under RCRA. March Coatings accomplished this by working closely with its paint supplier to find a formula that met their needs.

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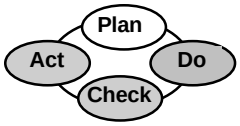

Capture the Learning: Corrective & Preventive Action Worksheet

Do we have an **existing process** for corrective and preventive action? If yes, does that process need to be revised? In what way?	
Who needs to be involved in this process within our organization?	
How are **nonconformities** and other potential system deficiencies **identified**? (List methods such as audits, employee suggestions, ongoing monitoring, etc.)	
How do we **determine the causes** of nonconformities and other system deficiencies? How is this information used?	
How do we **track the status** of our corrective and preventive actions?	
How is / can **information** on nonconformities and corrective actions **be used within the EMS** (for example, in management review meetings, in employee training sessions, in review of procedures, etc.)	
How do we **ensure the effectiveness** of our corrective and preventive actions?	
Our next step on corrective and preventive action is to …	

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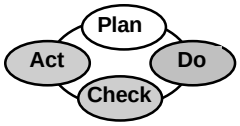

Records

Evidence that the EMS is working as intended

The value of records management is fairly simple — you should be able to **demonstrate** that your organization is actually implementing the EMS as designed. While records have value internally, over time you may need to provide **evidence of EMS implementation to external parties** (such as customers, a registrar, or the public). Records management is sometimes seen as bureaucratic, but it is difficult to imagine a system **operating consistently** without accurate records.

What are "records"?

Records provide evidence that the processes that make up your EMS are being implemented as described.

The basics of records management are straightforward: you need to decide **what** records you will keep, **how** you will keep them and for **how long**. You should also think about how you will **dispose** of records once you no longer need them.

If your organization has an ISO 9001 (or other) management system, you should have a process in place for managing records. This process could be adapted for EMS purposes.

Hints:

- Start by **identifying** what **EMS records are required**. Look at your other procedures and work instructions to determine **what evidence is needed to demonstrate implementation**. Also consider records that are required by various **legal requirements**.
- **Focus on records that add value —** avoid bureaucracy. If records have no value or are not specifically required, don't collect them. The records you choose to keep should be **accurate and complete**.
- You may need to generate certain **forms** in order to implement your EMS. When these forms are filled out, they become records. Forms should be **simple and understandable** for the users.
- Establish a records retention policy and stick to it. Make sure that your policy takes into account **records retention requirements specified in applicable environmental regulations**.
- In designing your records management process, be sure to consider:
  - who needs access?
  - to what records?
  - in what circumstances?

Records should be important to the operation of the EMS, including your regulatory compliance efforts.

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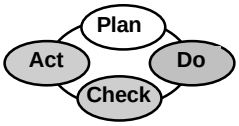
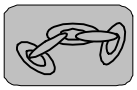


Key Questions

- ☑ what records are kept?
- ☑ who keeps them?
- ☑ where are they kept?
- ☑ how are they kept?
- ☑ how long are they kept?
- ☑ how are they accessed?
- ☑ how are they disposed?

- If your organization uses computers extensively, consider using an electronic EMS records management system. Maintaining records electronically can provide an excellent means for rapid retrieval of records as well as controlling access to sensitive records.
- Think about which records might require additional security. Do you need to restrict access to certain records? Should a back-up copy of critical records be maintained at another location?



Virtually every element of an EMS can result in the generation of records

The Tool Kit contains a tool for organizing your filing system (see Appendix A). You can copy the pages, cut out the tabs, and use them to set up your filing system.

Types of Records You Might Maintain (Examples):

- legal, regulatory and other code requirements
- results of environmental aspects identification
- reports of progress towards meeting objectives and targets
- permits, licenses and other approvals
- job descriptions and performance evaluations
- training records
- EMS audit and regulatory compliance audit reports
- reports of identified nonconformities, corrective action plans and corrective action tracking data
- hazardous material spill / other incident reports
- communications with customers, suppliers, contractors and other external parties
- results of management reviews
- sampling and monitoring data
- maintenance records
- equipment calibration records

Capture the Learning: Records Management Worksheet

Have we **identified what records** need to be maintained? Where is this defined?	
Have we determined records **retention times**? Where is this defined?	
Have we established an effective **storage and retrieval** system?	
Our next step on records is to …	

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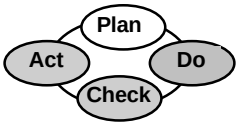

EMS Auditing

Objective evidence of conformance with EMS requirements

Once your organization has established its EMS, verifying the implementation of the system will be critical. To identify and resolve EMS deficiencies you must **actively seek them out**.

In a smaller organization, periodic audits can be particularly valuable. Managers are often so close to the work performed that they may not see problems or bad habits that have developed. Periodic EMS audits will help determine whether **all** of the requirements of the EMS are being carried out **in the specified manner**.

Audits are vital to continual improvement

For your EMS audit program to be effective, you should:

- develop audit **procedures** and protocols;
- determine an appropriate audit **frequency**;
- select and **train** your auditors; and,
- maintain audit **records.**

Results of your EMS audits should be linked to the **corrective** and **preventive action** process, as described earlier.

While they can be time-consuming, EMS audits are critical to EMS effectiveness. Systematic identification and reporting of EMS deficiencies to management provides a great opportunity to:

- maintain **management focus** on the environment,
- **improve** the EMS and its performance, and
- ensure the system's **cost-effectiveness**.

EMS Audit

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

- ISO 14001

Getting Started:

- ***How frequently do we need to audit?*** To determine an appropriate frequency of your EMS audits, consider the following factors:
  - the nature of your **operations** and **activities**,
  - your significant environmental **aspects / impacts** (which you identified earlier),
  - the results of your **monitoring** processes, and
  - the results of **previous audits**.

As a rule of thumb, all parts of the EMS should be audited **at least annually**. You can audit the entire EMS at one time or break it down into discrete elements for more frequent audits. (There may be advantages to conducting frequent audits, but the decision is up to you).

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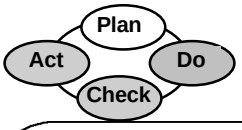

Audit procedures should describe:

- ☑ audit planning
- ☑ audit scope (areas and activities covered)
- ☑ audit frequency
- ☑ audit methods
- ☑ key responsibilities
- ☑ reporting mechanisms
- ☑ recordkeeping

- ***Who will perform the audits?*** You should select and train EMS auditors. Auditor training should be both **initial and ongoing**. Commercial EMS auditor training is available, but it might be more cost-effective to link up with businesses or other organizations in your area (perhaps through a trade association) to sponsor an auditor training course. Some local community colleges also offer EMS auditor training courses.

  Auditors should be trained in **auditing techniques** and **management system** concepts. Familiarity with environmental regulations, facility operations, and environmental science can be a big plus, and in some cases may be essential to adequately assess the EMS.

  Some auditor training can be obtained **on-the-job**. Your organization's first few EMS audits can be considered part of auditor training, but make sure that an **experienced auditor** leads or takes part in those "training" audits.

Traits of a good auditor:

- ☑ ***Independent (of the activity being audited***
- ☑ ***Objective***
- ☑ ***Impartial***
- ☑ ***Tactful***
- ☑ ***Attentive to detail***

  Auditors should be **independent of the activities being audited**. This can be a challenge for small organizations. See the box on next page for ideas.

  If your company is registered under **ISO 9001**, consider using your internal quality auditors as EMS auditors. While some additional training might be needed for EMS auditing, many of the required skills are the same.

- ***How should management use audit results?*** Management can use EMS audit results to **identify trends or patterns** in EMS deficiencies. The organization also should ensure that identified system gaps or deficiencies are **corrected** in a timely fashion and that corrective actions are **documented**.

Hints:

- Your EMS audits should focus on **objective evidence of conformance**. During an audit, auditors should resist the temptation to evaluate, for example, **why** a procedure was not followed — that step comes later.

- During an audit, auditors should **review identified deficiencies** with people who work in the relevant area(s). This will help the auditors verify that their audit findings are correct. This also can reinforce employee awareness of EMS requirements.

- If possible, train at least **two** people as internal auditors. This will allow your auditors to work as a **team**. It also allows audits to take place when one auditor has a schedule conflict, which is often unavoidable in a smaller organization!

Sources of Evidence

- ☑ interviews
- ☑ document review
- ☑ observation of work practices

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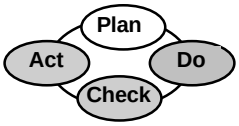


Results of regulatory compliance audits are often good indicators of EMS deficiencies. Use compliance audit findings to guide your EMS efforts

Options for Auditor Independence

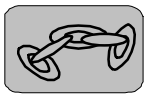
- Barter for audit services with other small organizations in your area
- Use external auditors
- Have office personnel audit production areas (and vice versa)

- **Before you start** an audit, be sure to **communicate** the audit scope, criteria, schedule, and other pertinent information to the people in the affected area(s). This helps to avoid confusion and facilitate the audit process.

*The **Tool Kit** includes a sample EMS audit procedure, sample EMS audit questions, and a number of sample audit forms (see Appendix A)*

- Consider **integrating** your EMS and regulatory compliance audit processes, **but** keep in mind that these audit processes have different purposes. While you might want to **communicate the results** of EMS audits widely within your organization, the results of compliance audits might need to be communicated in a more limited fashion.

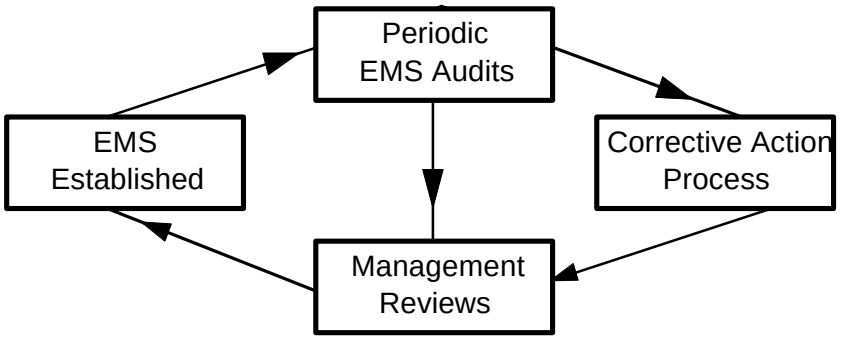
- Final thought: An EMS audit **is** a check on how well your system meets your own established EMS requirements. An EMS audit is **not** an assessment of how well employees do their jobs. Auditors should avoid the "gotcha" mentality. Audits should be judged on the **quality** of findings, rather than on the number of findings.



- ***Structure & Responsibility***
- ***Training & Awareness***
- ***Corrective Action***
- ***Management Review***

Figure 13:
Linkages among EMS audits, corrective action and management reviews

Even if you have an effective internal audit program, consider periodic external audits to ensure objectivity



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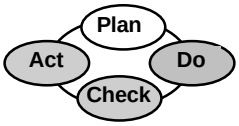

Capture the Learning: EMS Auditing Worksheet

Have we developed an **EMS audit program**? If not, how will this be accomplished? **Who need to be involved** in the audit process?	
Is there **another audit program** with which our EMS audits could be **linked** (for example, our quality or health & safety management system audits)?	
Have we determined an appropriate **audit frequency**? What is the **basis** for the existing frequency? Should the frequency of audits be modified?	
Have we **selected** EMS auditors? What are the **qualifications** of our auditors?	
What **training** has been conducted or is planned for our EMS auditors?	
Have we **conducted EMS audits** as described in the audit program? Where are the results of such audits described?	
How are the results of EMS audits **communicated** to top management?	
How are the **records** of these audits maintained?	
Our next step on EMS auditing is to …	

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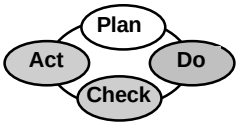

Management Review

Closing the continual improvement loop

An effective EMS is one that:

- ☑ ***meets the organization's needs***
- ☑ ***produces results***
- ☑ ***conforms to EMS criteria***
- ☑ ***has staying power***

Just as a person should have periodic physical exams, your EMS must be reviewed periodically by top management to stay "healthy". Management reviews are one **key to continual improvement** and for ensuring that the EMS will continue to meet your organization's needs over time.

Management reviews also offer a great opportunity to keep your EMS **efficient and cost-effective**. For example, some organizations have found that certain procedures and processes initially put in place were not needed to achieve their environmental objectives or to control key processes. **If EMS procedures and other activities don't add value, eliminate them.**

The key question that a management review seeks to answer:

> "Is the system **working**?" (i.e., is it <u>suitable, adequate and effective,</u> given our needs?)

Hints:

- Two kinds of people should be involved in the management review process:
  - people who have the right **information** / knowledge,
  - people who can **make decisions** about the organization and its resources (top management).
- Determine management review **frequency** that will work best for your organization. Some organizations combine these reviews with other meetings (such as director meetings). Other organizations hold "stand-alone" reviews. At a minimum, consider conducting management reviews at least once per year.
- During management review meetings, make sure that someone records what **issues** were discussed, what **decisions** were arrived at, and what **action** items were selected. Results of management reviews should be **documented**.
- Management reviews should assess how **changing circumstances** might influence the suitability, effectiveness or adequacy of your EMS. Changing circumstances might be **internal** to your organization (such as new facilities, new raw materials, changes in products or services, new customers, etc.) or might be **external** factors (such as new laws, new scientific information or changes in adjacent land use).

"Many of the benefits of an EMS cannot be anticipated beforehand. You will have to discover them as pleasant surprises at some point after implementation. They <u>will</u> be there.

Milan Screw Products

*The **Tool Kit** contains a sample Management Review procedure. (See Appendix A)*

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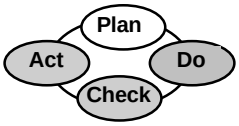
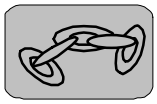


Information sources to consider:

- ☑ Audit results
- ☑ Internal suggestions
- ☑ External communications
- ☑ Progress on objectives and targets
- ☑ Other environmental performance measures
- ☑ Reports of emergencies, spills, other incidents
- ☑ New or modified legislation and regulations
- ☑ New scientific / technical data on materials and processes used by the organization

Consider holding management review meetings "after hours" to minimize disruption of work.



All elements of the EMS should be considered as part of Management Review

- After documenting the action items arising from your management review, be sure that someone **follows-up**. Progress on action items should be tracked to completion.
- As you assess potential changes to your EMS, consider **other organizational plans and goals**. In this way, environmental decision-making can be integrated into your overall management and strategy.

Management Review: Questions to Ponder

- Did we achieve our **objectives and targets**? If not, why not? Should we modify our objectives?
- Is our environmental **policy** still relevant to what we do?
- Are **roles and responsibilities** clear, do they make sense and are they communicated effectively?
- Are we applying **resources** appropriately?
- Are our **procedures** clear and adequate? Do we need other controls? Should we eliminate some of them?
- Are we **fixing problems** when we find them?
- Are we **monitoring our EMS** (e.g., via system audits)? What do the results of those audits tell us?
- What effects have **changes in materials, products, or services** had on our EMS and its effectiveness?
- Do changes in **laws or regulations** require us to change some of our approaches?
- What other changes are coming in the near term? What impacts (if any) will these have on our EMS?
- What **stakeholder concerns** have been raised since our last review? How are concerns being addressed?
- Is there a **better way**? What can we do to **improve**?

Smaller organizations often favor employee experience over written procedures and documented systems. However, personnel turnover without documented systems can stall progress. When the manager of the Washtenaw County Home Toxics Reduction Program took over his position, there had been a six-month gap since his predecessor had left and very little in place to tell him what to do, whom to contact, or what the history of the program was. Having an EMS can facilitate a smooth transfer of responsibilities for environmental management.

YOU SHOULD NOW UNDERSTAND ALL OF THE ELEMENTS OF AN EFFECTIVE EMS !!

NOW YOU'RE READY TO "GO"! (See next section)

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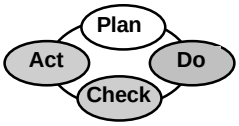

Capture the Learning: Management Review Worksheet

Do we have an **existing process** for conducting management reviews? If yes, does that process need to be revised? In what way?	
Who needs to be involved in this process within our organization?	
When is the **best time** for us to implement this process? Can this effort be **linked** to an existing organization process (such as our budget, annual planning or auditing cycles?)	
How **frequently** are management reviews? What is the **basis** for this frequency? Should we conduct reviews more or less frequently?	
Who is responsible for **gathering the information** needed to conduct management reviews? Who is responsible for **presenting** this information?	
How do we ensure that **changing circumstances** (both internal and external to the organization) are considered I this process?	
How do we ensure that the **recommendations** of management reviews are **tracked and acted upon**?	
Our next step on management review is to …	

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Section 5 : GO! (Roadmap for EMS Development)

A sequence of activities for building an EMS from the ground up

Once you gain an understanding the individual elements of an EMS, you can begin the process of **putting these elements in place**. Each of the individual EMS elements is described in detail in Section 4. Also, several "up front" EMS planning tasks (such as gaining top management commitment) were described in Section 3.

Ford Motor Company conducted ISO 14001 implementation workshops for its suppliers. Part of these workshops was devoted to a discussion of how to "launch" the EMS effort through a set of implementation steps.

Experience of many organizations shows that the **order** in which EMS implementation activities should take place is not always obvious or intuitive. Further, the optimal **sequence of implementation activities** does not necessarily follow the order in which elements are described in various EMS models, such as ISO 14001. Using a logical sequence can save time and money and minimize the "false starts" an organization might make.

This section provides a **step by step action plan** for developing and implementing the elements of an EMS. It describes a logical sequence or "roadmap" for planning and implementing EMS elements and explains how this sequence can be important in building an effective EMS.

The Washtenaw County Home Toxics Reduction Program (HTRP) successfully linked its management review process with its new Business Improvement Process (BIP). HTRP used its environmental objectives as input to the BIP and reviewed progress annually to determine what worked and to make adjustments, where needed. The output of BIP will feed into the County's budgeting process.

Keep in mind that this is just one way to do the job– you might find other approaches that work just as well.

Figure 14 illustrates the suggested implementation process flow. Each of the steps (and a rationale for their sequence) is discussed below.

A few **hints** to keep in mind as you build your EMS:

- **You may already have some EMS elements in place**, as indicated by the preliminary review that you performed earlier (see Section 3 for more details).
- Make sure to build in the **links between elements**. Refer back to Section 4 for information on the key links. The effectiveness of your EMS depends as much on the strength of its links as it does on the strength of the individual elements themselves.
- For many EMS elements, you will need to **design and implement a process**. In these cases, you also should consider **documenting** the process in the form of a **procedure**.

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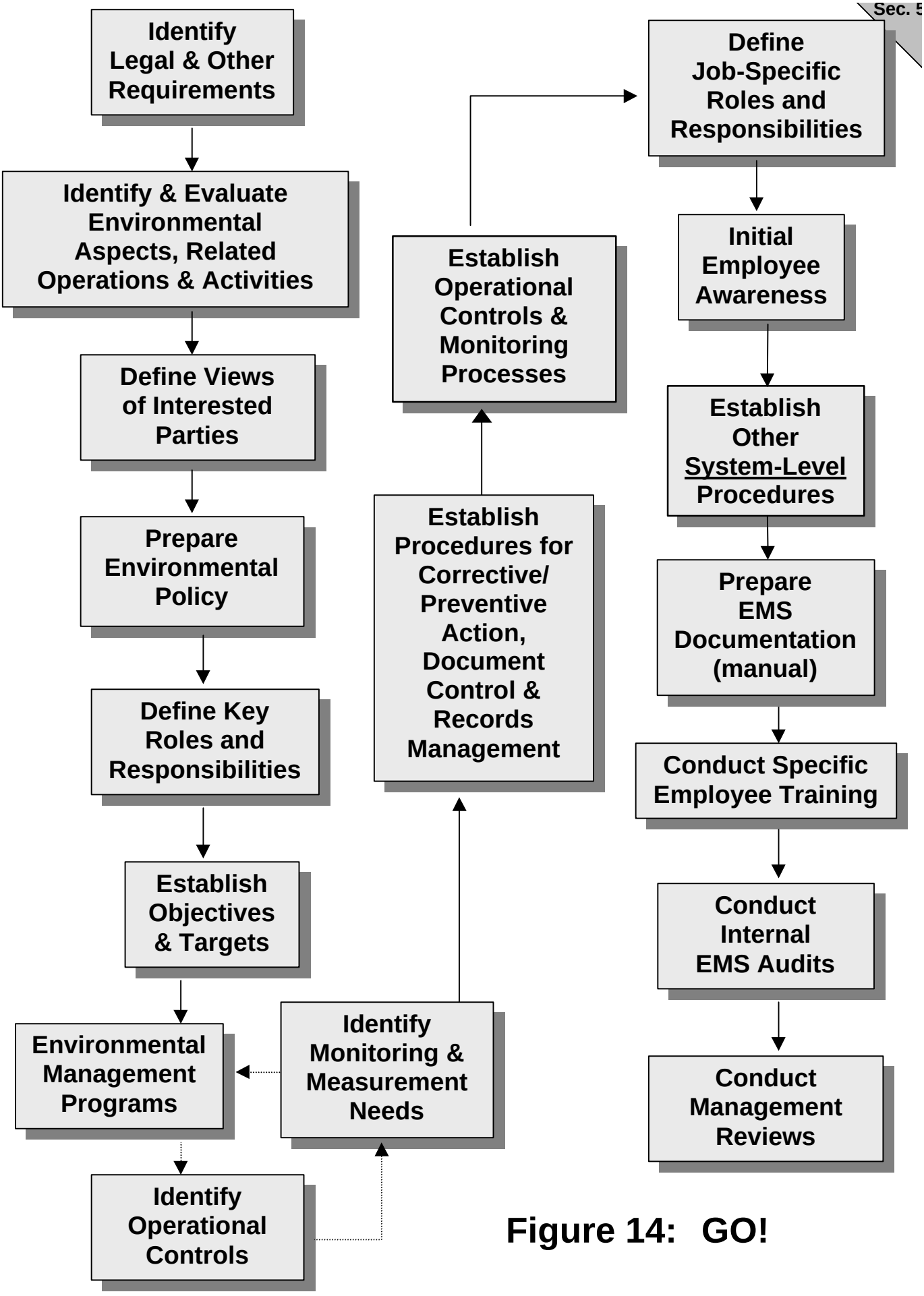

Figure 14: GO!

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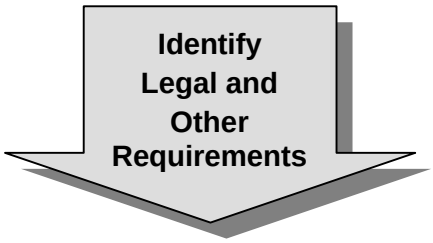
Creating Your EMS: Step by Step



A first step in the EMS-building process is **understanding the legal and other requirements** that apply to what you do (i.e., that apply to your products, activities and services). This step is important for understanding compliance obligations and how these obligations affect the overall EMS design. For example, you might have an operation that is covered by an air quality permit or might provide a service that results in the generation of regulated wastes. Your EMS should include processes to ensure that such legal requirements are addressed when you conduct these operations (or when they are modified).

Your EMS should be designed to help you accomplish more that just compliance with applicable laws and regulations, but these compliance requirements should be a major consideration. Performing this step first allows you to understand how legal requirements might relate to the environmental aspects and impacts of your products, activities and services, as discussed next.

Once you understand what "rules" apply, you should **assess how your organization interacts with the environment.** This is accomplished by identifying your environmental **aspects and impacts** and determining which of them are significant. Some of your environmental aspects may be regulated, while others may not be.

As you identify and assess your aspects, you also should **identify specific products, operations and activities** from which these aspects / impacts arise. Likewise, you can identify any **monitoring** that is performed of these operations or activities for environmental purposes. For example, if you identify the generation of a particular air emission as a significant environmental aspect, it would help to know which operation(s) generate such air emissions. It might also help to know whether these air emissions are monitored or otherwise measured in some manner.

Collecting this information at an early stage will help you implement subsequent EMS elements. You can use a form (such as **Figure 15**) to capture this information. One caveat -- just because you identify an existing control and/or monitoring activity related to a particular operation or activity, **don't automatically assume that these controls are adequate** for EMS purposes. The adequacy of these controls will depend on several factors, including your objectives and targets.

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Figure 15: **Linking Operations, Aspects, Controls and Monitoring (example)**

Source	Significant Aspect(s)	Regulated?	Associated Controls	Associated Monitoring or Measurement
Operations *Parts painting*	• *Air emissions (VOCs)* • *Solvent waste generation*	• *Yes* • *Yes*	• *Limits on VOC content in paints and operating hours* • *SOP for HW generation*	• *Paint use records, log of operating hours* • *Waste tracking sheet*
Parts plating	• *Waste generation* • *Water discharges*	• *Yes* • *Yes*	• *SOP for HW generation* • *Notification to site effluent treatment plant*	• *Waste tracking sheet* • *Pre-discharge sampling*
Other Activities *Raw material storage*	• *Potential spills*	• *Yes*	• *Stormwater Pollution Prevention Plan*	• *Weekly inspections of storage area*
Fleet maintenance	• Waste oil generation • *Potential spills*	• *Yes* • *Yes*	• *SOP for HW generation* • *Stormwater Pollution Prevention Plan*	• *Waste tracking sheet* • *Weekly inspections of storage area*
Products *Pumps*	• *Energy Use* • *Chromium content*	• *No* • *No*	• *None* • *None*	• *None* • *None*
Services *Equipment servicing at customer sites*	• *Waste generation* • *Fuel use*	• *No* • *No*	• *SOP for equipment service* • *None*	• *Waste tracking sheet* • *Fuel dispensing records*

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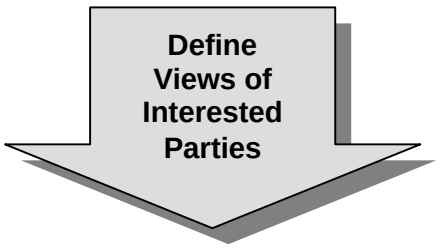

Armed with information on applicable legal and other requirements as well as the environmental attributes of your products, activities and services, you should **gather information of the views of your "stakeholders"** (or interested parties). Stakeholders might include, for example, your neighbors, interest groups, regulators and others. Their views might address how your organization affects the environment, how well you are meeting your environmental obligations, and whether your organization is a "good neighbor", among other topics. There are many ways to collect information on stakeholder views, as discussed in Section 4 (See "Communication").

Gathering this information now allows you to consider stakeholder input in the development of your environmental policy. Since you have already assessed your legal and other requirements and your environmental aspects, you should be in a good position to have meaningful dialogues with these stakeholders.

At this point, you should have a sound basis for **developing** (or possibly amending) **your environmental policy**. Using the information developed in the previous three steps allows your organization to prepare a policy that is relevant to the organization and the key issues that it faces. For example, you will have information on the views of your stakeholders that might be valuable in developing an environmental policy.

Keep in mind that you evaluated your current environmental programs when you performed the preliminary review (see Section 3), so you should understand how (and how well) you are currently managing these key issues.

Once the environmental policy has been written, you can begin to **define key roles and responsibilities** within the EMS. At this stage of implementation, focus on "higher-level" responsibilities, such as the roles and responsibilities of senior management, key functional leaders and environmental staff (if one exists). EMS responsibilities for other specific jobs or functions will be identified in a later step. Once the key roles and responsibilities have been defined, obtain the input of these individuals in the next step of the process – establishing objectives and targets.

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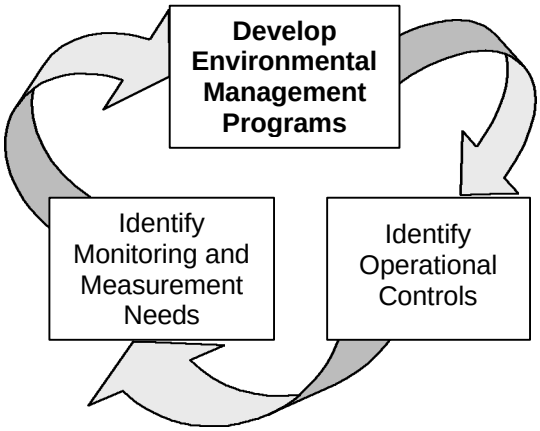
At this point you are ready to **establish environmental objectives and targets** for your organization. These objectives should be consistent with your environmental policy. Each of your objectives also should reflect the analyses you carried out on legal and other requirements, environmental aspects and impacts, and the views of interested parties (as well as the other factors discussed in Section 4).

You identified the operations and activities related to your significant aspects and impacts in an earlier step. Also, you defined certain key roles and responsibilities. This information will help you to determine the **relevant levels and functions** within the organization for achieving objectives and targets. For example, if you set an objective to reduce hazardous waste generation by 10% this year, you also should know which parts of the organization must be involved in order to meet this objective.

This brings us to one of the most challenging (and potentially most valuable) steps in the overall process. Armed with an understanding of legal requirements, your significant environmental aspects and impacts, and your objectives and targets, your are ready to **tackle several EMS elements simultaneously**. These elements include the design of environmental **management programs**, the initial identification of necessary **operational controls**, and the initial identification of **monitoring and measurement** needs. One reason combining these steps is that they can often overlap significantly. For example, your environmental management program for achieving a certain objective (such as maintaining compliance with regulations) might consist of a number of existing operational controls (procedures) and monitoring activities. Similarly, achieving an objective might require a feasibility study or the implementation of certain "new" operational controls. Likewise, determining progress on achieving objectives often requires some form of monitoring or measurement.

Figure 16



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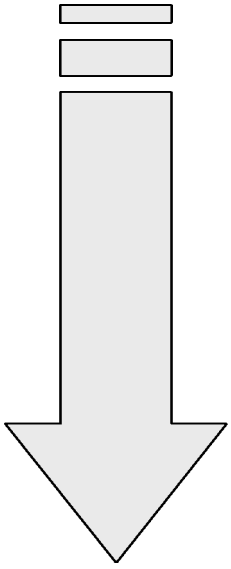
One important caveat: Keep in mind that operational controls and monitoring / measurement processes might be needed **even if** no objective (or corresponding management program) exists for a particular operation or activity. For example, controls might be needed for certain operations to ensure compliance with legal requirements or to control a significant environmental aspect, even where no specific objective has been set. The initial identification of operational control needs at this point in the process should be supplemented by a more detailed design of operational controls and monitoring processes, as described in a subsequent process step.

An example of a form for describing environmental management programs that shows the links between programs and operational controls is provided in the Tool Kit (Appendix A)

Also keep in mind that this **process is usually iterative.** That is, you might need to "re-visit" your management programs, operational controls and monitoring processes over time to ensure they are consistent and up-to-date.



You should already have a **head start** on this step, since you identified operations and activities related to your significant environmental aspects (as well as existing control and monitoring processes) several steps ago. *Remember how we said this was a good idea?*

Your don't need to fully develop these operational controls and monitoring activities yet – that step comes later (see "Design Operational Controls & Monitoring Processes"). What you need to do now is **compile a list of your operational control and monitoring <u>needs</u>**. As you develop your environmental management programs, ask yourself the following questions:

- How do we control this operation or activity <u>now</u>?
- Are these controls <u>adequate</u> to meet our objectives and to ensure compliance?
- If <u>additional controls</u> are needed, <u>what types</u> of controls make sense?
- What type of <u>monitoring / measurement</u> is needed to <u>track our progress</u> in achieving objectives and to <u>ensure that operational controls are implemented</u> as designed?

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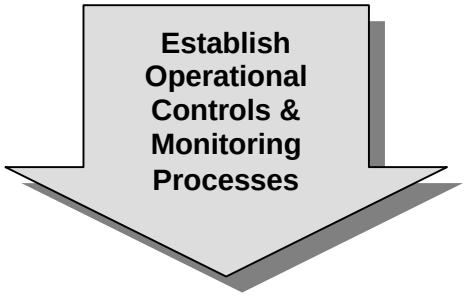
At this stage of implementation, your EMS will begin to generate some documents (such as procedures and forms) and records (that demonstrate that various processes are being carried out). For this reason, it is a good time to **establish procedures for corrective/preventive action, document control, and records management**. These three processes are essentially "system maintenance" functions. As you develop and implement other system-level procedures, work instructions for various activities, and other EMS documents, you need a process for controlling the generation and modification of these documents. Likewise, you will need a process to ensure that you can fix (or correct) problems when they occur. In addition, many of these processes (such as monitoring activities) will generate records, so you need an effective way to manage the records that your EMS generates.



Once the system maintenance functions are in place, you can start in earnest the **establishment of activity- or area-specific operational controls and monitoring processes**. As a starting point, refer back to the list of operational control and monitoring needs that you generated in preparing your environmental management programs (see earlier step). Also, you should have a template for the development of these work instructions (or standard operating procedures), since your document control process was established in the prior step. Remember that you might need operational controls and monitoring processes to meet your **policy commitments** and **control significant environmental aspects**, even where no specific objectives or environmental management programs have been established.

Employees that work in relevant operations or activities can provide a lot of support here. Also, note that these operational controls and monitoring processes can play an important role in employee training, as discussed later.

Also keep in mind that you also need a procedure for conducting **periodic compliance evaluations**.

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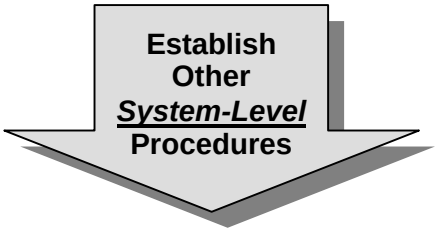
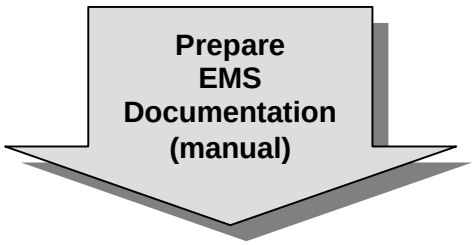
As part of the process described above, you should **define job-specific roles and responsibilities**. Such roles and responsibilities should address the specific operational controls and monitoring processes discussed above. You might want to document these responsibilities in a **responsibility matrix** or in some other form that is easily communicated to employees.

Initial employee awareness training should be conducted to promote understanding of the organization's EMS efforts and the progress made to-date. As a first step, train employees on the environmental policy and other elements of the EMS. Discuss the environmental impacts of their activities, any new / modified procedures, the organization's objectives and targets, as well as their EMS responsibilities. If you have contractors or others at your site who are not employees of your organization, consider whether these other individuals should be included in these EMS awareness sessions.



Some system-level procedures (such as the procedures for identification of environmental aspects and access to legal and other requirements) were developed at earlier stages of the process. At this point, you **can establish any other procedures required for the EMS**. These other system-level procedures might include, for example:

- employee training and awareness,
- internal and external communication,
- emergency preparedness and response,
- EMS auditing, and
- management review.



Once you have established roles and responsibilities and defined all of your system-level procedures, **preparing the EMS manual** should be a relatively simple matter. The manual should summarize the results of your efforts so far (that is, it should describe the processes you have developed, the roles and responsibilities you have defined as well as other EMS elements). Also, it is important to describe the **links** among system elements and provide direction to other system documents. Keep the manual simple – there is no need to provide great detail on any particular system process. Readers can be referred to the detailed procedures if more information is needed.

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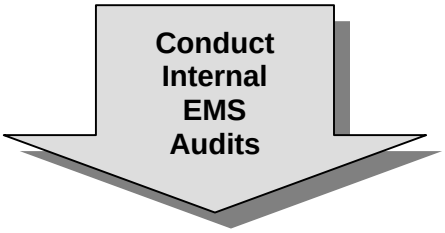
Once the procedures and other system documentation have been prepared, you are ready to **conduct specific employee EMS training**. As a first step, identify specific **training needs**. Employee training should be designed to ensure understanding of:

- key system processes,
- operational controls related to their specific jobs, and
- any monitoring or measurement for which they are responsible.

Job-specific training should also cover topics such as EMS auditing for those employees that will conduct internal EMS audits.



Once internal auditors have been selected and trained, you should **design and initiate the internal auditing process**. At this point, you should have sufficient EMS processes in place to conduct meaningful audits. Many organizations find that it is easier to start with smaller, more frequent audits that to audit the entire EMS at once. These early audits can serve as a learning tool for the auditors.

Once the audit results are known, use **the corrective and preventive action process** you developed earlier to address any identified problems. Audit records should be managed in accordance with the records management process.

Use the results of your internal audits (along with other information on the EMS) to **conduct management reviews**. Management should consider the need for any changes to the EMS and make assignments for any changes needed. Such assignments should be consistent with the roles and responsibilities established previously.

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Appendix A: TOOL KIT

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Note: The examples in the Tool Kit are drawn from many different sources. They are not designed to be used together in EMS development.

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Sample Environmental Policies

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NEO INDUSTRIES
HEALTH, SAFETY AND ENVIRONMENTAL POLICY

Neo Industries is committed to managing health, safety and environmental (HS&E) matters as an integral part of our business. In particular, it is our policy to assure the HS&E integrity of our processes and facilities at all times and at all places. We will do so by adhering to the following principles:

Compliance

We will comply with all applicable laws and regulations and will implement programs and procedures to assure compliance. Strict compliance with HS&E standards will be a key ingredient in the training, performance reviews and incentives of all employees.

Where existing laws and regulations are not adequate to assure protection of human health, safety and the environment, we will establish and meet our own HS&E quality standards.

Prevention

We will employ management systems and procedures specifically designed to prevent activities and / or conditions that pose a threat to human health, safety or the environment. We will minimize risk and protect our employees and the communities in which we operate by employing safe technologies and operating procedures, as well as being prepared for emergencies.

We will strive to prevent releases to the atmosphere, land or water. We will minimize the amount and toxicity of waste generated and will ensure the safe treatment and disposal of waste.

Communication

We will communicate our commitment to HS&E quality to our employees, vendors and customers. We will solicit their input in meeting our HS&E goals and in turn will offer assistance to meet their goals.

Continuous Improvement

We will continuously seek opportunities to improve our adherence to these principles, and will periodically report progress to our stakeholders.

{Signature}
Neil K. Holt
President

March 1995

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Pacific Gas and Electric Company

Environmental Quality Policy Statement

PG&E is committed to a clean, healthy environment. We will provide our customers with safe, reliable, and responsive utility service in an environmentally sensitive and responsible manner We believe that sound environmental policy contributes to our competitive strength and benefits our customers, shareholders, and employees by contributing to the overall well-being and economic health of the communities we serve.

September 1995

(Actual policy is printed on recycled paper)

We will:

Comply fully with the letter and spirit of environmental laws and regulations, and strive to secure fundamental reforms that will improve their environmental effectiveness and reduce the cost of compliance.

Consider environmental factors and the full acquisition, use, and disposal costs when making planning, purchasing, and operating decisions.

Work continuously to improve the effectiveness of our environmental management.

Provide appropriate environmental training and educate employees to be environmentally responsible on the job and at home.

Monitor our environmental performance regularly through rigorous evaluations.

Seek to prevent pollution before it is produced, reduce the amount of waste at our facilities, and support pollution prevention by our customers and suppliers.

Manage land, water, wildlife, and timber resources in an environmentally sensitive manner.

Use energy efficiently throughout our operations, and support the efficient use of gas and electricity by our customers and suppliers.

Re-use and recycle whenever possible.

Use environmentally preferred materials.

Clean up residual pollution from past operations in a cost-effective manner.

Work cooperatively with others to further common environmental objectives.

Communicate and reinforce this policy throughout the company.

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CAMPBELL & CO. ENVIRONMENTAL POLICY

Campbell & Co's commitment to improve the environment is an expression of our Guiding Principles, and a demonstration of "think globally and act locally" sensibilities.

We strengthen this commitment by employing Quality Operating System methodology as the framework to identify objectives and targets for addressing areas of environmental significance.

Campbell & Co. is improving the condition of our environment by preventing pollution, specifically through the reduction of natural resource usage. We are also helping to preserve the environment by promoting recycling as well as continuing to make responsible environmental choices when purchasing products.

Campbell & Co. will comply with all federal, state and local legislation and regulatory requirements, as well as those requirements adopted through the Michigan Business Pollution Prevention Partnership Policy.

Above all, Campbell & Co. employees will strive to continuously improve our efforts to create a cleaner and safer environment.

David Scheinberg, President & CEO

Created: June 6, 2000
Revised: October 6, 2000

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Village Of Chelsea, Michigan

Statement Of Environmental Policy

The Village of Chelsea is committed to continual improvement of its Environmental Management System and is in compliance with all relevant federal, state, and local environmental legislation and regulations. The Village of Chelsea will meet and strive to exceed all environmental requirements and will seek to prevent pollution before it is produced. To sustain this commitment, the requirements of the Environmental Management System described in this Manual apply to all activities and employees. The Village's Department Superintendents are the Village's Management Representatives who have the responsibility and authority to plan, enforce, and maintain the Village's Environmental Management System. This responsibility also includes stoppage of activities that deviate from the requirements of this Manual. The EMS Management Representative may delegate some of this authority downward through the organization in order to implement the system effectively. We will continuously seek opportunities to improve our adherence to the principles of environmental management.

Policy adopted by Village Council on March 11, 1997.

_____

Village President

_____

Village Clerk

[Signatures included in original policy.]

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Saint Joseph Mercy Hospital (in Michigan) demonstrated that an environmental policy can be written in the form of a procedure. One advantage of this approach is that hospital staff can make a direct connection between the policy and their departmental responsibilities for implementing the policy. The hospital includes its policy in the Administrative Policy Manual because that manual was already well established and widely distributed. Integrating EMS requirements with existing manuals, procedures, training, and responsibilities was a key implementation strategy for the hospital.

Saint Joseph Mercy Hospital

Administrative Policy and Procedure

Subject:	Environmental Compliance Policy
Effective Date:	September 14, 1998
Revised Date:	
Approved By:	President and CEO

POLICY

It is the policy of St. Joseph Mercy Hospital (SJMH), which includes all SJMH owned and operated buildings and services, to conduct all of its operations in an environmentally responsible and sensitive manner. St. Joseph Mercy Hospital will fully comply with both the letter and the spirit of all applicable federal, state and local regulatory requirements governing hazardous materials and wastes, pollution prevention and environmental protection. It is recognized that the health and well being of the environment contributes to the health and well being of the communities and populations we serve. St. Joseph Mercy Hospital will strive to continuously improve its systems and procedures related to environmental protection and pollution prevention activities. St. Joseph Mercy Hospital will manage its facilities and properties in an environmentally responsible manner. St. Joseph Mercy Hospital will participate as appropriate in community, industry, and/or governmental sponsored groups addressing environmental issues affecting the communities we serve.

NARRATIVE

Environmental protection is the responsibility of all SJMH departments and employees. As a health care organization, SJMH must handle and manage a wide variety of potentially hazardous or polluting materials including medical wastes, radioactive materials and hazardous chemicals and wastes. Many of our processes present potential water and air quality issues that demand continuous monitoring and control. Proper and responsible handling of these materials and processes is imperative to prevent pollution, reduce waste and protect our environment. A host of federal, state and local regulatory requirements are in place to guide this organization in achieving environmental compliance.

PROCEDURE

I. Each department will continuously assess its operations to identify potential safety hazards and pollution risks. Each department is responsible for establishing and maintaining department specific policies and procedures designed to reduce or eliminate environmental hazards and minimize any negative environmental impact when applicable.

   A. Potential risks will be minimized to the extent possible by seeking out less environmentally hazardous products, equipment or procedures.

   B. Appropriate engineering controls will be implemented when it is not possible to eliminate an environmentally hazardous material or

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procedure.

C. All departments and employees will strive to reduce all types of wastes through identifying and eliminating wasteful practices and products and participate in organizational recycling and waste reduction programs.

D. Departments will educate and communicate organizational and department specific environmental policies, goals and objectives to employees as required.

E. Departments will consider using products that have recycled content taking economic and quality factors into account.

II. The Safety Steering Committee is responsible for monitoring environmental compliance issues recommending and assuring that corrective action is implemented as warranted to correct deficiencies.

A. Objectives and targets will be established to assure continuous improvement in organizational environmental performance. Safety Committee structure is responsible for establishing goals and implementing programs to meet targets. The Safety Steering Committee is responsible for monitoring progress and reporting activities to Executive Management.

REFERENCES

- Safety Steering Committee
- Hazardous Material and Waste Committee
- Product Value Analysis Committee
- Safety Policy Manual Section III_300 – “Hazardous Materials and Waste”
- Departmental Specific Hazardous Material/Pollution Prevention Policies and Procedures

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Environmental Impact Identification and Evaluation: Techniques and Data Sources

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SOME TECHNIQUES AND DATA SOURCES FOR IDENTIFYING AND EVALUATING ENVIRONMENTAL IMPACTS

Process Hazard Analyses	Used to identify and assess potential impacts associated with unplanned releases of hazardous materials. Methodology in common use due to OSHA Process Safety Management regulations. Typically employs team approach to identify and rank hazards.
Failure Mode and Effects Analyses	Commonly used in quality field to identify and prioritize potential equipment and process failures as well as to identify potential corrective actions. Often used as a precursor to formal root cause analyses.
Process Mapping	**See Appendix C for details of this technique.**
Environmental Impact Assessments	Used to satisfy requirements of National Environmental Policy Act (NEPA) regarding the evaluation of environmental impacts associated with proposed projects. Methodology in common use, but not typically used to assess environmental impacts associated with existing operations.
Life Cycle Assessments	Used to assess full range of impacts from products, from raw material procurement through product disposal. Methodologies somewhat subjective and can be resource intensive. Described in ISO 14040-14048.
Risk Assessments	Used to assess potential health and/or environment risks typically associated with chemical exposure. Variety of qualitative and quantitative methodologies in common use.
Project Safety / Hazard Reviews	Used to assess and mitigate potential safety hazards associated with new or modified projects. Methodologies in common use. Typically do not focus on environmental issues.
Emission Inventories	Used to quantify emissions of pollutants to the air. Some data may already by available to the organization, based on EPCRA requirements and CAA Title V permitting program.
Pollution Prevention or Waste Minimization Audits	Used to identify opportunities to reduce or eliminate pollution at the source and to identify recycling options. Requires fairly rigorous assessment of facility operations. Typically does not examine off-site impacts.
Environmental Property Assessments	Used to assess potential environmental liabilities associated with facility or business acquisitions or divestitures. Scope and level of detail is variable. Typically do not assess impacts associated with products or services.
Environmental Cost Accounting	Used to assess full environmental costs associated with activities and/or products. Emerging protocols require comprehensive assessment to quantify costs.
Environmental Compliance Audits	Used to assess compliance with federal, state and local environmental regulations. Methodologies in common use. Scope and detail vary. Not typically directed at examining environmental impacts (particularly for products).

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Sample Procedure:
Instructions for Environmental Aspects Identification Form
(courtesy of ZEXEL Corporation)

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OPERATIONAL PROCEDURE		Issue Date: August 04, 2000
Number: OP-EV0100.R06	Author: Ronda Moore	Approval: _____ Vice President Operations
Title: Environmental Aspects & Impacts		Reviewed By: _____ Waste Water Group Leader

1.0 Purpose

The purpose of this procedure is to provide a system and instructions to identify environmental aspects of ZEXEL's activities, products, and services in order to determine those which may have a significant impact on the environment.

2.0 Scope

This procedure covers all activities, products, and services associated with ZEXEL. For purposes of evaluation, activities, products, and services with similar characteristics may be grouped together.

3.0 Reference Documents

Document Name	Document Number
Objectives and Targets	OP-EV0103
Management Review	OP-ZX006
Aspect/Impact Evaluation Form	WF-ES002
Aspect/Impact Listing - Decatur	WF-ES008
Aspect/Impact Listing - Arcola	WF-ES058
Initial Production Control	OP-ZX001
Contract Review	OP-SA001

4.0 Procedure

4.1 The procedure consists of an initial screening of activities, products, and services, based on data submitted to the ISO 14000 Task Force by the Area Managers. The Task Force assesses the aspects, determines associated impacts, and assigns an impact rating. The Task Force will review the evaluation results, and up-date as needed.

4.2 Area Managers are responsible for developing a flowchart for their department(s) showing all inputs and outputs to their processes. Inputs into the process may include supplies, raw materials, chemicals, packaging, and energy consumption. Outputs from the process may include products, solid wastes, liquid wastes, emissions, noise, and odor. The flowcharts shall also include the current method of handling generated wastes.

4.3 The Task Force shall evaluate the information submitted on the flowcharts. The Task Force may call upon other ZEXEL Team Members to assist, as needed. Each activity, product, and service shall be evaluated from the time the material is accepted on site through the time of sale, at the sale location. If a waste is being evaluated, the timeline to consider is the time the material is accepted on site through ultimate disposal, as displayed by the diagram below.

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Accept Material Sale Location

|----------Product----------| Ultimate Disposal
|----------Waste----------|

4.4 The Task Force shall assign an impact rating according to the scales described below, while considering each of the following stages: raw material storage, production (accidents, start up, and normal operation), product and waste storage, transportation, and ultimate disposal.

4.5 The Task Force shall ask for each aspect / impact evaluation:

a) Is it in our permits / permittable?
b) Is it regulated by law?
c) Do we have control over it?

If the answer to a and/or b is "yes", the impact *must* be included on the list of significant impacts. If the answer to c is "no", the impact shall not be included on the list of significant impacts. The following table explains the different possible answers.

Possible Answer	**Permitted / Permittable**	**Regulated by Law**	**Do we have Control**
Yes	must include	must include	may include
No	may include	may include	shall not include

4.6 When evaluating the "frequency", the number shall be determined from the following scale, based on documented evidence, by asking the following questions to determine frequency of use and of accidents: (1). How often does the process occur? and (2). How often has a problem occurred?

Frequency	**Scale**
Continuously	10
once per shift	9
once per day	8
Weekly	7
Monthly	6
Quarterly	5
semi-annually	4
Annually	3
once every 1 to 5 years	2
over 5 years	1
Never	0

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4.7 When evaluating the "severity" the task force shall assign an impact number by selecting the highest evaluated rate from the scale below, based on documented evidence. When considering human impact, it is important to include contractors, neighbors, customers, etc., as well as team members.

Severity Scale	Human Impact	Animal / Plant Effect	Public Relations
10	multiple deaths	widespread permanent destruction	plant closure
9	single death	on-site permanent destruction	permanent public disfavor
8	disabling injury	widespread genetic impact	interrupted operations
7	long term health effects	on site genetic impact	loss of historical assets
6	lost time Injury/Illness	wide spread disfigurement	state or national protest
5	restricted duty	on-site disfigurement	city or county protest
4	medical only	wide spread appearance	employee protest
3	first aid treatment	reduction of natural beauty	public inconvenience
2	Discomfort	on-site appearance	public disfavor
1	None	none	none

4.8 Impact ratings shall be determined by multiplying the frequency and severity numbers. The Task Force shall determine an appropriate cutoff level for significant impacts.

4.9 The Environmental Manager shall work closely with ZEXEL's Plant Management to ensure that the identified significant environmental aspects are considered in establishing environmental objectives and targets for ZEXEL, as stated in the Objectives and Targets OP.

4.10 The results of the most recent environment aspect / impact identification is reviewed as part of the Management Review process, as specified in the Management Review OP. From this review ZEXEL Management determines the need to update the environmental impact evaluation. Factors considered in the determination to update the assessment include improved methodologies, and major changes in ZEXEL's policies, products, or processes. Aspect reviews may also be triggered from the Initial Production Control (IPC) and Contract Review process. Environmental impact evaluations shall be conducted at least, on an annual basis, *by the end of each calendar year,* even if none of the factors listed above dictate a review.

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ASPECT / IMPACT EVALUATION

Aspect/Impact/Activity: Date:

		Frequency		Severity			
Category	Stages	Use	Incident	Human Impact	Animal/Plant	Public	Impact Rating
Air Quality	Raw Material Storage						
Water Quality	Production (Start-Up)						
Land Quality	Production (Normal)						
Consumption	Product/ Waste Storage						
	Transportation						
	Ultimate Disposal						
					Overall Rating		

Please note: Significant Impact if
- permittable
- required by law
- over the establish cut off

	Severity			
Frequency	**Human Impact**	**Animal/ Plant Effect**	**Public Relations**	**Scale**
continuously	multiple deaths	widespread perm. destruction	plant closure	10
1 per shift	single death	on-site permanent destruction	permanent public disfavor	9
1 per day	disabling injury	widespread genetic impact	interrupted operations	8
weekly	long term health effects	on-site genetic impact	loss of historical assets	7
monthly	lost time injury/ illness	widespread disfigurement	state or national protest	6
quarterly	restricted duty	on-site disfigurement	city or county protest	5
semi-annually	medical only	widespread appearance	employee protest	4
annually	first aid treatment	reduction of natural beauty	public inconvenience	3
1 every 1 - 5 yrs	discomfort	on-site appearance	public disfavor	2
over 5 yrs	none	none	none	1
never *(Use Only)*				0

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Environmental Aspects Identification Form
(courtesy of Johnson Controls, Inc. – Automotive Systems Group)

Note: The instructions and form were developed within the context of a comprehensive EMS. References are made to processes outside of the instructions.

This is intended as an example, not a stand-alone document.

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Provided courtesy of Johnson Controls, Inc., Automotive Systems Group

Instructions for Environmental Aspect Identification Form

Responsibilities

The facility Cross Functional Team (CFT) led by the Management Representative (MR) is responsible for completing this form for each Core Process and Supporting Activity within a facility. If possible, members of the CFT must conduct a physical inspection when completing this form. The completed form is a material balance of a process or activity and is used to identify Environmental Aspects. The facility CFT compares the resulting material balance and list of facility-specific aspects to any information available in the form of generic "HSE Process Profiles" produced for similar type processes or activities.

At a minimum, the CFT will review and revise the completed forms, by means of physical inspection, as necessary at issuance, annually, prior to and immediately following implementation of new or modified processes/activities.

All environmental aspects are evaluated for significance and managed as defined in the Environmental Aspects Control Plan form.

Conducting a Material Balance

The material balance consists of identifying all raw materials, chemicals, and utilities used as input along with their relative usage rates, and all output as product and by-products produced. The latter is all wastes produced, all recycled materials, water discharges, and air emissions known for the process(es), and any available rates of production.

1.0 Record the Plant Name, Process/Activity Name, and Location.

2.0 Provide a description of the process/activity.

3.0 Determine and record if the Process/Activity is a Contracted Process/Activity.

4.0 Record Material Inputs and Outputs. If the Process/Activity is installed or in place, conduct the identification by means of physical inspection.

Raw material inputs

- Parts: Enter the major, non-chemical parts/supplies used in the process.
- Chemical: Enter any chemical materials used in the process.
- Energy: Enter energy type and usage. (Levels are relative to the facility.)
- Other Input: Enter inputs that are not covered clearly in other categories. (e.g. packaging, containers)
- Water Use: Enter water type (e.g. city, well, storm, process, chilled) and usage. (Levels are relative to the facility.)

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Process Output

- List all products produced by the process specifically produced for sale. Recyclable and Chemical By-Product (e.g. Rebond) outputs are entered in the waste section.
- List all air emissions whether they are drawn directly through a stack or are discharged into the room and escape as fugitive emissions. Include noise and odor as an air emission if potentially noticeable outside the facility.
- Enter wastes. Wastes are any materials intended to be discarded or disposed of, whether regulated or not, and include liquids, solids, and gases. Also include recycled materials, returnable containers and chemical by-products under this category
- Check the recycled box if the material is currently recycled, internally or externally. It does not include materials that go directly back into the process (i.e., Calibration shots returned to day tanks, etc.)
- Include containerized wastewater transported off-site.
- Enter all wastewater streams that discharge directly to storm or sanitary sewer systems or surface waters. Containerized wastewater should be included in the waste section. In the bottom portion of the wastewater section, list any treatment that occurs before the water is discharged.

5.0 Compare the completed form to any information available in the form of generic “HSE Process Profiles” produced for similar type processes or activities.

6.0 Sign and date the form with the date the form was completed or revised.

7.0 Collect all completed Aspect Identification forms and enter data into the supporting Environmental Aspect Control Plan form.

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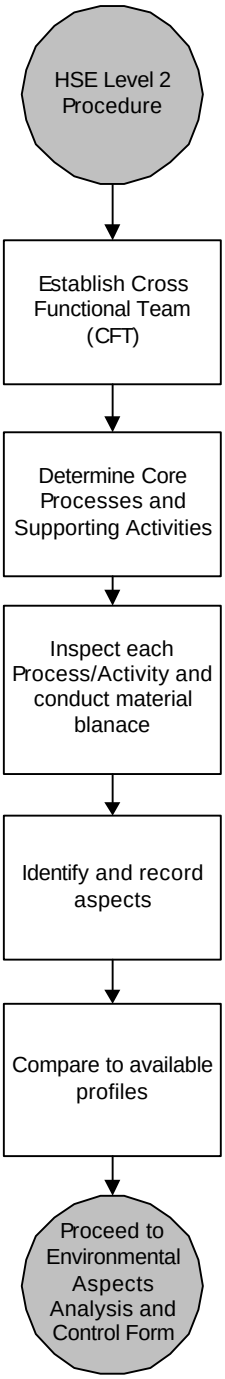
Environmental Aspects Identification Process Overview



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ENVIRONMENTAL ASPECTS IDENTIFICATION

Plant: _____ Process/Activity: _____

Contracted? _____ Process/Activity Location: _____

RAW MATERIAL INPUTS

PARTS

CHEMICAL MATERIAL

ENERGY USE:

TYPE:	USAGE High	Medium	Low
Electricity			
Natural Gas			
Propane			
Steam			
Compressed Air			
Hydraulics			

OTHER INPUT:

Provide brief description of process/activity

Optional: Attach and circle photo, schematic, sketch drawing, detailed description

PRODUCT OUTPUTS

AIR EMISSIONS
(include noise & odor)

WASTE (& BYPRODUCTS)
(Solid & Liquid)

Check if Recycled

WATER

WATER USE:

TYPE:	USAGE High	Medium	Low

WATER DISCHARGES

On site Treatment (Type)

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Sample Environmental Aspect Evaluation and Scoring Tools

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Sample 1: Environmental Aspect/Impact Scoring Worksheet

A company identified "Spills from Unloading Trucks" as an environmental aspect of its operations. The company used the following worksheet and rating criteria to determine whether the environmental impacts (on water quality and/or soil contamination) of this aspect should be considered significant.

First, the company determined that the LIKELIHOOD of a spill was low, since it had not experienced any spills of this type in the prior three years. Second, they determined that the MAGNITUDE (or SEVERITY) of the environmental impact would be moderate for most of the types of materials that they unload from trucks at the loading dock. The company noted, however, that certain chemicals are regulated and that spills of such materials in reportable quantities would require an appropriate response to regulatory agencies.

Using the "**Key to Impact Rating**" (see below), an environmental impact with a Low Likelihood and a Moderate Magnitude received an overall score of "low impact significance". Thus, "spills from unloading trucks" was not considered a significant environmental aspect.

Area or Activity	Aspect	Impacts	Impact Scoring (see below)	Significance
Shipping Dock	Spills from Unloading Trucks	Water Quality and Soil Contamination	Likelihood is **low** Magnitude is **moderate** ***OVERALL IMPACT SCORE IS LOW***	**Not Significant** (Note: spills of reportable quantities of certain chemicals must be reported)

Key to Impact Rating

Likelihood of Occurrence or Impact(s)	Magnitude (severity of impacts, actual or potential		
	Severe	Moderate	Low
High	High Significance	High Significance	Medium Significance
Medium	High Significance	Medium Significance	Low Significance
Low	Medium Significance	**Low Significance**	Low Significance

Excerpted from "Environmental Management Systems: A Guide for Metal Finishers" (NSF International), available for free download at www.nsf-isr.org.

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Sample 2: Environmental Aspect/Impact Scoring Worksheet

Approach
For each product, service or activity (or group of products, services or activities), each element in the table is assigned two scores, based on (1) the degree of impact and (2) frequency or likelihood of the associated environmental impacts.

Degree of Impact
4 = serious (likely to result in severe or widespread damage to human health or the environment)
3 = moderate
2 = minor
1 = no impact (unlikely to have an adverse impact on human health or the environment)

Frequency/Likelihood of Impact
4 = continuous (impact occurs on an on-going basis)
3 = frequent (impact occurs more than once / month)
2 = infrequent (impact occurs more than once / year but less than once / month)
1 = improbable / never (impact has never occurred or is highly unlikely to occur)

Scores are added for each indicator across the relevant life cycle stages (as shown in the example below) to generate a total impact score.

Category	Indicator	Pre-Production	Manufact-uring	Production/ Distribution	Use / Service	Waste Mgt	TOTAL SCORE
Human Health							
	Employees	*3/2*	*2/2*	*2/1*	*4/2*	*2/2*	**22**
	Surrounding Community	*2/2*	*2/3*	*2/2*	*1/2*	*2/2*	**20**
	Global	*1/2*	*1/2*	*1/3*	*1/2*	*1/3*	**17**
Environment							
	Air Quality						
	Surface Water						
	Ground Water						
	Land / Soil						
	Ecosystem Effects						
	Noise						
Resource Use							
	Fuels						
	Water						
	Raw Materials						

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Resources for Tracking Environmental Laws and Regulations

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Resources for Tracking Environmental Laws and Regulations

Over the last few years, the Internet has emerged as a tremendous tool for tracking and obtaining information on environmental laws and regulations. For example, the USEPA home page (see address below) in one quite useful Internet source. See **Appendix F** for additional information on resources.

This table describes a variety of commercial and non-commercial sources of information on federal and state environmental laws and regulations. This list is not intended to be comprehensive. Appearance on this list should not be construed as an endorsement by EPA or NSF of any commercial products listed here.

Source	Description
USEPA Small Business Ombudsman (1-800-368-5888)	Regulatory explanations and guidance, research, case studies, contacts for additional information. Variety of hotlines available for particular statutes (such as RCRA). Internet access also available (http://www.epa.gov).
USEPA Web Site	Provides a variety of information of environmental laws and regulations as well as tools and compliance guidance. (http://www.epa.gov).
Small Business Assistance Programs (various states)	Guidance on regulations and compliance issues. Initially focused on clean Air Act requirements, but expanding into other environmental media.
US Small Business Administration	Various services available to small businesses in the US.
US Government Printing Office (202-512-1800)	Federal Register published daily with all federal proposed and final rules. (Also available on line via *GPO Access)*
Trade and Professional Associations (various)	Provide a variety of services related to environmental laws and regulations, including regulatory updates and training. Contact individual associations for details.
Counterpoint Publishing (1-800-998-4515)	CD-ROM and Internet dial-up access to legal / regulatory information for federal government and all 50 states, updated daily.
Bureau of National Affairs (1-800-372-1033)	Information on EHS laws, regulations and activities at international, national and state level. Paper and electronic access available.
Thompson Publishing Group (1-800-677-3789)	Manuals on a variety of federal and state environmental programs with monthly updates and newsletters.
Business & Legal Reports, Inc. (1-800-727-5257)	Access to federal and state regulations with monthly, updates on available on CD-ROM.
Aspen Law and Business (1-800-638-8437)	Publishes compliance manuals with regular update service for RCRA and Clean Air Act.

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Sample Process Tool:
Setting Objectives & Targets

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Sample Process Tool for Setting Objectives & Targets

Step 1: A **cross-functional team** is a good way for your organization to set realistic objectives and targets. **List here** who needs to be involved on the team:

Name	**Contacted?**
•	•
•	•
•	•
•	•
•	•
•	•

Step 2: Think about what **information sources** your team will need to establish objectives and targets. Pull together information sources such as:

Information Sources	**How they will help**
	e.g.,
• process maps	• *identify process steps with environmental aspects*
• waste, and emission data	• *determine current wastes and sources*
• site maps	• *etc.*
• compliance audit reports	
• list of identified environmental aspects and impacts	
• communications from interested parties	
• others??	
•	
•	
(you may also want to do a plant tour or "walk through" to identify other issues)	

Step 3: Is there other information that might be helpful to the team?

Other Information Needed	**Where we will get it**
•	•
•	•
•	•

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Step 4: **List the significant environmental impacts** (you identified these earlier). You can **categorize** these impacts by type:

Energy Use	Raw Materials	Air Impacts	Water Impacts	Waste Impacts	Land Issues	Other (specify)

Step 5: Look at **processes** (such as plating or assembly) and **activities** (such as shipping or purchasing). Are there any **other issues** the team should consider, in addition to those listed above as significant impacts? (For example, you might want to establish an objective to reduce spills of hazardous materials at the loading dock, even if this was not identified as a potentially significant environmental impact.)

Process or activity	Issues	Possible Objectives & Targets

Step 6: List any new **regulatory requirements** that affect the facility (or other regulations for which the need for additional actions has been identified).

Regulations, other requirements	Possible Objectives & Targets

Step 7: Consider inputs from **interested parties**. Any need for additional objectives related to views of neighbors, community groups or other parties?

Inputs from Interested Parties	Possible Objectives & Targets

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Step 8: Look at the lists of **possible objectives developed in Steps 4 -7**. **Brainstorm** with the team on whether these objectives are:

- reasonable,
- technologically feasible,
- consistent with other organizational plans/goals, and
- affordable.

List preliminary objectives and targets based on this exercise:

Selected Preliminary Objectives
•
•
•
•
•

Step 9: Determine how you will **measure** each of the selected preliminary objectives. (If you cannot establish an effective way to measure it, put that objective "on-hold" for later consideration).

Selected Objectives	**Performance Indicator(s)**

Step 10: For each objective that you selected, determine **who** is going to develop the **action plan** (who, what, when, where, how). List these names below:

Selected Objectives	**Responsibility for Action Plan**

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Sample Procedure:
Setting Objectives & Targets

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EMS PROCEDURE: SETTING AND TRACKING OF ENVIRONMENTAL OBJECTIVES AND TARGETS

I. Purpose

The purpose of this procedure is to ensure that the organization establishes and maintains documented environmental objectives and targets.

II Scope

This procedure applies to environmental objectives and targets set at all relevant levels within the organization.

III. Definitions

Environmental (or environmental) objective- A site goal that is consistent with the environmental policies and considers significant environmental impacts and applicable laws and regulations. Objectives are quantified wherever practicable.

Environmental (environmental) target- A detailed performance requirement (quantified wherever practicable) based on an environmental objective. A target should be met in order for the underlying objective to be achieved.

IV. General

The organization establishes environmental objectives and targets in order to implement the environmental policies. Objectives and targets also provide a means for the organization to measure the effectiveness of its environmental efforts and improve the performance of the environmental management system. In establishing environmental objectives, the organization considers:

- applicable laws and regulations (and requirements of other programs, such as ...);
- environmental aspects of the organization’s activities and products;
- technological, financial, operational, and other organizational requirements; and,
- the views of employees and other interested parties.

Based on the organization 's environmental objectives, targets are established for different functions within the organization and for different areas of the plant. For example, the organization may establish an environmental objective to "reduce waste generation by 10% per year". Based on this objective, different areas of the plant might set targets for reducing individual waste streams in order to ensure that the organization’s objective was achieved. An organization-wide environmental objective might also be translated into individual projects (such as changes in production processes, materials or pollution control equipment) in different plant areas.

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V. Procedure

A. The organization's top management is responsible for establishing environmental objectives on an annual basis. To initiate the process, the Plant Manager holds a meeting of all staff members to discuss the development of environmental objectives.

B. Objectives are action- and prevention-oriented and are intended to result in meaningful improvements in the organization 's environmental performance.

C. Each plant area or functional manager is responsible for providing input from his / her own function (Finance, Engineering, etc.) or shop area (Fabrication, Assembly, Shipping / Receiving, etc.). The organization's environmental manager is responsible for providing input on applicable laws and regulations, significant site environmental impacts, and the views of interested parties. (These inputs are obtained from the separate analyses required by Procedure #'s).

D. As a starting point, the organization's management evaluates its performance against environmental objectives for the current year. As part of this effort, management examines the results of its environmental performance evaluations.

E. Preliminary environmental objectives are developed for further discussion and evaluation. Each manager is responsible for evaluating the potential impacts within his / her functional or shop area (if any) of the proposed environmental objectives. The organization's environmental manager reviews proposed objectives to ensure consistency with the overall environmental policy.

F. Environmental objectives are finalized, based on review comments from site managers and employees. Each manager identifies the impacts of the objectives in his / her function or shop area, establishes targets to achieve the objectives, and develops appropriate measures to track progress towards meeting the objectives and targets.

G. Each manager is responsible for communicating objectives and targets (and the means for achieving them) to others in his / her part of the organization.

H. Progress towards the objectives and targets is reviewed on a regular basis at management meetings. The progress is also communicated to plant employees via bulletin boards and other similar means.

I. At the end of each calendar year, the organization's management reviews its performance with regard to achieving the objectives and targets. This information is used as input to setting objectives and targets for the succeeding year.

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Sample Tools:
Environmental Management Program

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Sample Environmental Management Program Form

(Note: Use one form per objective)

Date (_____/_____/____) **Individual Responsible:**
Environmental Objective:
Related Target(s):
Related Significant Environmental Aspect(s):
Specific Function and/or Department:
Target Date (Month/Year): (_____/_____)
Environmental Management Program: Action Plan
How will this objective be met? (attach additional pages as necessary)
What operational controls might support the achievement of this objective?
How will this objective be tracked? (attach additional pages as necessary)
What resources will be required to achieve this objective? (attach additional pages as necessary)

Adapted from the EPA/NSF guide "Environmental Management Systems: A Guide for Metal Finishers" (December 1998). Available for free download at www.nsf-isr.org.

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Environmental Management Program - Sample Tool

Objective / Target #1: _____					
Action Items	**Priority**	**Respon-sibilities**	**Schedule**	**Resources Needed**	**Comments**

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Sample Responsibility Matrix

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Responsibility Matrix

Legend:
L = Lead Role
S = Supporting Role

	Plant M'gr	EHS M'gr	HR M'gr	Maintenance	Purchasing / Materials	Engineering	Production Supervisor(s)	Finance	EMS Mg't Rep.	Employees
Communicate importance of environmental management	L	S					S			
Coordinate auditing efforts		L		S			S			
Track / analyze new regulations (and maintain library)		L								
Obtain permits and develop compliance plans		L				S				
Prepare reports required by regulations		L								
Coordinate communications with interested parties			L							
Train employees		S					L			
Integrate environmental into recruiting practices			L							
Integrate environmental into performance appraisal process			L							
Communicate with contractors on environmental expectations					L					
Comply with applicable regulatory requirements	L	L	S	S	S	S	S	S	S	S
Conform with organization's EMS requirements	L	L	S	S	S	S	S	S	S	S
Maintain equipment / tools to control environmental impact				L						
Monitor key processes		S					L			
Coordinate emergency response efforts	L	S								
Identify environmental aspects of products, activities, or services	S	L	S	S	S	S	S	S	S	
Establish environmental objectives and targets	L	S					S			
Develop budget for environmental management		S						L		
Maintain EMS records (training, etc.)		L								
Coordinate EMS document control efforts					S				L	

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Sample Environmental Training Log

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EMS Training Log (Sample)

Training Topic	Attendees*	Frequency	Course Length	Course Method	Comments	Date Completed
EMS Awareness						
Supervisor EHS Training						
Hazardous Waste Management						
Hazardous Waste Operations						
Spill Prevention & Response						
Chemical Management						
Emergency Response						
Accident Investigation						
Hazardous Materials Transport						
Hazard Communication						
Personal Protective Equipment						
Fire Safety						
Electrical Safety						
Hearing Conservation						
Confined Space Entry						
Lock-out/Tag-out						
Bloodborne Pathogens						
Job-Specific Training (list)						

Attendees Code
1: All Employees
2: Supervisors / Managers
3: Operators
4: Maintenance
5: Material Handlers
6: Engineering

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Sample Procedure: Communications with External Parties

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EMS PROCEDURE: COMMUNICATIONS WITH EXTERNAL PARTIES

I. Purpose

This procedure is intended to establish a process for outreach and communication with external parties regarding the organization's environmental management system *(Note: the organization should also consider external communication regarding its significant environmental aspects).*

II. Scope

This procedure describes how the organization receives, documents, and responds to communications from external parties. In addition, it discusses proactive steps that the organization takes to maintain a meaningful dialogue with external parties on environmental matters.

III. Definitions

Interested Parties- Individuals or groups with an interest in the environmental impacts of the organization's products, activities or services. These parties include regulators, local residents, employees, stockholders, insurers, customers, environmental groups and the general public *(adapted from ISO 14001).*

IV. General

The organization uses a number of mechanisms to ensure effective communication with interested parties. These mechanisms include regulatory filings (such as permit applications and reports), open houses, the media, and informal discussions with regulators, community representatives, and local business leaders.

To solicit the views of interested parties, the organization may use additional techniques, including (but not limited to) surveys, community advisory panels, newsletters, or informal meetings with representatives of external groups.

General rules for external communications require that the information provided by the organization:

- be understandable and adequately explained to the recipient(s); and
- present an accurate and verifiable picture of the organization and its environmental management system, its environmental performance, or other related matters.

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V. Procedure

A. Management of Communications from External Parties

1. Inquiries and other communications (received by mail, fax, telephone, or in person) from external parties concerning the organization's EMS or environmental performance may be received by a number of the organization's representatives, including the Plant Manager, the environmental manager, and the human resources manager, among others. All such communications are reviewed by the Plant Manager or his / her designee to determine the appropriate response.

2. Communication with representatives of regulatory agencies is delegated to the organization's environmental manager, who maintains records of all such communications (both incoming and outgoing). In the absence of the environmental manager, communications with regulatory officials are delegated to the human resources manager.

3. Copies of all other written communications on environmental matters are maintained by the human resources manager. All non-written communications from external parties are documented using telephone logs or similar means. All records of external communications are maintained as discussed in Procedure # (Records Management).

4. A record of the responses to all communications from external parties is maintained by the human resources manager in files designated for that purpose.

B. Outreach to Interested Parties

1. The organization solicits the views of interested parties on its environmental management system, its environmental performance, and other related matters. In particular, such outreach is conducted when significant changes at the facility are being considered, such as facility expansion or other actions that might affect the actual or potential environmental impacts of the organization's products, activities, or services.

2. As part of the Management Review process, the team designated to conduct the Review evaluates proactive efforts to communicate with external parties. Based on this evaluation and other factors, the organization's management determines the need for outreach with external parties in the coming year and how such communications can be carried out most effectively.

External Hazard and Emergency Communication

Note: All external communications regarding emergency response are addressed in Procedure #.

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Sample Document Index

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Sample Document Index

(sample indicates individual that revised document, his/her position/department and date(s) of revision)

Revision Number

Document	1	2	3	4	5	6
Environmental Policy	*John Smith Plant Manager 1/1/98*	*John Smith Plant Manager 1/1/99*				
Environmental Manual						
Procedure 1: Environmental Aspects Identification						
Procedure 2: Access to Laws and Regulations						
Procedure 3: Setting Objectives & Targets						
Procedure 4: Environmental Training						
Procedure 5: External Communications						
Procedure 6: Internal Communications						
Procedure 7: Document Control						
Procedure 8: Emergency Preparedness						
Procedure 9: Corrective Action						
Procedure 10: Records Management						
Procedure 11: EMS Audits						
Procedure 12: Management Reviews						
Procedures 13-X (list individually)						
EMS Audit Checklist						
Other plans & documents related to above procedures (list separately, e.g. SPCC Plan, Emergency Response Plan, etc.).						
Other forms and checklists (list)						

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Outline of Sample EMS Manual and Other EMS Documents

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Outline of Sample EMS Manual and Other EMS Documents

Basic EMS Manual

- **Index / Revision History / Distribution List**
- **Environmental Policy**
- **Description of How Our EMS Addresses Each of the EMS Elements (and linkages among these elements)**
  - How We Identify Significant Environmental Aspects
  - How We Access and Analyze Legal and Other Requirements
  - How We Establish and Maintain Objectives and Targets
  - How the Organizational Structure Supports EMS (organization charts, key responsibilities)
  - How We Train our Employees and Ensure Competence
  - How We Communicate (internally and externally)
  - How We Control EMS Documents
  - How We Identify Key Processes and Develop Controls for them
  - How We Prepare for and Respond to Emergencies
  - How We Monitor Key Characteristics of Operations and Activities
  - How We Identify, Investigate and Correct Nonconformance
  - etc.

Environmental Management Program Description

- **Annual Objectives and Targets**
- **Action Plans (to achieve objectives and targets)**
- **Tracking and Measuring Progress**

EMS Procedures

- **Index / Revision History / Distribution List**
- **Organization-wide Procedures (for some EMS elements there might be more than one procedure)**
  - Environmental Aspects Identification
  - Access to Legal and Other Requirements
  - Training, Awareness and Competence
  - Internal Communication
  - External Communication
  - Document Control
  - Change Management Process(es)
  - Management of Suppliers / Vendors
  - Emergency Preparedness and Response
  - Monitoring and Measurement
  - Calibration and Maintenance of Monitoring Equipment
  - Compliance Evaluation
  - Corrective and Preventive Action
  - Records Management
  - EMS Auditing
  - Management Review
- **Procedures / Work Instructions for Specific Operations or Activities**
  - Waste Management
  - Wastewater Treatment ***(These are examples only)***
  - Operation of the Paint Line

Other EMS Documentation (Emergency Response Plans, etc.)

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Sample Records Management Form (supplied courtesy of General Oil Company)

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Title: EMS RECORDS MANAGEMENT TABLE **Revision Date:** November 7, 2000 **Print Date:** February 15, 2001 (Uncontrolled document if printed)	**Doc. No.:** EMF-4.5.3 **Approval by:** **Page 135 of 1**

EMS Records Management Table

The following table lists records related to the Environmental Management System, in accordance with EMP-4.5.3 (Record keeping procedure).

Record Type	Person Responsible	Location	File Method	Retention minimum
ADMINISTRATION				
Records on costs - purchasing, operations, and disposal	Office Manager	Admin. Office	Date order	3 years
Utility bills	Office Manager	Admin. Office	Date order	3 years
Record of annual waste quantity received	Office Manager	Admin. Office	Date order	Life of Co.
Certificates of Insurance	Office Manager	Admin. Office	Date order	Life of Company
Waste Analysis Sheets	Office Manager	Admin. Office	Customer name	3 years
Waste Manifests - outgoing	Office Manager	Admin. Office	Date order	3 years
ENVIRONMENTAL				
Incident Reports	Env. Dept.	Env. Office	Date order	3 years
Complaint Reports	Env. Dept.	Env. Office	Date order	3 years
EMS Communications with external parties	Env. Dept.	Env. Office	Issue	3 years
Decision regarding external communication of significant environmental aspects	Env. Dept.	Env. Office	Date order	3 years
Major Source Determination Records	Env. Dept.	Env. Office	Date order	Life of Co.
Title V Permit Exemption	Env. Dept.	Env. Office	Date order	Life of Company
Correspondence regarding Air Notices	Env. Dept.	Env. Office	Date order	5 years
Odor Control System Permit	Env. Dept.	Env. Office	Date order	5 years or per Permit
Air Emission Reports	Env. Dept.	Env. Office	Date order	5 years
Records on waste disposal sites used	Env. Dept.	Env. Office	Site name	Life of Co.
EMS Monitoring Inspection reports	Env. Dept.	Env. Office	Date order	5 years

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Sample Procedure:
Corrective and Preventive Action
(includes tracking log)

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EMS PROCEDURE: PREVENTIVE AND CORRECTIVE ACTION

I. Purpose

The purpose of this procedure is to establish and outline the process for identifying, documenting, analyzing, and implementing preventive and corrective actions.

II. Scope

Preventive or corrective actions may be initiated using this procedure for any environmental problem affecting the organization.

III. General

A. Corrective action is generally a reactive process used to address problems after they have occurred. Corrective action is initiated using the Corrective Action Notice (CAN) document as the primary vehicle for communication. Corrective action may be triggered by a variety of events, including internal audits and management reviews. Other items that might result in a CAN include neighbor complaints or results of monitoring and measurement.

B. Preventive action is generally a proactive process intended to prevent potential problems before they occur or become more severe. Preventive action is initiated using the Preventive Action Notice (PAN). Preventive action focuses on identifying negative trends and addressing them before they become significant. Events that might trigger a PAN include monitoring and measurement, trends analysis, tracking of progress on achieving objectives and targets, response to emergencies and near misses, and customer or neighbor complaints, among other events.

C. Preventive and corrective action notices are prepared, managed and tracked using the preventive and corrective action database.

D. The ISO Management Representative (or designee) is responsible for reviewing issues affecting the EMS, the application and maintenance of this procedure, and any updates to EMS documents affected by the preventive and corrective actions.

E. The ISO Management Representative is responsible for logging the PAN or CAN into the database, and tracking and recording submission of solutions in the database. The requester and recipient of the CAN or PAN are responsible for verifying the effectiveness of the solution. The ISO Management Representative is responsible for overall tracking and reporting on preventive and corrective actions.

F. Personnel receiving PAN's and CAN's are responsible for instituting the required corrective or preventive action, reporting completion of the required action to the ISO Management Representative, and assuring sustained effectiveness.

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III. General (cont'd.)

G. Completed records of PAN's and CAN's are maintained in the database for at least two years after completion of the corrective or preventive action.

IV. Procedure

A. Issuing a CAN or PAN

1. Any employee may request a CAN or PAN. The employee requesting the CAN or PAN is responsible for bringing the problem to the attention of the ISO Management Representative. The ISO Management Representative is responsible for determining whether a CAN or PAN is appropriate and enters the appropriate information into the corrective and preventive action database. Responsibility for resolving the problem is assigned to a specific individual ("the recipient").

2. The ISO Management Representative, working with the recipient, determines an appropriate due date for resolving the CAN or PAN.

B. Determining and Implementing Corrective and Preventive Actions

1. The CAN or PAN is issued to the recipient, who is responsible for investigation and resolution of the problem. The recipient is also responsible for communicating the corrective or preventive action taken.

2. If the recipient cannot resolve the problem by the specified due date, he / she is responsible for determining an acceptable alternate due date with the ISO Management Representative.

C. Tracking CAN's and PAN's

1. CAN's or PAN's whose resolution dates are overdue appear on the Overdue Solutions report. The ISO Management Representative is responsible for issuing this report on a weekly basis to the Plant Manager and the recipients of any overdue CANs or PANs.

2. Records of PANs and CANs are maintained in the database for at least two years after completion of the corrective or preventive action.

D. Tracking Effectiveness of Solutions

1. The recipient of a CAN or PAN, in conjunction with the requester, are responsible for verifying the effectiveness of the solution. If the solution is deemed not effective, the CAN or PAN will be reissued to the original recipient.

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SAMPLE CORRECTIVE ACTION NOTICE

CAN Number: Issue Date: Solution Due Date:

Name Location Phone:

Requested By:
Issued To:

Problem Statement (completed by ISO Management Representative):

Most Likely Causes (completed by ISO Management Representative):

Implemented Solutions (completed by recipient - include dates as applicable):

Results (confirming effectiveness):

Closed by: Closing Date:

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CORRECTIVE ACTION TRACKING LOG

CAN Number	Requested By	Issued To	Plan Due (Date)	Plan Completed (Date)	Corrective Action Completed (Date)	Effectiveness Verified (Date)	CAN Closed (Date)

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Sample Environmental Records Organizer

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Environmental Records Organizer (SAMPLE)

Air Emissions Regulations

Air Emissions Fees

Air Emissions Inventories

Air Emissions Permits

Air Permit Applications

Air Permit(s): Historical

Annual Licenses & Fees

Compliance Reporting

Compliance Plans

Community Right-to-Know

EPCRA Regulations

EPCRA Reporting

Hazardous Waste Regulations

Hazardous Waste Permit/ID Number

Hazardous Waste Fees

Hazardous Waste Biennial Report

Hazardous Waste: Open Manifests

Hazardous Waste: Closed Manifests

Historical Data

Indoor Air Quality

Loss Prevention Information

Other Permits & Permit Applications

Pollution Prevention (P2) Regulations

Pollution Prevention Fees

Pollution Prevention Reporting

Recycling Information

Recycling Projects

Special Wastes

Solid Waste Permit

Solid Waste Fees

Spill Reports

Spill Response Actions

Stormwater Regulations

Stormwater Permit

VOC/HAPs Reporting

VOC Annual Analysis

Wastewater Regulations

Wastewater Fees

Wastewater Permit

Wastewater: Semi-Annual Reporting

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Sample Procedure: EMS Audits

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EMS Procedure: Environmental Management System Audits

I. Purpose

To define the process for conducting periodic audits of the environmental management system (EMS). The procedure defines the process for scheduling, conducting, and reporting of EMS audits.

II. Scope

This procedure applies to all internal EMS audits conducted at the site.

The scope of EMS audits may cover all activities and processes comprising the EMS or selected elements thereof.

III. General

Internal EMS audits help to ensure the proper implementation and maintenance of the EMS by verifying that activities conform with documented procedures and that corrective actions are undertaken and are effective.

All audits are conducted by trained auditors. Auditor training is defined by Procedure #. Records of auditor training are maintained in accordance with Procedure #.

When a candidate for EMS auditor is assigned to an audit team, the Lead Auditor will prepare an evaluation of the candidate auditor's performance following the audit.

The ISO Management Representative is responsible for maintaining EMS audit records, including a list of trained auditors, auditor training records, audit schedules and protocols, and audit reports.

EMS audits are scheduled to ensure that all EMS elements and plant functions are audited at least once each year.

The ISO Management Representative is responsible for notifying EMS auditors of any upcoming audits a reasonable time prior to the scheduled audit date. Plant areas and functions subject to the EMS audit will also be notified a reasonable time prior to the audit.

The Lead Auditor is responsible for ensuring that the audit, audit report and any feedback to the plant areas or functions covered by the audit is completed per the audit schedule.

The ISO Management Representative, in conjunction with the Lead Auditor, is responsible for ensuring that Corrective Action Notices are prepared for audit findings, as appropriate.

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IV. Procedure

A. Audit Team Selection - One or more auditors comprise an audit team. When the team consists of more than one auditor, a Lead Auditor will be designated. The Lead Auditor is responsible for audit team orientation, coordinating the audit process, and coordinating the preparation of the audit report.

B. Audit Team Orientation - The Lead Auditor will assure that the team is adequately prepared to initiate the audit. Pertinent policies, procedures, standards, regulatory requirements and prior audit reports are made available for review by the audit team. Each auditor will have appropriate audit training, as defined by Procedure #.

C. Written Audit Plan - The Lead Auditor is responsible for ensuring the preparation of a written plan for the audit. The Internal EMS Audit Checklist may be used as a guide for this plan.

D. Prior Notification - The plant areas and / or functions to be audited are to be notified a reasonable time prior to the audit.

E. Conducting the Audit

1. A pre-audit conference is held with appropriate personnel to review the scope, plan and schedule for the audit.

2. Auditors are at liberty to modify the audit scope and plan if conditions warrant.

3. Objective evidence is examined to verify conformance to EMS requirements, including operating procedures. All audit findings must be documented.

4. Specific attention is given to corrective actions for audit findings from previous audits.

5. A post-audit conference is held to present audit findings, clarify any misunderstandings, and summarize the audit results.

F. Reporting Audit Results

1. The Team Leader prepares the audit report, which summarizes the audit scope, identifies the audit team, describes sources of evidence used, and summarizes the audit results.

2. Findings requiring corrective action are entered into the corrective action database.

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IV. Procedure (cont'd.)

G. Audit Report Distribution

1. The ISO Management Representative is responsible for communicating the audit results to responsible area and / or functional management. Copies of the audit report are made available by the ISO Management Representative.

2. The ISO Management Representative is responsible for ensuring availability of audit reports for purposes of the annual Management review (see Procedure #).

H. Audit Follow-up

1. Management in the affected areas and / or functions is responsible for any follow-up actions needed as a result of the audit.

2. The ISO Management Representative is responsible for tracking the completion and effectiveness of corrective actions.

I. Record keeping

1. Audit reports are retained for at least two years from the date of audit completion. The ISO Management Representative is responsible for maintaining such records.

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Audit Plan

Area or Function to be Audited	Lead Auditor	Audit Team Members	Target Date	Special Instructions
• Purchasing	• Jim H.	• Linda B. • Joe S.	• 11/10/00	- Verify corrective actions from previous audit - Interview new employee in department
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•

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Sample Communications to Audit Team

ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT

Lead Auditor:

Audit Team Members:

Audit Area: Target Due Date:

Listed above is the area to be audited. The due date given is the target to have the entire audit completed, including the report and follow-up meeting with the responsible area management. Listed below are the areas of environmental management systems criteria that you are to assess. If you have any questions, please call me. Special instructions, if any, are listed below. Thank you for your help. Effective audits help make an effective environmental management system.

__ Policy

__ Environmental Aspect identification

__ Environmental Management Program

__ Training, Awareness, Competence

__ EMS Documentation

__ Operational Controls

__ Monitoring and Measurement

__ Records

__ Management Review

__ Legal and Other Requirements

__ Objectives and Targets

__ Structure and Responsibility

__ Communication

__ Document Control

__ Emergency Preparedness

__ Nonconformance / Corrective Action

__ Management System Audits

Special Instructions:

ISO Representative (signature)

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Sample EMS Audit Forms

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EMS AUDIT SUMMARY SHEET

Organization Audited: _____

Lead Auditor: _____ **Date:** _____

ELEMENT NUMBER AND DESCRIPTION		AUDIT RESULTS	
		No. of Majors / No. of Minors	A, N, or X*
4.2	Environmental Policy		
4.3	*Planning*		
4.3.1	Environmental Aspects		
4.3.2	Legal and Other Requirements		
4.3.3	Objectives and Targets		
4.3.4	Environmental Management Program(s)		
4.4	*Implementation and Operation*		
4.4.1	Structure and Responsibility		
4.4.2	Training, Awareness, and Competence		
4.4.3	Communication		
4.4.4	EMS Documentation		
4.4.5	Document Control		
4.4.6	Operational Control		
4.4.7	Emergency Preparedness and Response		
4.5	*Checking and Corrective Action*		
4.5.1	Monitoring and Measurement		
4.5.2	Corrective and Preventive Action		
4.5.3	Records		
4.5.4	EMS Audit		
4.6	Management Review		
TOTAL			

Legend:
A = Acceptable: Interviews and other objective evidence indicate that the EMS meets all the requirements of that section of the standard.

N = Not Acceptable: The auditor has made the judgment that, based on the number and type of nonconformances, the requirements of that the section of the standard are not being met.

X = Not Audited

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EMS AUDIT FINDINGS FORM

Type of Finding (circle one):

Nonconformance: Major Minor Positive Practice Recommendation

Description (include where in the organization the finding was identified):

_____
_____
_____
_____
_____
_____
_____

ISO 14001 (or other EMS criteria) Reference: _____	**Date:** _____	**Finding Number:** _____
Auditor: _____	**Auditee's Rep.:** _____	

Corrective Action Plan (including time frames):

_____
_____
_____
_____
_____
_____

Preventive Action Taken:

_____
_____
_____

Individual Responsible for Completion of the Corrective Action: _____	**Date Corrective Action Completed:** _____

Corrective Action Verified By:

_____ **Date**:_____

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Sample EMS Audit Questions
(by organizational function)

The following questions are excerpted from a comprehensive list of EMS audit questions contained in the NSF-ISR project report, "Implementing Environmental Management Systems in Community-Based Organizations: Part 2".

For a complete list of EMS audit questions by function, download Part 2 of the project report from the NSF web site (www.nsf-isr.org)

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Function: TOP MANAGEMENT

4.2 Environmental Policy	
Top Management	***Objective Evidence***
a. Describe your role in the development of the environmental policy.	
b. How do you know that your policy is appropriate for your activities, products, and services?	
c. What is management's role in the review and revision of the policy?	
d. How does management ensure continued adherence to the policy throughout the company?	
e. How does the policy help guide organizational decisions?	
f. How are employees made aware of the environmental policy?	
g. How is the policy made available to the public?	
[Auditor Note: Is there evidence that the policy was issued by top management? (e.g., Is the policy signed? By whom? At what level in the organization are they?)]	

Notes:

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Function: TOP MANAGEMENT

4.3.3 Objectives and targets	
Top Management	***Objective Evidence***
a. What are the environmental objectives and targets for your organization? What is your role in approving them? **What are the relevant functions and levels within your organization that support the attainment each of the objectives and targets?**	
b. How are the environmental objectives linked to other organizational goals (and vice versa)?	
c. Are the objectives/targets consistent with the goals of the environmental policy for prevention of pollution and continual improvement?	
d. How were the objectives and targets developed by or communicated to management?	
e. How does management keep up with progress in meeting their objectives and targets throughout the year?	
f. How often are you informed of the status of the objectives and targets?	
g. On what basis are the objectives and targets reviewed and modified?	

Notes:

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Function: TOP MANAGEMENT

4.4.1 Structure and responsibility	
Top Management	***Objective Evidence***
a. At what level within the organization is the designated EMS representative placed? ***Auditor Note: Is the EMS representative at a level within the organization to effectively implement an EMS for his/her organization?]***	
b. What authority does the EMS representative have to carry out his/her responsibilities?	
c. How does the organization assess its resource needs for environmental management? How are these factored into operating and strategic plans (and vice-versa)?	
d. What resources (financial, technical personnel) has management provided to develop or maintain the EMS?	
e. How are you informed on the performance of the EMS? Do you receive routine reports?	
f. Are responsibilities for the environmental management of the organization documented? If so, where? **Is an integrated structure in place in which accountability and responsibility are defined, understood, and carried out?**	
g. **How are these responsibilities communicated to all employees (including managers)?**	

Notes:

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Function: TOP MANAGEMENT

4.4.3 Communication	
Top Management	***Objective Evidence***
a. How are you informed of the environmental issues within your organization? How often does this take place? Does this include compliance issues?	
b. How are you kept up to date with progress in meeting your organization's environmental objectives and targets? **How is this information passed on to your managers?**	
c. How do you communicate with the organization on environmental issues? **How is this done? How frequently?**	
d. How does the organization handle inquiries from interested parties (e.g., the public, regulators, other organizations) on environmental matters? **Who has responsibility for responding to such inquiries?**	

4.6 Management review	
Top Management	***Objective Evidence***
a. Describe the organization's management review process.	
b. How often are management reviews performed? How was this frequency determined?	
c. Who is involved in the management review process? What are their roles in this process?	
d. What changes have been made to the EMS as a result of the last review?	

Notes:

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Sample Procedure: Management Review

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EMS PROCEDURE: MANAGEMENT REVIEW

I. Purpose

The purpose of this procedure is to document the process and primary agenda of issues to be included in the Management Review meetings for evaluating the status of the organization's environmental management system (EMS).

II. Scope

This procedure applies to all Management Review meetings conducted by the organization.

III. General

The Management Review process is intended to provide a forum for discussion and improvement of the EMS and to provide management with a vehicle for making any changes to the EMS necessary to achieve the organization's goals.

IV. Procedure

A. The ISO Management Representative is responsible for scheduling and conducting a minimum of two Management Review meetings during each 12-month period. The ISO Management Representative is also responsible for ensuring that the necessary data and other information are collected prior to the meeting.

B. At a minimum, each Management Review meeting will consider the following:

- suitability, adequacy and effectiveness of the environmental policy;
- suitability, adequacy and effectiveness of the environmental objectives (as well as the organization's current status in achieving these objectives);
- overall suitability, adequacy and effectiveness of the EMS;
- status of corrective and preventive actions;
- results of any EMS audits conducted since the last Management Review meeting;
- suitability, adequacy and effectiveness of training efforts; and,
- results of any action items from the previous Management Review meeting.

C. Minutes of the Management Reviews will be documented and will include, at a minimum the list of attendees, a summary of key issues discussed and any actions items arising from the meeting.

D. A copy of the meeting minutes will be distributed to attendees and any individuals assigned action items. A copy of the meeting minutes will also be retained on file.

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Appendix B:

EPA's National Environmental Performance Track and Other Government EMS Initiatives

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National Environmental Performance Track Program

The National Environmental Performance Track is designed to recognize and encourage top environmental performers – those who **go beyond** compliance with regulatory requirements to attain levels of environmental performance and management that benefit people, communities, and the environment. As top environmental performers, participants earn access to a unique reward package that includes recognition, better information, and administrative streamlining.

The Performance Track consists of two levels. The first level, the **National Environmental Achievement Track**, is available now and is open to facilities of all types, sizes, and complexity, public or private, manufacturing or service-oriented. It is designed to recognize facilities that consistently meet their legal requirements and have implemented high-quality environmental management systems, as well as encourage them to even better achievement by continuously improving their environmental performance and informing and involving the public. The second level, the **National Environmental Stewardship Track**, is designed to recognize and encourage broader and higher levels of voluntary environmental performance than those expected under the Achievement Track. The Stewardship Track is still under development, and EPA plans to have it available by May 2001.

Any program for improving environmental performance must aim for participation by small businesses and other small entities, such as local governments. EPA is making every effort to make the Achievement Track accessible for small entities. This effort is reflected in several aspects of the design. For example, depending on the nature and extent of a facility's operations, the EMS for a small facility may be simpler than one for a larger, more complex facility. For the same reason, a small facility may have fewer environmental aspects. In addition, a small facility is not asked to make as many performance commitments as other participants.

Environmental Management System (EMS) Requirements

Facilities wanting to participate in the Performance Track must meet several requirements. A facility will certify that it has an EMS in place.[1] The EMS will include the elements listed below and will have gone through at least one full cycle of implementation (i.e., planning, setting performance objectives, EMS program implementation, performance evaluation, and management review). A facility that has adopted systems based on EMS models with a Plan-Do-Check-Act framework would meet most of these elements.

EPA recognizes that the scope and level of formality of the EMS will vary, depending on the nature, size, and complexity of the facility. EPA's experience with a variety of programs suggests that these EMS elements are within the capability of small facilities and can be met through a variety of approaches. To help small facilities implement an EMS, EPA will make guidance documents and assistance materials available.

A facility will certify that it has implemented an EMS that includes these elements:

[1] For purposes of the Achievement Track, an EMS represents an organization's systematic efforts to meet its environmental requirements, including maintaining compliance and achieving performance objectives that may be related to unregulated aspects of the organization's activities.

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Policy

A written environmental policy, defined by top facility management, that includes commitments to: (1) compliance with both legal requirements and voluntary commitments; (2) pollution prevention (based on a pollution prevention hierarchy where source reduction is the first choice); (3) continuous improvement in environmental performance, including areas not subject to regulations; and (4) sharing information about environmental performance and the operation of the EMS with the community.

Planning

- Identification of significant environmental aspects[2] and legal requirements, including procedures for integrating anticipated changes to the facility's requirements or commitments into the EMS.

- Measurable objectives and targets to meet policy commitments and legal requirements, to reduce the facility's significant environmental impacts, and to meet the performance commitments made as part of the facility's participation in the program. In setting objectives and targets, the facility should consider the following criteria: preventing non-compliance, preventing pollution at its source, minimizing cross-media pollutant transfers, and improving environmental performance.

- Active, documented programs to achieve the objectives, targets, and commitments in the EMS, including the means and time-frames for their completion

Implementation and Operation

- Established roles and responsibilities for meeting objectives and targets of the overall EMS and compliance with legal requirements, including a top management representative with authority and responsibility for the EMS.

- Defined procedures for: (1) achieving and maintaining compliance and meeting performance objectives; (2) communicating relevant information regarding the EMS, including the facility's environmental performance, throughout the organization; (3) providing appropriate incentives for personnel to meet the EMS requirements; and (4) document control, including where documents related to the EMS will be located and who will maintain them.

- General environmental training programs for all employees, and specific training

[2] An "environmental aspect" is defined as an "element of an organization's activities, products, or services that can interact with the environment." Facilities are asked to use their list of significant environmental aspects in selecting performance commitments under this program.

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for those whose jobs and responsibilities involve activities directly related to achieving objectives and targets and to compliance with legal requirements.

- Documentation of the key EMS elements, including the environmental policy, significant environmental aspects, objectives and targets, a top management representative, compliance audit program, EMS audit program, and overall EMS authority.

- Operation and maintenance programs for equipment and for other operations that are related to legal compliance and other significant environmental aspects.

- An emergency preparedness program.

Checking and Corrective Action

- An active program for assessing performance and preventing and detecting non-conformance with legal and other requirements of the EMS, including an established compliance audit program and an EMS audit program.

- An active program for prompt, corrective action of any non-conformance with legal requirements and other EMS requirements.

Management Review

- Documented management review of performance against the established objectives and targets and the effectiveness of the EMS in meeting policy commitments.

****

Although a third-party audit of the EMS is not necessary to qualify for the Achievement Track, a facility is asked in the application form if it has undergone such an audit. If it has not, it will have conducted a self-assessment. A facility will retain EMS documentation and provide a summary of its performance, including performance against objectives and targets, and a summary of the results of compliance and EMS audits, in its Annual Performance Report.

For more information about the National Environmental Performance Track, contact the EPA via:

Web: www.epa.gov/performance track
E-Mail: ptrack@indecon.com
Phone: 888-339-PTRK

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The Multi-State Working Group on Environmental Management Systems Overview of Organizational and State Activities

MSWG is an organization that convenes government, non-government, business and academic interests to conduct research, promote dialogue, create networks and establish partnerships that improve the state of the environment, economy and community through systems-based public and private policy innovation. Its quarterly meetings move around the US to accommodate participation. Meetings are open; everyone is welcome. All have a right to speak. Decisions are by consensus. The Council of State Governments (CSG) handles administration and to accommodate gifts has 501(c)(3) status. Voluntary dues support MSWG. NGOs do not pay dues. New members are welcome, especially businesses and NGOs. All 50 states are enrolled in MSWG and linked by e-mail. About 25 states regularly participate at quarterly meetings and 30-40 states attend the annual meeting and workshop. Check www.mswg.org for information.

What activities does MSWG sponsor?

- Pilot projects: In partnership with the U.S. EPA, the Environmental Law Institute, and University of North Carolina-Chapel Hill, MSWG states sponsor about 75 EMS pilot projects that produce data for a national database project funded by the EPA's Office of Water. The purpose of the pilots is to evaluate the ability of environmental management systems to improve the environment. Information is at: www.eli.org/isopilots.htm
- EMS Research: MSWG held six EMS research roundtables at major universities that led to a Research Summit, held in 1999 at The Brookings Institution in cooperation with CSG and the National Academy of Public Administration. The Summit produced an EMS research agenda. Summit papers are included in a textbook, edited by Harvard University and the Massachusetts Institute of Technology, published in 2001 by Resources for the Future. Plans are being made for a second summit.
- EMS Policy Academy: With funding from The Joyce Foundation to CSG and support of business, MSWG has a design team of business, government, academic and NGO appointees preparing recommendations for a national EMS Policy Academy. The "virtual" Academy will focus on learning about public policy EMSs, not those within the confines of a private organization and will complement and not compete with existing services. Public policy EMSs have designed to have credibility with business, government, NGO, consumer and enlightened shareholder interests.
- Workshops: Each June or July, MSWG sponsors, with support from EPA and businesses, an annual EMS workshop. It is a "hands-on" event that hosts EMS practitioners from the US and abroad. It has grown from 75 participants in Cary, NC 1998 to nearly 300 in San Diego, CA in 1999.
- Networking: MSWG provides a networking function between states and EMS support functions, especially those focused on EMSs that fit into a public policy strategy. Technical assistance centers in Florida, Georgia, Iowa, Kentucky, Massachusetts and South Carolina help MSWG participants.
- Other activities: MSWG members contribute to numerous public policy-related environmental initiatives and discussions including EPA's Performance Track, ISO 14001 revisions; Environmental Council of States forums; Global Environmental Management Initiative meetings; professional and trade association programs and Commission for Environmental Cooperation.

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MSWG is state-driven. Several states sponsor EMS pilot projects and contribute data to the UNC-ELI database. They are: AZ, CA, IL, IN, NC, NH, OR, PA VT and WI. These states have or are developing public-policy-related EMS policies, programs, internal EMSs or environmental laws that recognize EMSs: AZ, CA, CT, FL, IA, IL, IN, LA, MA, ME, MN, NC, NH, OH, OR, PA, SC, TX, VA, WA, VT and WI. Contact Marci Carter, carterm@uni.edu for state contact information or questions. Many MSWG states participate in EPA's performance track program, whose businesses use EMSs for public policy purposes.

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Implementing Environmental Management Systems In Government Entities

Fourteen government entities were selected from an applicant pool of 50 to participate in a pilot project designed to assist public-sector organizations develop and implement an environmental management system (EMS) based on the ISO 14001 protocol. The U.S. Environmental Protection Agency's (U.S. EPA) Office of Water, Office of Compliance, and Office of Air and Radiation, including Regions I and IX, jointly sponsor this initiative which runs from April 2000 to January 2002.

Each participating organization has selected a facility/organization ("fenceline") in which to implement the EMS, as noted below.

Public Entity	Fenceline
City of Berkeley, CA	Solid Waste Management Division
City of San Diego, CA	Refuse Disposal Division
City of Detroit, MI	Department of Recreation & Public Lighting
Florida Gulf Coast University - Fort Myers, FL	Solid Waste Activities and Services
Port of Houston, TX	Container Terminal and the Central Maintenance Department
Jefferson County, AL	General Services Department
Little Blue Valley Sewer District - Independence, MO	Wastewater Treatment Facility All operations
Louisville and Jefferson County Metropolitan Sewer District Louisville, KY	Wastewater Treatment Facility and Purchasing Department
Wisconsin Department of Natural Resources - Madison, WI	Air Management Bureau
Tri-County Metropolitan Transportation District Portland, OR	Maintenance Facilities
King County Solid Waste Division - Seattle, WA	Entire Division - Eight Transfer Stations & one Regional Landfill
Massachusetts Department of Environmental Protection Lawrence, MA	Wall Experiment Station Analytical Laboratory
University of Massachusetts - Lowell, MA	Olney Science Building - Laboratory
New Hampshire Department of Transportation Concord, NH	Bureau of Traffic

In 1997, U.S. EPA sponsored the first two-year EMS project for nine local governments. Participants experienced compelling environmental and economic benefits over the two-year project period:

- **Improved Environmental Awareness -** "*There's a much better understanding of environmental issues in every department of the fenceline, not just in the environmental department. We are recognizing simple internal "housekeeping" measures that are having a positive effect on our environmental performance. We have self-imposed additional requirements to help prevent pollution, reduce energy use, manage our contractors, and expand environmental education for our citizens. Employees are bringing ideas for reducing our waste streams, for less toxic products. There has been a definite improvement in involvement and morale."*

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- **Improved Efficiency -** "*Systematically analyzing compliance issues revealed an opportunity for cost savings. Fifteen departments were responsible for obtaining their own air quality permits - 23 altogether. The implementation team consolidated these permits into eight, saving the city $16,000 per year."*

- **A Positive Effect on Environmental Compliance and Performance -** "*With regards to environmental compliance, we have a better understanding of our legal requirements. We have better-trained employees whose competence in their work area is critical to the environment. We expect that our EMS efforts will increase our ability to stay in compliance."*

For case study information, see the final report at www.getf.org/projects/muni.cfm.

THE SECOND GOVERNMENT EMS INITIATIVE

Due to the overwhelming success of the first program and local governments' growing interest in EMSs, U.S. EPA decided to conduct a second EMS initiative to gather additional data about the value of EMS tools in government organizations. The Global Environment & Technology Foundation (GETF) was again selected to lead the effort, providing in-depth training, coaching and on-site technical assistance to help participants design and implement their EMS's.

Jim Horne, the National Project Manager, from U.S. EPA's Office of Water said,

"The U.S. EPA team was extremely gratified by the level of interest shown by local governments for this second initiative and the level of sophistication of the applications. It is clear that public-sector organizations are rapidly becoming aware of the value of implementing EMS's and the value of working with U.S. EPA. We are delighted with the diverse range of organizations that were selected and expect great things from each of them."

During the two-year project, participants attend five comprehensive workshops. At each they receive training, materials, and technical assistance to help them accomplish EMS milestones in each of the four implementation phases.

The Houston Port Authority, TX had the following to say about the project:

"*This will be an interesting two-year process, learning with and from other organizations who share our interest in protecting the environment while providing public services. We plan to convey all that we learn to our tenants, the city and county, and other port authorities so that we can all do a better job as stewards of the environment."*

For more information on the Local Government EMS Initiative, please contact Craig Ruberti (cruberti@getf.org) at 703-750-6401, Faith Leavitt (fleavitt@earthvision.net) at 941-489-1647, or Jim Horne (horne.james@epa.gov) at 202-260-5802 **or** visit the project web site (http://www.getf.org/projects/muni.cfm) for regular updates on the project.

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NEIC Compliance-Focused Environmental Management System

Since the late 1980s, civil multimedia compliance investigations conducted by the EPA National Enforcement Investigations Center (NEIC) have increasingly involved identifying causes of observed noncompliance. In a significant number of cases, the causes arise from inadequate environmental management systems (EMSs). NEIC, in response, developed key elements for a compliance-focused EMS (CFEMS) model, which have been used as the basis for EMS requirements in several settlement agreements. The CFEMS, which includes a guide for using it in settlement agreements, was published in August 1997 and revised in January 2000.[3]

The CFEMS elements are as follows:

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

To achieve maximum benefit from the CFEMS elements, the overall EMS in which they are incorporated should embody the “plan, do, check, and act” model for continuous improvement. Consequently, the compliance-focused EMS model described here is intended to supplement, not replace, EMS models developed by voluntary consensus standards bodies, such as the ISO 14001 EMS standard developed by the International Organization for Standardization.

Settlement agreements that require an EMS typically include a requirement that the organization conduct an initial review of its current EMS, followed by development of a comprehensive CFEMS that must be documented in a manual. The EMS manual must contain policies, procedures, and standards for the 12 key elements, at a minimum, and should also identify other, more detailed procedures and processes (e.g., inspections and self-monitoring) that may be located elsewhere at the facility. After the organization has had sufficient time to implement and refine the EMS (usually 2 to 3 years), the agreement should require at least one EMS audit by an independent third-party auditor, with results reported to both the organization and EPA. However, additional audits may be required, as individual circumstances dictate

[3]The document is available on NEIC’s website. http://es.epa.gov/oeca/oceft/neic/12elmenr.pdf

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The intended result of this approach is twofold: first, to have the organization develop an EMS that will both improve its compliance with applicable environmental requirements and, second, to improve its environmental performance by achieving the organization's environmental targets and objectives.

The January 2000 revision involved enhancing several of the elements and more completely incorporating the due diligence provisions of the EPA audit policy. Refinement continues through settlement negotiations, and discussions with EPA staff, EMS consultants, and environmental personnel from several companies with medium-size and large facilities.

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Appendix C:

Information on Process Mapping and Design for Environment

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Introduction to Process Mapping

Organizations operate using a collection of processes. A process can be defined as a method of doing something, generally involving a number of steps or actions. An EMS is one example of linked organizational processes that are directed at a specific purpose. Most organizations employ a variety of processes to carry out their core functions, such as manufacturing a product or providing a service.

A process typically has four components. Two of these are inputs (the items to which action is done) outputs (the results of those actions). In addition, a process has controls (which direct the action) and mechanisms (which are the resources that actually perform the action). Mechanisms can be people or machines that change the inputs to the outputs. Other concepts that are important to process mapping are process boundaries (which define the limits of a particular process from its larger environment), suppliers (who provide the process inputs) and customers (whoever receives the output of the process).

Process mapping is a tool that allows an organization to visualize and understand how work gets accomplished and how its work processes can be improved. It is a simple but powerful tool through which an organization can focus its efforts where they matter most and eliminate process inefficiencies. Used properly, process mapping can help an organization understand its environmental aspects and reduce wastes and pollution. It also can help an organization to reduce operating costs by identifying and eliminating unnecessary activities.

As an EMS tool, process mapping can help an organization to:

- **improve its understanding of existing processes**, including the key **inputs** (such as chemicals, raw materials and other resources used), **outputs** (including products, wastes, air emissions, etc.) and **interactions** with other processes.

- **identify areas for process improvement** that can result in environmental performance improvements (such as pollution prevention opportunities)

Over time, processes are often modified many times in seemingly small ways. Over time, these process modifications can result in a process that is ineffective. This is one of the bases for the concept of “re-engineering” which seeks to examine processes in a holistic manner to ensure they are effective and necessary to achieve an organization’s mission.

Getting Started on Process Mapping

- **Select a process** (or set of related processes) to examine. Processes might be prioritized for review based on a number of criteria, such as relevance or importance to the organization, prior assessments of the process, existing knowledge of the environmental significance of the process, or history of problems with the process, among others. Define the process boundaries.

- Use a **team** to understand and map how these existing process(es) work. At a minimum, the team should include the process “owner” as well as individuals that are actively involved in carrying out the process. Many organizations use a facilitator that is independent of the process under review to manage team meetings. Don’t be surprised

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if a diversity of opinions exists among team member exist regarding how the existing process works.

- **Clarify the objectives** of the process under review. Each process should have a primary customer and a primary performer, although additional (secondary) customers and performers also might exist.

- As a team, **determine the level of detail** needed to accurately map your processes. Initially, you might map at a fairly high level, then get into more detail as improvement opportunities as identified.

- Decide on a **set of symbols** that the team will use to visually describe the process. For example, use one symbol for work steps, another symbol for process inputs, a third symbol for process outputs, a fourth symbol for decision points, a fifth symbol for measurement points, etc.

- **Identify the key steps** (or "unit operations") in the process first, then go back and **analyze** each of these steps in more detail. Use lines or arrows to show the relationships among individual process steps. Use brainstorming and/or storyboarding techniques to identify the process steps, then agree upon the sequence of these steps.

- Start with the **preparation of an "as is" map** that describes how the process works now, including key process inputs to and outputs. For environmental purposes, key inputs might include energy and other resources consumed, and raw materials and chemicals used. Outputs might include products or services, air emissions, wastewater discharges, solid and hazardous wastes. This "as is" map can be analyzed to identify environmental aspects and key opportunities for improvement.

- Some processes can be extremely complex and might consist of numerous **sub-processes**. If the team gets bogged down, it might examine and map some of the key sub-processes first, rather than trying to tackle the entire process at once. As a rule of thumb: If the process is so complex that it cannot be shown on a single page, then it might be a good candidate for re-engineering.

- Depending on the purpose of the process mapping exercise, the analysis of the "as is" map can lead to the preparation of a **modified map** that defines how the re-engineered process is intended to function.

- A variety of **tools and materials** can be used to prepare process maps. For example, a number of commercial software packages exist. However, you can also employ simpler methods, such as self-sticking removable ("Post-It") note pads. These are particularly useful for moving individual process steps around on a board.

A **sample process map** for a printing operation is shown at the end of this section.

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Conclusion

Process mapping can provide a solid foundation for understanding and continually improving an organization's processes.

Viewing processes graphically helps an organization to see things that otherwise might not be apparent. Once a process map has been prepared, it can be used as training tools as well as for internal and external communications.

Process mapping has several important benefits for an EMS. First, it allows an organization to understand its current environmental aspects and impacts as well as the specific operations and activities from which they arise. Second, it provides a basis for enhancing an organization's processes in a manner that can improve both environmental and financial performance.

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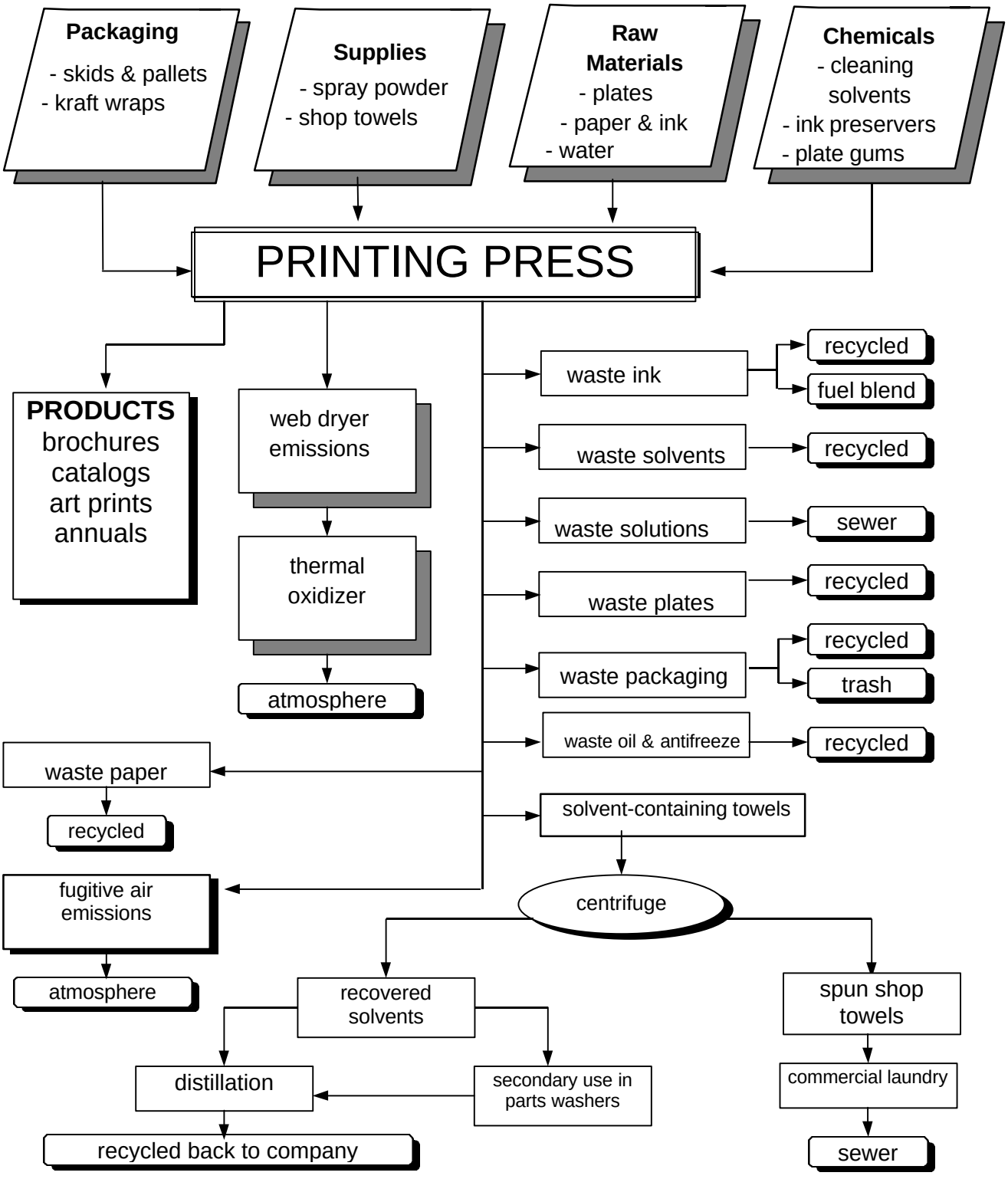
Sample Process Map for Printing Operation



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Information on Design for Environment

Every product or service has some impact on the environment. Such impacts can occur at many stages of the product or service's life cycle, from raw material acquisition to ultimate disposal or reuse. Just as the quality and performance characteristics of a product are significantly affected by decisions made at the development stage, so are the product's environment attributes. Consideration of potential environmental impacts throughout the product or service development process can improve both environmental and financial performance. By looking at each stage of a product or service life cycle, an organization can better understand and control the potential environmental impacts.

Design for Environment (DFE) is based on techniques for integrating environmental considerations into an organization's decisions concerning its products and services, as well as manner in which these products and services are generated. In involves an understanding of materials flows (and the environmental effects of such material flows) as well as the comparison of alternative approaches to producing a product or service.

DFE is grounded in the use of life cycle assessment to evaluate the full range of impacts associated with a product or service. Such life cycle assessments allow an organization to evaluate potential environmental impacts and identify opportunities to make improvements.

DFE is based on an assessment of the performance, costs and risks associated with alternatives. The technique seeks to encourage front-end innovation through product or service redesign, rather than reliance on "end of pipe" controls in order to manage risks to the environment. As such, use of the technique might result in redesign of a product formulation, a manufacturing process, or a management practice, among other possibilities.

In general, the earlier that environmental considerations are taken into account in the product or service development process, the more effective the results will be with respect to environmental performance. Organizations can use an approach that includes:

- Evaluating information on the environmental attributes of a product or service,
- Designing specific measures to reduce associated environmental impacts.
- Testing alternatives that seek to reduce impacts, while considering other importance product characteristics (such as quality and performance), and
- Applying the resulting "lessons learned" to subsequent product or service development.

While it might be simpler to implement DFE practices on new products or services, an organization also might find opportunities to apply DFE in their existing products or services. In conducting such evaluations, an organization could consider a number of goals, such as:

- Minimizing the use of toxic materials
- Minimizing compliance costs
- Avoiding chemicals that are banned or restricted by customers / other parties
- Minimizing packaging
- Minimizing energy use
- Minimizing use of water, other resources
- Maximizing reuse potential

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A product or service's environmental impacts are largely based on the inputs used to make the product (or provide the service) and the outputs generated at various stages of its life cycle. An organization can start to apply DFE concepts by using a simple matrix to assess the environmental impacts associated with a product, such as shown below (1).

	Potential Environmental Issues				
Product Life Cycle Stages	Material Selection	Energy Use	Air Emissions	Water Discharges	Solid Wastes
Premanufacture (Product design)					
Product Manufacturing					
Product Packaging & Delivery					
Product Use					
Product Disposal or Reuse					

For many organizations, the effective application of DFE concepts involves working closely with their suppliers and customers. Effective communications with supply chain partners can be critical in ensuring that an organization's products or services satisfy all their performance needs (i.e., performance, durability, environmental, safety, cost, etc.)

More information on DFE can be obtained from a variety of sources (see Appendix F for additional information sources). In particular, organizations can access information on DFE tools and projects on EPA's DFE web site at *www.epa.gov/opptintr/dfe*.

(1) Adapted from "Best Current Practices: Design for Environment", Lucent Technologies, February 1997.

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Integrated Environmental Management Systems

What is EPA's DfE Program?

EPA's Design for the Environment Program partners with stakeholders to help businesses help the environment. DfE projects help businesses design products, processes, and management systems that are cost-effective, cleaner, and safer for workers and the public. The DfE goals are to

- Encourage businesses to incorporate environmental information into their decision criteria, and
- Effect behavior change to facilitate continuous environmental improvement.

To accomplish these goals DfE and its partners use several approaches including cleaner technology and life-cycle assessments, environmental management systems (EMS), formulation improvement, best practices, and green supply chain initiatives.

To date, the DfE Program has brought environmental leadership to over 2 million workers at over 170,000 facilities. Small- and medium-sized businesses recognize DfE as a unique source of reliable environmental (as well as performance and cost) information.

DfE's Approach to EMSs

EPA's Design for the Environment (DfE) Program has developed an enhanced EMS approach called Integrated Environmental Management Systems (IEMS) to help companies achieve continuous environmental improvement. IEMSs emphasize reducing risk to humans and the environment, pollution prevention, and wise resource management. DfE's IEMS combines continuous improvement principles and tools with proven environmental assessment methodologies.

Key IEMS components that might not be included in traditional EMSs are

- Paying close attention to process and material flows,
- Obtaining knowledge of chemicals used and their hazards and exposures,
- Conducting substitutes assessments that can include full-cost accounting, and
- Considering and selecting cleaner technologies.

IEMSs assist companies in making sound environmental decisions as part of daily business practices. As a result, IEMSs help companies to

- Reduce cross-media impacts and Use energy and other resources efficiently,
- Better manage the risk associated with using hazardous chemicals (both regulated and unregulated),
- Practice extended product and process responsibility, and
- Integrate environmental and worker safety and health requirements.

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DfE's IEMS approach was piloted with several small and large screen printing companies and the Screenprinting & Graphic Imaging Association International. The pilots demonstrated that both small and large companies can develop and implement sophisticated, action-oriented IEMSs. Several of the pilot companies are applying for ISO 14001 certification.

What IEMS Materials Are Available?

To help organizations create and document their own IEMSs, DfE has developed an IEMS Implementation Guide (EPA 744-R-00-011), an IEMS Company Manual Template (EPA 744-R-00-012), and a website. The Implementation Guide walks an organization through the steps of developing an IEMS. It provides simple, thorough directions that are clear even to those unfamiliar with environmental management planning. The Guide includes worksheets, examples, and step-by-step guidance on process mapping, environmental policy development, risk assessment, and evaluating cleaner alternatives.

IEMS information and materials may be obtained by visiting the DfE website at www.epa.gov/dfe or by contacting EPA's Pollution Prevention Information Clearinghouse via email (ppic@epa.gov) or phone (202-260-1023).

Possible IEMS Roles for Lead Organizations, Associations, Technical Assistance Providers, and Large Companies

A lead organization such as an association, a technical assistance provider, or a large company can greatly facilitate development of IEMSs among its members, clients, or small suppliers. DfE's IEMS experience shows that the IEMS development process can be much more cost- and time-efficient and more fun if a lead organization takes on common activities, such as developing a basic process map or providing group training, that each company would otherwise do separately. Some additional ways in which a lead organization could help companies with IEMSs include

- Adapt the IEMS Implementation Guide and other tools to reflect a given industry sector's unique conditions,
- Organize and lead participating companies to develop an IEMS,
- Develop sector-specific pollution prevention and regulatory information,
- Help establish environmental improvement targets and evaluate results, and
- Recognize or certify companies that participate and demonstrate results.

Opportunities For IEMS Partnerships With DfE: If you are interested in becoming an IEMS partner and in leading IEMS efforts for an industry group or supply chain call DfE at 202-260-1678.

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Appendix D:

Registration of Environmental

Management Systems

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Registration of Environmental Management Systems

1st Party Audit
Internal Audit

2nd Party Audit
Customer audit of a supplier

3rd Party Audit
Audit by another party independent of a supplier and its customer

EMS registration in this appendix refers to the process whereby a non-biased third-party attests that an organization's EMS conforms with the requirements of the ISO 14001 Standard. ISO 14001 was written to describe the requirements for registration/self declaration and is the only one of the ISO series of environmental standards (such as environmental labeling or environmental performance evaluation) to which an organization may register. The third-party organization that performs the registration services is called the "registrar," and is selected by the organization that desires registration services.

An **accredited registrar** is one whose competence is evaluated by an independent third-party. Each country of the world has its own accreditation body established either nationally or by their government. In the United States, the accrediting body for both ISO 9000 and ISO 14001 is the **American National Standards Institute/Registrar Accreditation Board** (ANSI/RAB). ANSI/RAB has established criteria which registrars must meet in order to achieve accreditation. Accreditation is not a legal requirement. However, accreditation provides organizations assurance that their registrar has met ANSI/RAB requirements for things such as impartiality, confidentiality, a documented registration system, quality assurance, and policies to handle complaints and appeals.

Registration* vs. *Certification

Both terms refer to describe the third-party audit process. Technically speaking, "registration" applies to management systems, while "certification" applies to products. However, in common usage, they are synonymous.

The Registration Process

ANSI/RAB has established a two-stage registration approach for accredited registrars. Registrars may have different registration processes but must follow the basic two stage process:

Stage 1 Planning for the Audit

The purpose of Stage 1 is to determine the organization's preparedness for the registration audit. This stage includes a document review as well as on-site visit. A review of the EMS in light of the possible significant environmental aspects is a primary objective of Stage 1.

Scope of Registration….

..is the activities and organizations that are included within the EMS.

The scope should be discussed with your registrar before Stage 1.

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Stage 2: Evaluating Implementation

Stage 2 always takes place at the organization's location. An audit team conducts an on-site audit to evaluate and verify through objective evidence (interviews, procedures, records, etc.) that the EMS conforms to the requirements in the ISO 14001 Standard and is implemented and maintained.

Once you achieve registration, regular surveillance audits by the registrar are required by ANSI/RAB. These may be conducted once per year (with a re-audit after three years) or at least twice per year with all 17 elements audited in a three year period.

To what do you conform?

The answer may surprise you. Naturally you have to conform to ISO 14001 Standard requirements but you also have to conform to:

- Your own organization's policies and procedures: The EMS an organization designs often goes above and beyond ISO 14001 requirements. Did your environmental policy say your organization would promote sustainable development? Be an environmental leader? Continually improve environmental performance? During a registration audit, your policies and procedures become criteria to which you will be audited.

- The policies and procedures of the registrar: You will not be audited to the registrar's policies and procedures but they will include your responsibilities (such as timeframes for corrective actions) and rights within the registration process (such as auditor approval), and processes you should be aware of (such as confidentiality and dispute resolution).

Why Register?

The ISO 14001 Standard does **not** require third-party registration. However, for some industries such as automotive, a registered EMS is a mandated requirement for thousands of suppliers to the major auto makers. In addition, organizations that sell their goods or services internationally may find that EMS registration is a strong selling point in the global marketplace and may enable them to obtain preferred supplier status.

Where registration is not a direct market driver, organizations may pursue registration for many reasons including:

What does registration really mean?

Registration to ISO 14001 does not mean that your organization is a "green" facility, is environmentally friendly or that you have demonstrated superior environmental performance.

It means that your organization can claim it has a documented EMS that is fully implemented and consistently followed.

Major Nonconformance occurs when……

- One or more of the numbered requirements of ISO 14001 have not been addressed and/or;

- One or more of the numbered requirements of ISO 14001 have not been implemented and/or;

- Several nonconformances taken together lead a reasonable auditor to conclude that one or more of the numbered requirements of ISO 14001 have not been addressed or implemented

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"Sufficient data on an organization's compliance with relevant legislation and regulations, gathered during the registration review and surveillance, are relevant and necessary to determine whether or the organization's systems conform to the standard. "

-ANSI/RAB Criteria for Bodies Operating Registration of Environmental Management Systems (E3.2)

- Maintenance of current market position;
- Opportunities for a competitive advantage;
- Help ensure regulatory compliance;
- Improve relationships with regulators and/or the surrounding community; and
- Support state and Federal regulatory incentive programs.

There are also important but often unrecognized *internal benefits* to registration. Registration is a way to protect the investment your organization has made in your EMS. Knowing that you will be audited regularly by an outside party helps to keep management's attention on the EMS and ensure that it has the resources it needs to improve over time.

Registration and Compliance

A registration audit is not a compliance audit. Difference in the two types of audits are highlighted in Table 1. An EMS auditor will not perform a detailed compliance inspection but the will gather data on how your organization manages its compliance program. Pertinent questions may include; How do you stay informed of new requirements? How are these communicated to employees? How do you evaluate compliance with regulations? What process do you have for resolving any noncompliances identified?

"…while compliance is part of the management system, the registration audit is not an audit of full compliance with all applicable regulatory requirements."

- ANSI/RAB Criteria for Bodies Operating Registration of Environmental Management Systems (E3.2).

Occasionally, an EMS auditor may identify a regulatory noncompliance during the registration audit. Does this mean you automatically fail the audit? No, it does not. The registrar must verify that the EMS is set up to handle noncompliances and that taken together, the noncompliances do not indicate a major nonconformance.

Accredited registrars are required to have a method for handling and reporting regulatory noncompliance identified during a registration audit. Ask your registrar for their policy or procedure for handling this situation.

Table 1. Difference between EMS and Compliance Audits

EMS Audit	Compliance Audit
• Focus is on systems	• Focus is on details of regulations
• Information gathered largely through interviews and document review	• Observation of activities is important
• Corrective action involves individuals outside of the environmental staff	• Corrective actions involve only environmental staff

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Appendix E:

Integration of Environmental Management Systems and Quality Management Systems

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Integration of Management Systems

Integrating management systems has become an increasingly important competitive issue. A growing body of information indicates that organizations that integrate their EMS and quality management systems (QMS) can realize significant benefits, such as streamlined operations and decision-making, simplified employee training, more efficient of resources and reduction in audit costs. Systems for managing health & safety and other organizational functions can be similarly integrated.

The two most common models for QMS and EMS (ISO 9001 and ISO 14001, respectively) share many common elements. This should be no great surprise, since ISO 9001 was one of the source documents used by the drafters of ISO 14001. The two standards are very compatible in their current forms. The ISO committees responsible for the development and maintenance of these two standards continue to examine potential opportunities to increase the compatibility or alignment of the two standards.

Organizations that choose to implement both of these standards generally find that they can use many common processes to conform. In general, the elements of a QMS and an EMS can be categorized as either (1) essentially the same, (2) similar or (3) unique (see table below). System elements in both the "essentially the same" and "similar" categories can often be addressed by a common procedure (or parallel procedures), although some customization may be needed to address the differing overall purposes of these systems. Unique elements are typically dealt with in separate (EMS or QMS) procedures. Some of the typical elements for integration include: document control, corrective/preventive action, training, records management and management review. However, some organizations have gone much further – for example, some have developed common (quality and environmental) policies. The degree of system integration varies widely from organization to organization.

While an EMS can be readily integrated with an existing QMS, the overall purposes of these two systems must be kept in mind. A QMS is intended primarily to ensure that an organization satisfies its customers by assuring the quality of its products. An EMS generally has a broader context – the relationship between an organization and the environment in which it operates. Also, an EMS often concerns itself with a broader range of stakeholders, such as neighboring communities, customers and regulatory agencies.

System integration can have environmental benefits. By linking environmental management more closely with day-to-day planning and operation, some organizations have been able to raise the visibility of environmental management as a core organizational issue. In addition, these organizations enhance their abilities to address environmental issues when making modifications to products or processes for quality purposes.

Organizations that have a QMS in place generally are better off when implementing an EMS for several reasons. First, employees typically are already familiar with management system concepts and are involved in making the system work. Second, many of the processes needed for the EMS might already be in place. Finally (and perhaps most importantly), top management has committed the use of management systems to achieve organizational goals.

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A Few Tips on System Integration

For organizations that have an existing QMS and wish to integrate an EMS with it, some suggestions are provided below.

- ☞ Understand the existing QMS, its effectiveness and how the workforce perceives the system. Is the existing QMS documentation clear and workable? Do employees believe that the system is helping the organization to achieve desired results?

- ☞ Ensure that the scope of the two systems will be consistent (i.e., that the systems will cover the same facilities, products, activities and/or services). In particular, this will be an important issue if third-party registration will be sought.

- ☞ Establish a cross-functional team (including, at a minimum, representatives from the environmental and quality functions) to determine the optimal approach to system integration.

- ☞ As needed, manage resistance to change. Some employees and managers may be reluctant to change a system that they are already familiar with and/or in which they have important roles.

- ☞ Understand how QMS and EMS differ in purpose. While there are many common management system elements, there are elements of each system that are unique (see below). In the case of EMS, these include for example, environmental aspects, communications, emergency preparedness and response. These differences must be acknowledged and accommodated within the integrated management system.

Relationship of EMS Elements to QMS (based on ISO 9001: 1994)

Elements that are Essentially the Same

- ☞ Training, Awareness & Competence
- ☞ Document Control
- ☞ Nonconformance, Corrective & Preventive Action
- ☞ Calibration (part of the Monitoring & Measurement element)
- ☞ Records

Elements that are Similar

- ☞ Environmental Policy
- ☞ Structure and Responsibility
- ☞ EMS Documentation
- ☞ Operational Control
- ☞ Monitoring & Measurement
- ☞ EMS Audit
- ☞ Management Review

Elements that are Unique

Environmental Aspects
Legal and Other Requirements
Objectives & Targets
Environmental Management Program(s)
Communications
Emergency Preparedness & Response

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- Modify system documentation as required. Keep procedures simple and clear for users. Review proposed changes with affected managers and employees.

- On a procedure-by-procedure basis, consider whether to integrate procedures or keep them separate. While integration can reduce the total number of procedures or work instructions, it also can confuse the overall purpose of such procedures in some cases.

- Once the integrated system documentation has been prepared, train managers and employees on the integrated system.

- Audit the integrated system and take actions as necessary.

A few final thoughts on system integration:

- Can your organization afford to have two or more separate systems?
- Are there compelling reasons to keep these systems separate?
- What is the optimal approach from a strategic and operational standpoint?
- What approach is best suited for the organization's change and growth?

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Appendix F:

Additional Sources of Information and

Contacts

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Appendix F: Additional Sources of Assistance

There are many resources available to help your organization develop and implement an EMS that are free of charge or relatively inexpensive. The following is a description of some of these resources.

Federal Government Agencies

The U.S. **Environmental Protection Agency** (USEPA) provides information on a number of topics that can be useful in the development and implementation of an EMS. Some of these resources include: assistance with interpretation of environmental laws and regulations; information on pollution prevention technologies (case studies and fact sheets); and hotlines to answer questions about environmental issues. The Agency also has web sites for information on EMS's and Design for Environment. The USEPA's Office of Compliance has established national Compliance Assistance Centers for various industry sectors.

The **Small Business Administration** (SBA) provides assistance to small and medium-sized organizations. The SBA can provide information and assistance related to: operation and management of a business; sources of financial assistance; international trade; as well as laws and regulations.

State Agencies

Your state environmental regulatory agency can provide assistance with the development of an EMS. Contact your state environmental agency and inquire about education and outreach programs for organizations that are developing an EMS. Many state environmental agencies also can provide publications, pamphlets, and on-line help related to state environmental laws, innovative pollution prevention technologies, waste reduction, and permitting. Some states (such as North Carolina, Wisconsin and Virginia) have developed programs to help organizations implement and EMS and/or seek ISO 14001 registration. Recently, several states (including Texas and Virginia) established "EnviroMentor" programs within their Small Business Assistance Offices. These mentoring programs are intended to help small companies comply with regulations.

Associations

Industry trade associations can provide assistance with the development of an EMS. These organizations can provide information on industry-specific environmental management issues, and can put you in contact with other organizations that can share their experience and expertise in EMS implementation.

Colleges and Universities

Some colleges and universities provide EMS-related training or manage EMS demonstration projects.

Chambers of Commerce

Your local or state chamber of commerce might be helpful in providing information about legislative and regulatory issues that affect environmental management for small and medium- sized organizations. Other services that are commonly offered include handbooks, workshops, conferences and seminars.

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Non-Profit Organizations

Another resource to consider is the Manufacturing Extension Partnership (MEP), which is a growing nationwide system of services that provide technical support to businesses interested in assessing and improving their current manufacturing processes. The MEP is a partnership of local manufacturing extension centers which typically involve federal, state, and local governments, educational institutions, and other sources of information and funding support. The MEP can also often provide assistance with quality management, development of training programs and business systems.

The Industrial Technology Institute (ITI) is a non-profit organization dedicated to expanding technology access and technology management among U.S. manufacturers. ITI provides technical assistance to small and medium-sized organizations through the Michigan Manufacturing Technology Center. ITI also has experience with the development of business performance tools and provides services for energy, environment, and manufacturing assessments; as well as, QS 9000 and ISO 14000 training and implementation.

Other Organizations

Another recommended source of information and expertise is the organizations with which you do business. It is likely that your suppliers and customers have experience with many of the aspects of an EMS, and might be willing to share their experiences and provide advice to your organization.

On-line Resources

There is a wealth of information related to EMS implementation available electronically via the Internet. Many state, federal, and local agencies have home pages on the Internet containing information that can be useful to your organization. Numerous non-governmental organizations have home pages that contain information on topics such as ISO 14000, pollution prevention, recycling and waste minimization, environmental laws and regulations, innovative manufacturing technologies, and materials substitution. If your organization does not have Internet access, contact your local library to see if it provides Internet access to users.

****

Additional EMS resources and contacts are described on the following table.

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Appendix F (cont'd.)
Additional Sources of Information and Contacts

Note: This list is not intended to be comprehensive. Appearance on this list should not be construed as an endorsement by NSF of any products/service.

FEDERAL AGENCIES

Organization	Resource	Telephone Number / Internet Address	Description
US Environmental Protection Agency	Small Business Compliance Assistance Centers:	202/564-7066 (general information)	Centers are Internet Web Sites with comprehensive environmental compliance, technical assistance, & pollution prevention information for various industry sectors.
	Design for Environment Guide, Fact Sheets and DFE EMS Template	www.epa.gov/opptintr/dfe/tools/ems/ems.html	Website contains information on EMS and how to incorporate DFE into an EMS. Provides a how-to manual for implementing a DFE-based EMS and a set of integration tools for companies that already have an EMS.
	Small Business Compliance Policy	202/564-7072 www.epa.gov/oeca/smbusi.html	Effective May 11, 2000, this policy supercedes the June 1996 version. Published in the Federal Register on April 11, 2000 (65FR19630).
	Compliance-Focused EMS – Enforcement Agreement Guidance	http://es.epa.gov/oeca/oceft/neic/12elemnr.pdf	Presents the key elements of a compliance focused EMS model.
	Environmental Compliance Auditing Protocols	EPA National Service Center 1-800-490-9198 www.epa.gov/oeca/ccsmd/profile.html	These protocols are intended to guide regulated entities in the conduct of compliance audits and to ensure that audits are conducted in a thorough manner.
	Code of Environmental Management Principles	www.epa.gov/oeca/cemp/cemptoc.html	Collection of five broad principles and performance objectives that provide a basis for environmental management among Federal agencies.
	Pollution Prevention Clearinghouse	202/260-1023	Technical Information on materials and processes, including publications related to waste minimization and pollution prevention.

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FEDERAL AGENCIES

	Office of Wastewater Management	www.epa.gov/owm/iso2/htm	Provides information on various EPA-sponsored EMS projects.
	Public Information Center	202/260-7751	General information about EPA programs.
	RCRA / Superfund Hotline	800/424-9346 202/382-3000	Provides information about hazardous waste regulations and handles requests for federal documents and laws.
	Small Business and Asbestos Ombudsman	800/368-5888 202/557-1938	Information and advice on compliance issues for small quantity generators of hazardous waste.
	Technology Transfer and Support Division	513/569-7562	Access to the ORD research information and publications.
	TSCA Hotline	202/554-1404	Assistance and guidance on TSCA regulations.
	Enviroene	http://es.inel.gov	Solvent alternatives, international, federal and state programs, other research and development. Also, environmental profiles of various industrial categories.
	US EPA Home Page	http://www.epa.gov	Information about EPA regulations, initiatives, and links to the home pages of other agencies and EPA regional offices.
U.S. Small Business Administration	SBA Answer Desk	1-800-8-ASK-SBA	Information about SBA programs, and telephone numbers for local offices.
	SBA Home Page	http://www.sbaonline.sba.gov	Information about business services available to your organization, with links to other related sites.
Government Printing Office	GPO Superintendent of Documents	202/512-1800	Information about available documents and instructions on ordering GPO publications.
US Department of Energy	Pollution Prevention Information Clearinghouse	http://www.er.doe.gov/production/esh/epic.html	Pollution prevention and environmental design information.

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STATE AGENCIES			
Organization	**Resource**	**Telephone Number / Internet Address**	**Description**
State Environmental Protection Agencies	Environmental Assistance Programs	Contact your state's Environmental Protection Agency	Many state environmental protection agencies provide publications, technical assistance, and information on pollution prevention technologies, waste reduction, and regulatory compliance, at little or no charge.
	Small Business Assistance Programs (Mandated under Title V of the Federal Clean Air Act).	Call the EPA Small Business Ombudsman (800/368-5888) for the phone number and address of the Small Business Assistance Program in your state.	Provides information and technical assistance to small businesses regulated under the Clean Air Act.
	State and Local Pollution Prevention Programs	Contact the National Pollution Prevention Roundtable (202/466-7272) for the phone number and address of the pollution prevention program in your state.	Provides information and technical assistance on pollution prevention.
State Environmental Protection Agencies (cont'd)	Michigan Department of Environmental Quality	http://www.deq.state.mi.us	Fact sheets, training, and technical assistance.
	Minnesota Technical Assistance Program	http://es.inel.gov/techinfo/facts/mpca/mpca.html	Fact sheets on pollution prevention, materials substitution.
	Ohio Department of Environmental Protection	http://arcboy.epa.ohio.gov	Fact sheets on pollution prevention, materials substitution.
	Wisconsin Department of Natural Resources	http://es.inel.gov/techinfo/facts	Fact sheets on pollution prevention, materials substitution.

Note: The list shown above represents only a sample of the resources that may be available from state agencies. Contact your state agency for details of existing programs and other forms of assistance available

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EMS SOFTWARE PACKAGES		
Organization	**Contact Info**	**Description**
Greenware	1-800-474-0627 www.greenware.com	Provides ISO 14001 assessment, implementation and audit software
EMSoft2000	1-800-241-3618 www.rmtinc.com	Software package based on LotusNotes to support EMS implementation
ISOXpert	1-800-ISO-EASY	Built on LotusNotes platform. Customizable document formats.
ISOSoft 14001	416-679-0119 www.isogroup.simplenet.com/soft14k	Provides ISO 14001 assessment, implementation and audit software. Co-developed with BSI.

NON-PROFIT ORGANIZATIONS			
Organization	**Address**	**Phone Number**	**Description**
Industrial Technology Institute (ITI)	2901 Hubbard Road P.O. Box 1485 Ann Arbor, Michigan 48106-1485	1-800-292-4484 Fax: 1-313-769-4064	Technical assistance to small and mid-sized manufacturers. Energy, environment, and manufacturing assessments, as well as performance benchmarking, and QS 9000 and ISO 14000 implementation assistance.
Manufacturing Extension Partnership (MEP)	Building 301, Room C121 National Institute of Standards and Technology Gaithersburg, Maryland 20899-0001	1-301-975-5020 1-800-MEP-4MFG Fax: 1-301-963-6556	Assists manufacturers with assessing technological needs, and works to help small manufacturers solve environmental problems with cost-effective solutions.
North American Commission on Environmental Cooperation "Improving Environmental Performance and Compliance: 10 Elements of Effective Environmental Management Systems"	www.cec.org/pubs_info_resources/publications/enforce_coop_law/ems.cfm?varlan=english	514/350-4334 (Commission) 202/564-7048 (USEPA)	Joint expression from three North American governments regarding how voluntary EMS's designed for internal management purposes can also serve broader public policy goals, such as compliance assurance and improved environmental performance.

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INTERNET RESOURCES

Resource	Internet Address	Description
ANSI Online	http://www.ansi.org	Contains information related to the American National Standards Institute, including meetings, events, and standards information databases.
Business Resource Center	http://www.kciLink.com/brc	Provides information on a variety of topics, including tips on management, recycling, and financing.
Canadian Standards Association	http://www.csa.ca/isotcs	A center for information and services related to ISO 9000 and ISO 14000, maintained by the Canadian Standards Association.
Clean Technologies Center (UCLA)	http://cct.seas.ucla.edu	Innovative technologies for pollution prevention.
Consortium on Green Design and Manufacturing (UC-Berkeley)	http://euler.berkeley.edu/green/cgdm.html	Environmental design and sustainable development.
Environmental Technology Gateway	http://iridium.nttc.edu/environmental.html	Access to other environmental links and information, environmental technologies.
International Corporate Environmental Reporting Site	www.enviroreporting.com	International news about environmental issues and resources for environmental reporting.
Industrial Technology Institute Home Page	http://www.iti.org	Information about ITI, how to find environmental information on the Internet, and links to other organizations.
International Network for Environmental Management	www.inem.org	Case studies, publications and how-to information on environmental management. Interactive tools for assessing environmental policies and reports.
ISO 14000 Information Center	http://www.iso14000.com	Answers to questions on ISO 14000

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INTERNET RESOURCES		
Resource	**Internet Address**	**Description**
		standards.
ISO 14000 Integrated Solutions (ANSI/GETF)	http://www.gnet.org	Will provide training, conferencing, on-line information services and publications on a fee basis.
ISO Online	http://www.iso.ch	The ISO homepage provides information on ISO, its structure, members, technical committees, meetings, and events.
Multi-State Working Group	www.mswg.org	Describes the activities of this group regarding EMS and ISO 14001.
National Environmental Information Resources Center (NEIRC)	http://www.gwu.edu/~greenu/	Provides access to a wide variety of information about environmental matters, with links to hundreds of organizations.
NSF-ISR Home Page	http://www.nsf-isr.org	Contains information on NSF International and its pilot projects in EMS implementation.

AUTHORIZED SOURCES OF THE ISO 14000 STANDARDS		
NSF International (NSF)	Phone: 1-888-NSF-9000 Fax: 1-734-827-6801	789 N. Dixboro Road Ann Arbor, MI 48105
American National Standards Institute (ANSI)	Phone: 1-212-642-4900 Fax: 1-212-398-0023	11 West 42nd Street New York, NY 10036
American Society for Quality (ASQ)	Phone: 1-414-272-8575 Fax: 1-414-272-1734	Milwaukee, WI
American Society for Testing and Materials (ASTM)	Phone: 1-610-832-9585 Fax: 1-610-832-9555	West Conshohocken, PA

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Glossary of Acronyms

ACC	American Chemistry Council
ANSI	American National Standards Institute
API STEP	American Petroleum Institute's "Strategies for Today's Environmental Partnership"
CAA	Clean Air Act
CEC	Commission for Environmental Cooperation
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERES	Coalition for Environmentally Responsible Economies
CFCs	Chlorofluorocarbons
CMA	Chemical Manufacturers Association
CWA	Clean Water Act
DFE	Design for Environment
EHS	Environment, Health and Safety
EMAS	Eco-Management and Audit Scheme
EMS	Environmental Management System
EPA	(Also USEPA) U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
HMTA	Hazardous Materials Transportation Act
ICC	International Chamber of Commerce
ISO	International Organization for Standardization
ITI	Industrial Technology Institute
MEP	Manufacturing Extension Partnership
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
P2	Pollution Prevention
QMS	Quality Management System
RCRA	Resource Conservation and Recovery Act
SBA	U.S. Small Business Administration
SPCC	Spill Prevention Control and Countermeasure
TC 207	Technical Committee 207 (of ISO)
TSCA	Toxic Substances Control Act
TQM	Total Quality Management
USTAG	U.S. Technical Advisory Group (to TC 207)
VOCs	Volatile Organic Compounds

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Environmental Management Systems Primer for Federal Facilities

Prepared by:
Office of Environmental Policy & Assistance
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and

Federal Facilities Enforcement Office
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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.

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

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.

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.

ISO 14001 EMS Elements

1. **A *Policy Statement* endorsed by top management.**
2. ***Planning*: 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. ***Implementation and Operation:* assigning roles and responsibilities, training, communication, documentation, and emergency preparedness.**
4. ***Checking and Corrective Action:* establishing ways to monitor, identify and correct environmental problems.**
5. ***Management Review* 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

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.**

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.

▸ ***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.

"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 n0ot. 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

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.

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 is 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:

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**

▸ ***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.

"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

▸ ***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.

▸ ***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.

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**

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 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

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**

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.

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.

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.

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 cliche, "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.

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.

"[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

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.

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 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.

"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

▸ ***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.

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

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."

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.

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.**

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.

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:

"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

- 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.

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.

"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

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.

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.

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.

▸ ***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.

▸ ***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.

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.**

▸ ***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).

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

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.

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.

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**

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

WHAT'S IN AN AUDIT?

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

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.

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.

An 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 noncompliance, 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 from. 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 (Chemical Manufacturers Association) - provides an overview of 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.

Cascio, Joseph ed., *The ISO 14000 Handbook*, CEEM Information Services and ASQC Quality Press, 764 pp., 1996.

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.

Hooks, Craig, *EPA's Code of Environmental Management Principles (CEMP) for Federal Agencies: An EMS Framework for the Federal Sector*, Wiley & Sons, 1997.

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.

Lamprecht, James, *ISO 14000: Issues and Implementation Guidelines for Responsible Environmental Management*, American Management Association Press, 1997.

Nestel, Glenn ed., Joseph Delrossi, and Andrew Ullman, *The Road to ISO 14000*, Irwin Professional Publications, 1996.

Puri, Subhash, *Stepping Up to ISO 14000: Integrating Environmental Quality With ISO 9000 and TQM*, Productivity Press, 278 pp., 1996.

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.

Rothery, Brian, *ISO 14000 and ISO 9000*, Gower Publishing Company, 1995.

Sayre, Don, *Inside ISO 14000: The Competitive Advantage of Environmental Management*, St. Lucie Press, 230 pp., 1996.

Tibor, Tom and Ira Feldman, *ISO 14000: A Guide to the New Environmental Management Standards*, Irwin Professional Publishing, 237 pp., 1995.

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, S*trategic 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/benchmar/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 Integratetd 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
parry.burnap@state.co.us

INDIANA: Marc Hancock
Indiana Dept. of Environmental Management
Office of Pollution Prevention and Technical Assistance
105 S. Meridian St., P.O. Box 6015
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
2500 Broening Highway
Baltimore, MD 21224
410-631-3772; 410-631-3936 fax

MICHIGAN: Marcia Horan
Environmental Assistance Division
Michigan Department of Environmental Quality
P.O. Box 30457
116 W. Allegan
Lansing, MI 48909
517-373-9122
email: horanm@deq.state.mi.us

NORTH CAROLINA: Ravila Gupta
Office of Waste Reduction
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Raleigh, NC 27626
919-715-6507
email: Ravila_Gupta@owr.ehnr.state.nc.us

OHIO: Andrea Futrell
Ohio EPA, Office of Pollution Prevention
P.O. Box 1049
Columbus, OH 43216-1049
614-644-2813; 614-728-1245 fax

e-mail: andrea_futrell@central.epa.ohio.gov

PENNSYLVANIA: ISO 14000 Partnerships
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email: Barkanic.Robert@a1.dep.state.pa.us

VIRGINIA: Harry E. Gregori, Jr.
Director of Policy and Legislation
Virginia DEQ
PO Box 10009
Richmond VA 23240-0009

WASHINGTON: Rob Reuter
Dept. of Ecology
206-649-7086
email: rreu461@ecy.wa.gov

WISCONSIN: Tom Eggert
Wisconsin DNR
608-267-9700
email: eggert@dnr.state.wi.us

University of Wisconsin-Extension
Wayne P. Pferdehirt, P.E., AICP
U. of Wis., Solid & Hazardous Waste Education Center
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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 *Primer's* 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 *Primer*	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.

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Attn: Priscilla Harrington
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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

P2 and the EMS Model

Chapter 6 of the Guide demonstrates how a P2 program can be implemented through an environmental management system (EMS). While many EMS programs only require a "commitment" to pollution prevention, the EMS implementation team can certainly go much further than this. This section of the CD-ROM is designed to provide more information to help an organization take full advantage of the EMS implementation. Information is provided in the following categories:

EMS Information - A number of Internet links are provided to help secure information on preparing an EMS. You will need to have your Internet connection activated to use these links directly from the CD-ROM.

EMS Manuals - Some excellent references are made available on this CD-ROM to assist in preparing an EMS. This information can be used with the information in Chapter 6 of the EPA Guide to implement a P2 program

EMS Examples - Some examples of specific EMS work products are available to help your organization appreciate what is involved. You will need to have your Internet connection activated to use these links directly from the CD-ROM.

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EMS Info.

EMS Manuals

EMS Examples

EMS Information Web Sites

In order to help you understand environmental management systems (EMS), there are a number of Internet sites provided below. These sites contain information on ISO 14001 and let you know how to order this copyrighted standard. There are links to the U.S. Environmental Protection Agency's (EPA) web page and other groups offering assistance in the design and implementation of EMS. Make sure you consult with your state technical assistance provider for additional information on EMSs. You will need to have your Internet connection ready to be activated when you use these links.

Back HOME

Back to EMS Page

Click on the Web Site Name Below to View it on the Web. WWW

EXIT EPA	ISO 14001 Standard - Ordering Information	EPA EMS Home Page
	EPA Standards Network	Multi-State Working Group Home Page EXIT EPA
EXIT EPA	Kentucky EMS Information	Eco-Management and Audit Scheme (EMAS) EXIT EPA

EPA ISO 14000 Documents (ORD Tech Transfer Branch)

EMS Manuals

To provide you with some more practical information on EMS use, a number of manuals have been placed on this CD-ROM. Some of these manuals reside directly on this disk while others will require that you have your Internet connection prepared to be activated by the link.

Back HOME

Back to EMS Page

Click on the manual title below to view it.

EPA Integrated Environmental Management Systems - Implementation Guide	EPA Implementation Guide for the Code of Environmental Management Principles for Federal Agencies
NSF Environmental Management Systems: An Implementation Guide for Small and Medium Sized Organizations	NSF Environmental Management System Demonstration Project
DOE/EPA Environmental Management System Primer for Federal Facilities	Ford Motor Co. Environmental Management System Notebook

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United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
EPA -300 -R-00-006
August 2000

An Environmental Management System Review of the National Park Service:

Based on the Code of Environmental Management Principles

EXECUTIVE SUMMARY

In early 1998, the U. S. Environmental Protection Agency (EPA) and the Department of the Interior (DOI) agreed to work jointly to enhance regulatory compliance assistance across DOI Bureaus and facilities with the overall goal of raising the level of regulatory awareness and compliance with environmental regulation at all DOI facilities. While EPA's federal facilities program had previously conducted limited compliance assistance initiatives with specific environmental programs in other federal agencies, this was the first time that EPA committed to provide compliance assistance across an entire federal agency. One of the most innovative and far-reaching efforts that resulted from the EPA/DOI compliance initiative was an analysis of environmental management systems (EMS) within the National Park Service (NPS). This analysis was conducted by comparing existing management systems within the NPS against the Code of Environmental Management Principles (CEMP) for federal agencies.

The CEMP was developed by EPA in coordination with other federal agencies in response to requirements of Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements." The Executive Order required the federal community to agree to a set of principles that reflect state of the art environmental management programs. The CEMP is a collection of five broad management principles and underlying performance objectives that provide a basis for federal agencies to achieve and maintain effective and responsible environmental management.[1] The five principles are:

- Management commitment;
- Compliance assurance and pollution prevention;
- Enabling systems;
- Performance and accountability; and
- Measurement and improvement.

The analysis of the NPS environmental management system was a broad-based review that examined current and planned environmental management practices against an accepted systematic framework of principles. While the body of this document provides substantial information regarding the findings and recommendations of this review, highlights of those findings and recommendations are presented below.

The analysis and recommendations contained in this document are meant to support and enhance the current NPS environmental management system. EPA and NPS worked jointly to conduct this review in the hope that it will provide a basis for continued discussion within NPS regarding the future direction of the NPS environmental program. This effort has also stimulated dialogue between NPS and EPA field personnel and has lead to a better understanding of the respective roles of each entity in achieving and maintaining environmental leadership. Finally, results of CEMP analysis conducted for NPS will assist other federal agencies in recognizing the benefit of such an assessment across the federal community. EPA would like to express its appreciation to the NPS for participating in this review.

HIGHLIGHTS

Management Commitment

The NPS CEMP review found that bureau-wide, the NPS mission actively supports environmental stewardship and sustainability as a founding philosophy of the NPS. The review did reveal, however, that there is not currently a stand-alone statement that explicitly defined an NPS environmental policy. In addition, existing environmental guidelines do not emphasize compliance with environmental regulatory requirements. Development and wide distribution of a distinct environmental policy statement, along with the clear, high-level management commitment that would necessarily accompany such a statement would emphasize the NPS policy to employees and

[1]More information regarding the CEMP can be found in, "Implementation Guide for the Code of Environmental Management Principles for federal Agencies (CEMP), EPA document number 315-B-97-001.

park users and explicitly demonstrate the goal of the NPS to be a leader in environmental stewardship and regulatory compliance. Moreover, an explicit and comprehensive policy would clearly signal internal NPS support for funding and personnel resources necessary to ensure a robust environmental program. Finally, such a policy would encourage NPS support and outreach components, such as concessioners and interpretive elements, to incorporate environmental stewardship and compliance into facility-level activities.

Compliance Assistance and Pollution Prevention

Current NPS support programs responsible for ensuring compliance with environmental regulations and promoting pollution prevention are housed under separate entities within the NPS organization. In addition, while many parks have programs for support of pollution prevention and recycling efforts, these programs do not fully exploit reduced compliance liabilities resulting from their efforts. Development and support of comprehensive regulatory compliance activities would significantly contribute to ensuring both compliance with applicable environmental regulations and pursuit of pollution prevention opportunities throughout the NPS system. This effort would integrate all current regulatory components at NPS and it would support and reflect ongoing efforts to implement environmental auditing procedures at NPS facilities. A comprehensive compliance assurance and pollution prevention program would also serve as a bureau-wide source for communicating both changing environmental compliance requirements and innovations in pollution prevention applicable to facility-level operations.

Enabling Systems

The various support and enabling systems that affect environmental management aspects of the NPS reflect a separate, media-based approach toward awareness and compliance. Additionally, the principal environmental review mechanism is the NEPA review process which may not adequately address day-to-day operations of NPS facilities. Identification of facility level operational training needs and implementation of broad-based training programs for facility personnel would ensure adequate knowledge and understanding of NPS environmental priorities as well as external environmental requirements. Further, facility personnel who are not directly responsible for facility environmental compliance but who may contribute to success of the facility's environmental program, should have a recognized role in contributing to overall NPS facility-level policies and goals for environmental excellence.

Performance and Accountability

Responsibility and authority for compliance with environmental requirements at NPS facilities is generally limited to collateral duties of facility management personnel who are also responsible for a broad range of other facility operations. This approach limits the ability of those personnel to concentrate on environmental management and compliance at the facility and restricts the degree of authority and accountability relative to facility environmental performance. This situation could be significantly enhanced by the establishment of an NPS policy that secures adequate authority for ensuring facility environmental compliance and gives that authority to the responsible party at each NPS facility. In addition, development of performance standards and performance evaluations for those facility personnel responsible for compliance and other environmental priorities should fully recognize those responsibilities. Additionally, goals for environmental performance that reflect overarching NPS environmental policies should be developed and included into regional and park operational standards. Finally, while individual "champions" are important to the success of any environmental program, policies and practices should be in place to ensure that environmental leadership is standard procedure and lack of a champion does not preclude sound environmental performance.

Measurement and Improvement

Results of the NPS CEMP review indicate that current systems for evaluation and measurement of environmental performance at NPS facilities are limited to certain regional efforts and developing audit systems. Evaluation of program performance is critical to the ultimate success of any environmental program. Support and further development of planned auditing systems with appropriate mechanisms to collect and analyze audit results

across the bureau will contribute significantly to the success of the NPS environmental program. Evaluation of audit results including root cause analysis of environmental problems and non-compliance would enable NPS to develop tools to support regulatory compliance and transfer cost-effective innovations and solutions throughout the NPS system. Additionally, effective measurement will provide necessary information for budgetary and personnel decision making to respond to problem areas as well as enhance efforts that meet the policies and goals established for the NPS environmental management program.

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LIST OF ACRONYMS

Acronym	Definition
BLM	Bureau of Land Management
CAP	Compliance Assistance Project
CEMP	Code of Environmental Management Principles
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERL	Construction Engineering Research Laboratory
CFA	Civilian Federal Agency
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
EIMS	Environmental Information Management System
EMR	Environmental Management Review
EMS	Environmental Management System
EPA	Environmental Protection Agency
FRP	Facility Response Plan
GMP	General Management Plans
GPRA	Government Performance Results Act
HWMPP	Hazardous Waste Management and Pollution Prevention
IC	Incident Command
IMR	Inter-Mountain Region
ISWAP	Integrated Solid Waste Alternatives Program
KSA	Knowledge, Skills and Abilities
MOU	Memorandum of Understanding
MWR	Midwest Region
NEPA	National Environmental Policy Act
NER	Northeast Region
NPS	National Park Service
NRDA	Natural Resource Damage Assessment
NREL	National Renewable Energy Laboratory
NRI	Natural Resource Initiative
OEPC	Office of Environmental Policy and Compliance
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
P2OA	Pollution Prevention Opportunity Assessment
PHS	Public Health Service
PMIS	Project Management Information System
PWR	Pacific West Region
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
SER	Southeast Region
SPCC	Spill Prevention, Control, and Countermeasures
WASO	Washington Area Support Office

INTRODUCTION

Background

During discussions held in January of 1998, U. S. Environmental Protection Agency (EPA) and the Department of the Interior (DOI) agreed to work jointly to enhance compliance assistance across DOI Bureaus and facilities with the overall goal of raising the level of regulatory awareness and compliance at all DOI facilities. While EPA's federal facilities program had previously conducted limited compliance assistance initiatives with specific environmental programs in other federal agencies, this was the first time that EPA pledged to provide compliance assistance across an entire federal agency. One of the most innovative and far-reaching efforts that resulted from the EPA/DOI compliance initiative was an analysis of environmental management systems (EMS) within the National Park Service (NPS), including an analysis of support relationships between NPS field-level facilities and NPS and DOI Headquarters environmental offices. This analysis was conducted the Code of Environmental Management Principles (CEMP).

CEMP

In coordination with other federal agencies, EPA developed the Code of Environmental Management Principles for federal agencies (CEMP) in response to requirements of Executive Order 12856. The CEMP is a collection of five broad management principles and underlying performance objectives that provide a basis for federal agencies to achieve and maintain effective and responsible environmental management. The five principles are:

- Management commitment;
- Compliance assurance and pollution prevention;
- Enabling systems;
- Performance and accountability; and
- Measurement and improvement.

The five principles and accompanying objectives provide federal agencies with guidance to ensure environmental performance that is cost-effective, integrated, and sustainable.

Scope of the Assessment

The scope of the CEMP assessment was defined by: (1) assessed organization; (2) assessment period; and (3) assessment criteria. Additional information on each is presented below.

- Assessed Organization: The assessed organization was the NPS. Formal and informal aspects of the NPS environmental management system (EMS) were reviewed at the field, regional and headquarters levels. The review also addressed portions of the "parent" DOI organization which directly influence NPS environmental management activities. In this regard, the DOI Office of Environmental Policy and Compliance (OEPC) and additional DOI-level units were included in the review.

- Assessment Period: The assessment period for the CEMP review began in July 1998 and was completed in December 1998. During the assessment period, several changes to the NPS EMS were either underway or planned; the review documented those changes to the EMS as well. Consequently, the final document presents information collected during the assessment period about the existing EMS, as well as information on changes underway or planned.

- Assessment Criteria: The assessment criteria for the NPS CEMP review were the performance objectives supporting each of the CEMP principles. Details on the performance objectives were extracted from the CEMP Implementation Guide prepared by EPA in 1997. Specifically, both the

text of the CEMP Implementation Guide and the Guide's Self-Assessment Matrix were used as a reference for the assessment study and results.

Assessment Approach

The first stage of the assessment focused on gathering DOI and NPS organizational baseline information with an emphasis on how the two organizations administered environmental management responsibility internally. The assessment also included a review of administrative relationships between EPA, NPS and DOI. Collection of this information provided a common understanding of existing management systems. For example, the EPA, DOI/OEPC, and the NPS each have a regional management structure but the geographical territory associated with each region is different. A summary of collected baseline information is included in the final assessment document.

The approach of phase two of the assessment focused on field and regional level aspects of environmental management at NPS. EPA, DOI/OEPC, and NPS were informed of assessment progress through monthly reports, meetings, and through informal discussions.

The assessment team collected information through interviews, record reviews, and by direct observations. Further information on each aspect is presented below:

- Interviews: Over 75 interviews were conducted. Initial interviews, addressing all five principles, were broad in scope and lengthy (up to 2 hours). Towards the end of the assessment period, shorter interviews were used to fill information gaps or test initial conclusions on recommendations related to the principles. Nearly all interviews were structured to ensure specific objectives were met; however, there was no standard set of questions asked of all interviewees. Each interview was designed for specific information sought. In conducting interviews, the assessment team shared information about the CEMP as background and assured interviewees that their specific comments would remain confidential.

- Record Reviews: Over 85 individual EMS-related records were reviewed. These documents included guides, manuals, policy statements, and training documents.

- Direct Observations: A direct observation was defined as first hand information collected by the assessment team which was not derived from an interview or record review. Examples are:

  - Internal meetings where the assessment team observed information being shared; and

  - Observations on the availability of selected EMS related records. For example, in requesting information about records, observations were made on whether the records were available, understood, and/or used.

Only corroborated information is reported as findings in the document. For example, information based upon a single interview was not, for the purposes of the assessment, considered sufficiently reliable. To be reported as a finding, single interview information had to be supported by documentation or direct observation.

Findings

A set of recommendations was developed for each of the CEMP performance objectives as suggested areas for future improvement. The findings were designed to encourage further NPS review of the applicability of the CEMP in supporting the overall success of the NPS environmental management. system. While the main body of the assessment focuses on NPS , an additional section presents EMS related findings on the relationship between DOI and NPS.

OEPC RELATIONSHIP WITH NPS AND OTHER DOI BUREAUS

The Office of Environmental Policy and Compliance (OEPC), within the Office of Policy, Management and Budget, provides national and regional leadership, bureau coordination, and program evaluation in environmental management for DOI. The operations of this office were evaluated as part of the CEMP study of the NPS. It should be noted, this evaluation focused on OEPC relationships with the NPS. It was not a comprehensive review of OEPC environmental management systems or the office's relationship with other bureaus.

Existing Environmental Management Activities

Management Commitment

OEPC's role is to provide assistance and coordination on environmental policy and program implementation for inter-bureau, inter-agency, and other external activities. OEPC does not have responsibility for management or direct oversight of bureau environmental programs. OEPC develops departmental environmental policies and guidance. These policies are subject to approval by bureaus and offices. Environmental policies that have been promulgated include: Departmental Manual Part 515, Chapters 2 and 3, which address environmental auditing and recycling programs; Part 516, which addresses NEPA compliance; Part 518, Chapters 1 and 2, which address waste management; Part 602, which addresses pre-acquisition site assessment.

With the exception of the central hazmat fund, OEPC has no responsibility for management or review of NPS or other bureau environmental budgets.

Compliance Assurance and Pollution Prevention

A baseline of DOI environmental compliance has not been completed. Regulatory notices and guidance are developed on an as-needed basis by OEPC and are disseminated to NPS and other bureaus in two ways: 1) to Regional Environmental Officers for distribution to NPS and other bureau and office regional contacts; and 2) to bureau and office headquarters for distribution to regions and field units. There is no mechanism to track or assure distribution of this information to the field level once it leaves OEPC.

Criteria for NEPA documentation review at the departmental level have been developed. Internal and external NEPA documentation describing significant impacts are subject to OEPC review. A majority of bureau environmental impact statements are tracked by OEPC.

A departmental system is in place to address emergency response and is coordinated with the NPS and other bureaus and offices.

Enabling Systems

OEPC does not have resources or agency-wide initiatives for training. Environmental training responsibility is predominantly delegated to the bureaus and offices; occasional inter-bureau training may be provided at the headquarters or regional level.

OEPC has a web site and electronic bulletin board. The web site currently provides limited environmental compliance data. The site contains linkages to the Construction Engineering Research Laboratory (CERL) TEAM Guide, Green Seal environmentally preferable product reports, damage assessment training modules, tools and regulations. With the assistance of one of the Bureaus, OEPC conducts periodic nationwide environmental conferences to assist Bureaus in addressing a wide variety of environmental issues. There is no linkage to relevant environmental compliance policies. OEPC is currently benchmarking it's site against those of other civilian federal agencies.

Performance and Accountability

OEPC has no line authority for environmental compliance of the NPS or other bureaus. Office performance measures relate to success in coordinating and facilitating bureau programs and inter-agency partnerships. OEPC staff performance goals are not based on individual bureau performance.

Measurement and Improvement

DOI has developed policy mandating environmental audits of all facilities by September 2002. Transmittal of bureau audit results to OEPC is not required by the policy; however, OEPC has developed an audit summary report. The report format was revised based on comments from the bureaus.

Calls for other environmental data are made by OEPC to complete mandated summary reports (e.g., USTs, CERCLA sites). The completeness and/or timeliness of this data is at the discretion of the bureaus and offices.

Recommended Next Steps

A number of opportunities were identified where OEPC has the opportunity to enhance the environmental performance of individual bureaus and DOI as a whole. These improvements can be made within the existing OEPC mission framework of providing national leadership, bureau coordination, and program evaluation. In particular, enhancements can be taken in five specific areas:

- Policy;
- Guidance;
- Strategic tool development and deployment;
- Information management; and
- Quality assurance.

Policy

OEPC should develop minimum standards for all environmental program areas. These minimums should be clearly identified, and have specific emphasis on departmental applicability. They should not simply restate laws, regulations, and Executive Orders.

Policy developed by OEPC is subject to review and approval by each of the bureaus. This consensus building process often leads to a "watering down" of policy requirements. OEPC should issue interpretive guidance (which is not subject to the same level of bureau approval) to augment and re-strengthen the policy. OEPC should also develop strong strategic plans with bureau-level goals and measurement requirements which are tied to compliance requirements (e.g., EO 12856 pollution prevention goals).

Guidance

Guidance to bureaus is generally useful for any environmental management topic, but is especially important where:

- Consistency is essential (e.g., roll-up reporting of environmental audit findings);
- There are common bureau needs (e.g., affirmative procurement procedures and reporting);
- Bureaus do not have sufficient resources or determination; and

- Timeliness is important.

OEPC should look use these criteria to identify opportunities to develop environmental program guidance that will be most beneficial to the bureaus.

Strategic Tools

Efficiency and economy of scale can be realized by department-level tools benefitting most bureaus. Examples may include model plans, budget models, training curriculum and tools, fact sheets (e.g., new issues, lessons learned), and resource guides.

Information Systems

OEPC should work to become a value-added environmental point of contact for internal and external (e.g., EPA) communications and a preferred resource and information center within the department. The provision of the CERL Team Guide and Green Seal environmentally preferable products reports on the DOI web site are good examples of environmental information OEPC can provide to assist bureaus in maintaining environmental compliance. Other useful information may include regulations, relevant departmental manual chapters, interpretive guidance and strategic tools.

Quality Assurance

OEPC should conduct routine and as-needed program evaluations and audits. These may be CEMP- or NEPA-related, or address other key factors. These evaluations can serve to assess the quality of bureau programs and be used by OEPC for targeting root causes such as resources and commitment. This information can be used in the strategic planning of OEPC programs and/or provide guidance and direction to the Secretary (e.g., budget requirements).

Implementation

OEPC can take several steps to help enhance the departmental environmental management program:

- Seek opportunities to develop an integrated staff with bureaus through details or special assignments;
- Host key leadership-focused intra-departmental initiatives (e.g., the active role OEPC has taken in the development of the federal strategic plan for EO 13101);
- Create Centers of Excellence at selected bureaus to recognize and encourage superior performance (e.g., BLM for military munitions);
- Promote OEPC capabilities and successes internally and externally; and
- demonstrate the economic, efficiency and quality benefits from OEPC involvement.

Organization of the Document

The remainder of this document summarizes the results of the CEMP assessment of the NPS EMS. It is organized according to the five CEMP principles.

PRINCIPAL 1: MANAGEMENT COMMITMENT

Performance Objective 1.1 -- Obtain Management Support

Sub-Objective 1.1.1: Policy Development -- The agency establishes an environmental policy followed by an environmental program that complements its overall mission strategy.

Existing

There is no stand-alone environmental policy for the NPS. The document, *NPS Management Policies*, which is only revised on a ten-year cycle, serves as a Service-wide or Level 1 policy document. However, the need for environmental compliance is only implied in the foreward of the document. In addition, a number of subsections mandate compliance with specific federal laws and regulations, such as:

- Chapter 2 - Park System Planning addresses National Environmental Policy Act (NEPA).
- Chapter 4 - Natural Resource Management mandates compliance with the Clean Water Act and Clean Air Act and associated federal, state and local regulations.
- Chapter 9, Park Facilities addresses compliance with all applicable laws and regulations associated with solid and hazardous waste, hazardous materials management and site restoration.

Special Directives and Staff Directives are considered Level 2 internal working policy. They are prepared and updated as necessary and provide more detail than the *NPS Management Policies*. The Special and Staff Directives are being replaced by Directors Orders as part of an overall revision to the NPS Directives System. Level 2 policy has been issued to address waste management, underground storage tank management, integrated solid waste management, pesticide use and other environmental programs.

Level 3 NPS Guidelines provide guidance on the implementation of Level 1 and Level 2 policy. Some policy is included in theses guidance documents. NPS guidance with environmental compliance aspects include: NPS 12 -- NEPA Compliance Guideline, NPS 50 -- Loss Control Management (hazardous materials management, respiratory protection and hazard communication programs, and others), NPS 77 -- Natural Resources, and NPS 83 -- Public Health (water and wastewater treatment system management).

Under Development and Planned

The entire NPS policy system is being revised. This provides an opportunity to address environmental aspects more directly. There has been a broad call for input from NPS stakeholders on ways of strengthening policy language relative to environmental programs.

Several NPS program offices are in the process of updating or developing new Level 2 policy with stronger environmental language. Both the Concessions and Public Health policies are being revised. The Hazmat policy is also under review and an Oil and Hazardous Materials Spill Response policy has been drafted.

Other efforts may result in environmental policy. For example, the Environmental Leadership program currently under development includes environmental principles, which, if approved, could become policy. In addition, a proposed Natural Resources Initiative (NRI) includes Principal 9 that states “The NPS will comply with all environmental laws and apply the highest standards of environmental stewardship to its operations.” The Environmental Leadership program and other initiatives with environmental aspects have growing key stakeholder involvement. An Environmental Leadership senior stakeholder meeting was held on January 6 and 7, 1999 and included discussions on NPS environmental policy goals.

The NPS plans to share the messages from initiatives such as the Environmental Leadership program and NRI internally by integrating it in management training and other "normal" channels, as well as externally to concessioners and other stakeholders through training, conferences, and public information mechanisms.

Recommended Next Steps

The following are recommended next steps to more fully address Sub-Objective 1.1.1.

- **Develop a comprehensive environmental policy**. To be most effective, this policy should stand-alone and cross program lines. This policy should fully address traditional compliance aspects, but also consider pollution prevention and "beyond compliance" aspects, such as sustainability, which are key to the mission of the NPS. This policy should include and address independent efforts currently underway. It should be developed with wide internal and external participation at all levels to build consensus and assure completeness. The policy should establish goals for key environmental indicators so that performance can be tied to policy requirements.

- **Educate all employees and park users on the content of and management commitment to a robust environmental policy.** NPS should include environmental policy review in staff and stakeholder education (e.g., staff Compass training, concessioner training). In addition, NPS can spread the policy message through periodic management-supported promotions such as conferences, brochures, contract language, training, and web page posted documents.

- **Include specific reference to concessioners in environmental leadership policy.** The NPS is currently developing an "umbrella" policy on environmental leadership. The policy will reinforce the NPS commitment to baseline environmental compliance, pollution prevention, sustainability, and education. The Directors Order on environmental leadership should include a specific reference to concessioner compliance with the policy.

Sub-Objective 1.1.2: System Integration -- The agency integrates the environmental management system throughout its operations, including its funding and staffing requirements, and reaches out to other organizations.

Existing

Several NPS budget processes have been established to account for environmental aspects. The Annual Hazardous Waste Management and Pollution Prevention (HWMPP) team project funding review involves project selection based on four categories:

- Waste reduction and management;

- Fuel storage;

- Contaminated sites; and

- Technical support.

Each category has ranking criteria. NPS planned to integrate the existing system into a Project Management Information System (PMIS) in FY 1999. The annual natural resources program funding allocation process also employs environmental management criteria.

Environmental due diligence reviews occur for property acquisition. The bureau also formed a Contaminants Technical Advisory Group that meets quarterly.

Under Development and Planned

Through the EPA/DOI Compliance Assistance Partnership, NPS offered itself as a pilot subject for a CEMP study to obtain a Service-wide baseline environmental management system assessment and recommendations on ways to improve these systems. Participation in this study may also improve NPS's working relationship with EPA.

The Environmental Leadership program is being developed within the NPS to enhance the bureau's environmental management systems. The program has broad NPS participation. It is intended to link independent initiatives and move the NPS toward Service-wide environmental goals of environmental compliance, pollution prevention and sustainability, and internal and external environmental education. Environmental staff and budget requirements are being addressed as part of Environmental Leadership program development.

Regional environmental support capability is being expanded through the NPS internal audit program. Regional environmental coordinators have been assigned for the program. park-level points of contacts are to be established prior to site visits. Responsibility for environmental management and corrective actions identified during the audits will be specified. The incorporation of environmental audit program data into the budget/funding allocation process is also planned.

Recommended Next Steps

To integrate environmental management more effectively throughout the organization and meet Sub-Objective 1.1.2, the following next steps are recommended:

- **Develop and provide environmental "awareness" training to all levels of management** to foster environmental compliance and sustainability concepts throughout the organization.

- **Broaden the scope of environmental categories and criteria (e.g., waste and water) in the budget process** so that all project funding requests are addressed in one integrated evaluation of environmental aspects and priority.

- **Integrate environmental aspects in the resource allocation and planning process** at the park, region and headquarters level by requiring that environmental performance be specifically addressed in strategic and general management plans.

- **Develop policy that recognizes and endorses support for the Service-wide need for funding and personnel allocated specifically to environmental compliance.**

- **Develop a Concessions Division environmental policy that mandates concessioners comply with "Concessions Environmental Guidelines"** (see Principle 3.2).

- **Modify concessions contracts and facility operating plans to include performance criteria related to the Concessions Environmental Program (e.g. requirements for environmental audits).**

- **Incorporate environmental program needs into Concessions Program budget process.** The NPS Concessions Program should integrate environmental program development/implementation needs into the budget allocation process for the Division. Elements of this budget process could include:

  - Direction of funds from new sources, such as the 20/80% budget process, and
  - Use of partnership/cost sharing to provide integrated NPS staff/concessioner environmental services (e.g. environmental auditing and training).

Performance Objective 1.2 -- Environmental Stewardship and Sustainable Development

The agency strives to facilitate a culture of environmental stewardship and sustainable development.

Existing

Environmental stewardship and sustainability are founding philosophies of the NPS. The *NPS Management Policies*, Level 2 policies, and Level 3 guidelines such as NPS 77-- Natural Resources, address resource stewardship and sustainable design.

The *Guiding Principals of Sustainable Design* were published by NPS and are considered by some to be the quintessential work on sustainable design. These guidelines and other sustainable design tools are on the NPS "Renew" web site. NPS line item budget projects are designed following a sequence recommended in the Draft NPS 70 -- Design Process Guideline: The Built Environment. This guideline uses a "design for the environment" approach that incorporates ecosystem planning, life cycle cost, value analysis, and choosing by advantage methods. Alternative energy programs are promoted through on-going partnerships with the Department of Energy (DOE).

The NPS has an Environmental Quality Division within the Natural Resource Stewardship and Science Directorate that is responsible for managing internal and external NEPA reviews, the NPS integrated pest management program, and internal and external natural resource damage assessment and environmental response. The NPS also reportedly established a site restoration cost recovery program that includes a potentially responsible party search manual and a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) manual.

Draft Environmental Leadership training has been developed. The training is geared toward program and project managers and addresses environmental management, sustainability, and pollution prevention. The Environmental Leadership senior stakeholder summit conducted in January 1999 also had a strong emphasis on sustainability.

Regional and park-level efforts have also occurred. Green procurement training has been conducted (Northeast and National Capital Area). Sustainable Re-Development Addenda have been prepared for selected general management plans (GMPs) (e.g., Grand Canyon National Park).

Under Development and Planned

A Service-wide NRI is being developed and is supported by the Director. The NRI establishes natural resource stewardship goals and programs that include resource planning, environmental stewardship, and education.

The ongoing Environmental Leadership program has a strong emphasis on sustainable practices. The Denver Service Center is planning training telecast via satellite in partnership with academia. The NPS also participated in the DOI environmental conference in April 1999, which had a focus on sustainability and green procurement as well as other environmental topics.

The NPS is continuing its partnerships with DOE to conduct energy audits design and install alternative energy systems. A Memorandum of Understanding (MOU) between the DOE Federal Energy Management Program and NPS for participation in DOE regional contracts was signed in January 1998. A National Renewable Energy Laboratory (NREL) MOU focuses on sustainable design for energy systems. Sustainable transportation system demonstration projects are being conducted or are planned under a Department of Transportation/DOI MOU signed in November 1997.

Regional sustainability programs are also being launched in the Midwest Region (MWR), Northeast Region (NER), and Pacific West Region (PWR). Green team surveys and opportunity assessments are being conducted in the NER and Sustainability Program Opportunity Projects are being conducted in the PWR.

Recommended Next Steps

To more fully and efficiently address Sub-Objective 1.1.2 and to account for existing and planned environmental management responsibilities (e.g., compliance) in Service-wide and regional sustainability initiatives, NPS should implement the following:

- **Ensure communication and coordination between sustainability coordinators and compliance coordinators** (e.g., HAZMAT, Solid Waste, Fuel Storage Tank Coordinators). In this way, compliance realities can be better understood and considered in sustainability project planning and implementation.

- **Merge/coordinate various environmental initiatives and projects to minimize redundancy and provide an integrated approach.** This approach can provide a focus on sustainable solutions, but within the context of a "compliance first" strategy. For example, sustainability assessments could be coordinated with the environmental audit program. Sustainable pollution prevention solutions could be promoted as the best solution for waste management compliance issues during compliance assistance projects.

- **Ensure that sustainability and stewardship initiatives are integrated into the NPS environmental management system**. Build a system that will address all current issues and be sufficiently flexible to address future needs. For example, the environmental management system should integrate pollution prevention projects such as point source air permitting and transportation plans designed to minimize traffic in the park, both which contribute to establishing a program to sustain regional/park air quality.

- **Increase awareness of understanding and dealing with environmental impacts (i.e., NEPA)**. One means to accomplish this is NEPA training for managers and staff. The Environmental Quality Division offered this in the past. Training has not been conducted recently due to budget constraints.

- **Enhance the enforcement capability and posture for actions damaging NPS resources (e.g., illegal dumping)**. The recent enforcement action conducted at Mojave National Park where a large illegal dumping action was successfully prosecuted demonstrates that this activity occurs. It is also a model environmental crimes team approach within the NPS that could be effective at other locations.

PRINCIPLE 2: COMPLIANCE ASSURANCE AND POLLUTION PREVENTION

Performance Objective 2.1 -- Compliance Assurance

The agency institutes support programs to ensure compliance with environmental regulations and encourages setting goals beyond compliance.

Existing

Two headquarters programs have the most involvement in management of environmental compliance programs. The Parks and Operations Directorate is responsible for hazardous materials and waste management, solid waste, water and wastewater treatment, CERCLA, storage tanks and PCB management, energy and water conservation. The Natural Resources Directorate manages the NPS NEPA and pest management programs. There are some cross-directorate environmental management programs. An example is the management of air and water pollution sources in which Park Operations is responsible for park pollution source management, while Natural Resources is responsible for regional air and water quality. Similarly, affirmative procurement issues effect both the Administration Directorate (Contracting and Procurement) and the Parks and Operations Directorate.

Environmental compliance guidance is currently distributed via standard means (i.e., a hard copy is sent to regions for dissemination to parks). Guidance has been promulgated for hazardous waste management, solid waste management, CERCLA compliance, fuel storage tanks, water and wastewater treatment (Public Health Service), NEPA, and pesticide management, affirmative procurement (Contracting Officers Technical Memorandum 93-1) and others. There is no formalized regulatory update process. The NPS relies on information provided by the DOI OEPC and ad hoc sources for information.

The NPS is participating in a EPA/DOI Environmental Compliance Assistance Partnership. Partnership projects include the CEMP study. There are also regional EPA/DOI and NPS partnerships (e.g., Inter-Mountain Region (IMR)/EPA Region 8 Compliance Assistance Projects, OEPC San Francisco/EPA Region 9 Hazardous Waste Management Training).

A draft Environmental Audit program document and 21 draft Envirocheck Sheets have been developed for the NPS audit program. Audit program training was also conducted in October 1998. Regional audit initiatives have also been developed. P2OAs have occurred at 76 locations in the IMR; Compliance Assistance Projects (CAPs) have been conducted at 12 parks in the Midwest Region (MWR) and National Capital regions. Contracted audits have been conducted at five locations in the Southeast Region (SER).

Under Development and Planned

The draft Environmental Leadership implementation strategy documents environmental compliance and beyond compliance sustainable practices as key objectives. Beyond compliance goals are to be integrated into the NPS strategic plan through the Government Performance Results Act (GPRA) process. A number of ongoing projects have been incorporated in the draft Implementation Strategy. Other tasks have been identified that address current deficiencies in the NPS environmental management system.

Twenty-eight Envirofact Sheets are in the final phase of production. They provide background compliance information and self-assessment checklists for waste streams, environmental compliance, and management programs at parks. The Envirofact Sheets were disseminated via the Internet in FY 1999. Additional Envirofact Sheets are planned as needs are identified.

The National audit program is currently under development. Thirty draft Envirocheck Sheets (i.e., environmental audit protocol sections) have been prepared and are undergoing review.

Audits will be conducted by individual regions with oversight and program management by headquarters. The audit program is being designed to meet the following objectives:

- Establish baseline compliance;
- Identify needs for compliance guidance;
- Encourage pollution prevention as a management approach;
- Elevate issues to upper management;
- Encourage self-audit and reporting; and
- Address non-regulated risk.

Following completion of baseline audits, periodic audits of each park-level facility are planned. A system will be developed to track corrective actions identified during the audit program.

The NPS Concessions program is developing new environmental standards and a self-audit/awards program. A regional pilot program in hazard analysis is underway in the IMR. Staff from NPS headquarters and regions have participated in the EPA/Civilian Federal Agency (CFA) Task Groups and Roundtable and intend to participate in the future.

Recommended Next Steps

The following steps are recommended to more fully address Objective 2.1:

- **Establish a reliable regulatory information transfer and updating system** to communicate changing environmental compliance needs to parks.
- **Develop a multi-media compliance workgroup** to ensure that all environmental program areas are addressed and compliance requirements and goals are evaluated comprehensively. For example, ensure that air quality and water quality issues are addressed by involving Natural Resource Air Quality and Water Quality Divisions in program development. This workgroup should be established at an appropriate level to ensure adequate management support.
- **Include an assessment of the risk of non-compliance in the budget assessment and planning process** and strategic planning process at the park, region and Service level.
- **Seek and exploit opportunities to make good use of DOI (OEPC), other bureaus and other agencies** for cost-effective solutions to department-wide challenges. These could include:
  - Training;
  - Policy;
  - Quality assurance - audits;
  - Regulatory updating;
  - Reporting; and
  - Sharing lessons learned.
  - Beyond compliance activities

Performance Objective 2.2 -- Emergency Preparedness

The agency develops and implements a program to address contingency planning and emergency response situations.

Existing

The NPS instituted an Incident Command (IC) system that is used for fire and flood management. The program includes both national and regional incident commanders. Superintendents are provided with IC training through the Parks and Education Directorate fire management program.

Other Service-wide programs include a dam, bridge and road safety program managed through the Park Facility Management Division and a natural resource damage assessment (NRDA) program for oil spill response and assessment managed through the Environmental Quality Division.

Spill response systems at the park level vary widely. Comprehensive emergency response teams are established at some parks (e.g., Padre Island). Over 500 park staff have received hazardous waste operation and emergency response (HAZWOPER) training. Some parks have spill prevention, control, and countermeasures (SPCC) plans, facility response, OSHA emergency response, and/or Resource Conservation and Recovery Act (RCRA) contingency plans. However, a comprehensive needs analysis and park emergency planning compliance assessment has not been completed for the NPS.

Under Development and Planned

SPCC, facility response plans (FRP) and RCRA contingency plan applicability and plan deficiencies for parks will be assessed through the national audit program. Draft Envirocheck Sheets have been prepared for both SPCC and RCRA programs.

A hazard analysis pilot is underway at five parks in the IMR. Plan automated response and communication system software to develop park integrated contingency plans is being develop by the Environmental Quality Division with the assistance of the University of Virginia.

Spill response management has historically been divided between the Park Facility Management Division and Environmental Quality Division. Directors Order #79 on emergency response is being prepared to clarify roles and responsibilities.

Recommended Next Steps

Establish park-level emergency response task forces and procedures to enhance the emergency response and contingency planning process at Park facilities. Procedures should include the periodic review of park emergency response and contingency plans to ensure currency and compliance with regulatory requirements.

Ensure adequate facility hazardous waste training for emergency response and preparedness.

PRINCIPLE 3: ENABLING SYSTEMS

Performance Objective 3.1 -- Training

The agency ensures that personnel are fully trained to carry out the environmental responsibilities of their positions.

Existing

The NPS does not currently have a Service-wide environmental training curriculum. The only consistently offered training courses are HAZWOPER and integrated pest management. Approximately 10 HAZWOPER training courses are offered per year. The Public Health Service currently conducts these courses. The course is a NPS customized program and consists of four hours of HAZCOM training, an eight-hour HAZWOPER refresher training, 24 hours of HAZWOPER training, and two to four hours of pollution prevention training. The Environmental Quality Division offers the integrated pest management training to park and regional integrated pest management coordinators.

Over the last five years, other courses have been offered on a sporadic or one time basis. These have included training on CERCLA, hazardous waste, underground storage tanks, solid waste, and NEPA compliance. Regions have offered additional, unique environmental training (e.g., green procurement, hazardous materials transport, SPCC, etc.). NPS personnel, other bureaus and agencies, NPS contractors, and academic institutions provide this training.

Bureau of Land Management (BLM) environmental compliance training courses have been made available to the NPS. These courses include an introduction to environmental compliance and pollution prevention, emergency response/removal actions and emergency preparedness, environmental site characterization, hazardous materials recognition for field employees, and CERCLA site assessment.

The NPS has conducted several pilot training courses over the last year. A draft Environmental Leadership training for managers was piloted in April 1998. In November 1998, a distance learning pilot was conducted on the NPS Envirofact Sheets through a partnership between the Hazardous Waste Management and Pollution Prevention Team and Indiana University. The NPS has also begun investigations into distance learning opportunities in partnership with the USEPA Region 8 and Front Range Community College in Colorado.

Under Development and Planned

The NPS maintenance training program in cooperation with the Hazardous Waste Management and Pollution Prevention Team, in cooperation with Indiana University is developing a core environmental training curriculum. This process involves the identification of "essential competencies" for all relevant positions in the NPS and the development of a plan on what and how to deliver the required training.

In conjunction with the development of the curriculum, the NPS is continuing to investigate training presentation methods. A distance learning pilot in hazardous waste management is underway. The NPS is also planning to move forward with the Environmental Leadership training first piloted in April 1998. A pilot of the complete training course was held in 1999.

Recommended Next Steps

The following are recommended next steps to more fully address Objective 3.1.

- **Expand environmental training requirements to address training needs beyond "traditional" environmental career paths.** Personnel conducting environmental functions are in a variety of career tracks, particularly at the park level, where staff often have multiple duties. For example, environmental compliance jobs such as hazardous materials management at the park

level may involve the Safety Officer (Rangers), Buildings and Utilities Staff (Maintenance), Fire Management and Aviation personnel, and Contract and Procurement Staff (Administration).

Ë **Develop an integrated training function**. This should begin with a training needs assessment which can reflect various NPS career fields. The integrated training function should address a variety of environmental management programs including:

- Environmental compliance;
- Pollution prevention;
- Sustainable practices;
- Energy;
- NEPA;
- Integrated pest management;
- Natural resources;
- Environmental management systems; and
- Health and safety.

The NPS environmental training program should extend beyond first line workers to senior staff and managers and provide the appropriate type and level of training. For example, HAZWOPER training may not be appropriate for personnel only requiring HAZCOM training or a comprehensive RCRA course may not appropriate for staff at a park that is defined as a conditionally exempt small quantity generator under RCRA.

Ë **Pursue training partnerships where resources are already available or efficiencies can be gained.** Joint training opportunities should be implemented with other DOI offices and bureaus. The EPA should be used as a training resource both at headquarters and the regions. Other government agencies should also be explored such as the Department of Defense (DOD) and DOE.

Ë **Develop a tracking system to verify that training is received and completed**, particularly where there is a regulatory requirement for the training. This program should be developed on a Service-wide basis to ensure consistency.

Ë **Training requirements should be reflected in position descriptions; completion of training should be recognized in employee evaluations**.

Ë **Conduct a training needs assessment for concessioners.** The information from this needs assessment should be considered in the training needs assessment and training implementation plan for the NPS.

Ë **Conduct awareness training for concessioners.** This training should address general environmental stewardship, environmental issues of particular importance to concession operations, and NPS and Concessions Division-specific environmental policy programs and procedures.

Performance Objective 3.2 -- Structural Supports

The agency develops and implements procedures, standards, systems, programs, and objectives that enhance environmental performance and support positive achievements of organizational environmental and mission goals.

Existing

The NPS has established planning and budget processes that can account for environmental impacts and guidance documents which can enhance environmental performance. Some organizational goals have been established.

There is currently no formal process for the review of environmental regulations and the dissemination of updated information to the field. The Hazardous Waste Management and Pollution Prevention Team subscribes to the Environmental Reporter published by the Bureau of National Affairs. The Reporter is reviewed and regulatory updates are disseminated to the field on an ad hoc basis.

A formal NEPA process to evaluate environmental impacts has been developed within the NPS. A NEPA Guideline, NPS 12 is currently used for all NPS proposed actions. The Environmental Quality Division at headquarters manages the NEPA program. Procedures have been developed for internal and external NEPA evaluation, documentation, and review. The NEPA process is addressed in the NPS Management Policies and Level 2 policies.

The new Service-wide PMIS budget prioritization processes can include environmental ranking criteria. A priority ranking process is in place for hazardous waste management and pollution prevention-specific program funding.

Manuals and guidance containing operational procedures related to environmental management have been prepared and updated. Manuals include an Integrated Solid Waste Alternatives Program (ISWAP) Manual (1996), Hazardous Waste Handbook (1994), CERCLA Manual (revised in 1998), Fuel Storage Tank Management Handbook (1996). NPS Guidance include NPS-77, Chapter 2, Integrated Pest Management (revised 1997), NPS-50, Loss Control (OSHA programs) (1991), NPS-83, Public Health (Water and Wastewater Treatment) (1993).

A draft Environmental Leadership implementation plan provides an environmental management system-based three-year strategic plan for the NPS. The plan was developed based on park level, regional, Washington Area Support Office (WASO) and senior NPS management stakeholder input. General mission and goals for Environmental Leadership have been established as part of the planning process. A workgroup consisting of park, regional and WASO representatives from various programs are spearheading the Environmental Leadership effort.

Although general goals have been establish through the Environmental Leadership and strategic planning processes, defined, measurable, environmental program goals for most environmental programs at the national level have not yet been established. The only documented NPS goal is for solid waste reduction and recycling under the ISWAP. The IMR has established a specific set of environmental performance goals through its Goals 2000 program.

Under Development and Planned

Implementation of various aspects of the Environmental Leadership strategic plan is currently underway. These include policy development, development and promulgation of several environmental management tools (e.g., Envirofact Sheets), and others. Full implementation of the plan was planned for 2000.

The NPS is in the process of reviewing its Level I Management Policies and Level 2 policies to reflect Environmental Leadership goals and ensure completeness relative to environmental programs. A Level 2 policy on Environmental Leadership is under development. This policy will be overarching and provide comprehensive standards and procedures for the majority of environmental management programs within the NPS. These will include hazardous materials and waste management, affirmative procurement, fuels management, energy and water efficiency, and others. An environmental audit policy is also planned. This policy may be stand-alone or part of the Environmental Leadership policy.

Several other Level 2 policies and guidance are being revised. These include those for the Public Health Service (NPS water and wastewater treatment), Risk Management (OSHA programs) and NEPA compliance. An updated HAZWOPER Manual and Lands Acquisition Guidance and Forms are currently being developed.

The Environmental Leadership training which is being developed, will provide awareness training in environmental management systems, sustainability, contracted relationships, and other environmental management programs.

Two objectives of Environmental Leadership strategic plan are the linking of action items to GPRA based Service-wide strategic planning goals and the integration of the plan with other NPS initiatives (Natural Resource Initiative, DOE/NPS Energy Partnership, Sustainability Initiatives). The later is already underway, the former is one of the higher priority action items in the Environmental Leadership implementation plan. The encouragement and promotion of Centers of Environmental Excellence is also planned.

Recommended Next Steps

The following are recommended next steps to more fully address Objective 3.2.

- **Clearly and explicitly link environmental compliance and sustainability needs and any results of needs analysis to budget and resource planning and requests.**

- **Ensure that all environmental-related initiatives throughout the organization are integrated** and coordinated to minimize redundancy, share lessons learned, and provide consistency throughout the organization. This includes national initiatives (e.g., Natural Resources Initiative, Energy Initiatives, Cultural Resource Program, Training and Development Program, Ranger Activities) and regional/program initiatives (e.g., regional audit programs, regional sustainability and pollution prevention programs, Denver Service Center and regional design processes).

- **Extend the National Environmental Leadership program to the regional and park level**. Establish regional and park Environmental Leadership strategic plans which will complement the national plan and consider regional/park specific goals and needs.

- **Establish a process to review and revise existing environmental management structural supports** (i.e., procedures, standards, systems, programs, objectives, and goals) to ensure performance and currency. For example, if a new Executive Order is promulgated that establishes new federal agency energy efficiency goals, the bureau should have processes in place to identify these new requirements and change policy, standards and implementation tools to meet these new requirements. The NPS must also be able to react to and change procedures if they are determined to be inefficient or outdated (e.g., technological changes).

- **The Concessions Division should develop NPS "Level 3" guidelines that outline operational requirements for concessioners to comply with federal, state, and local regulations, and DOI and NPS policy (at a minimum).**

Performance Objective 3.3 -- Information Management, Communication & Documentation

The agency develops and implements systems that encourage efficient management of environmentally related information, communication, and documentation.

Existing

The Hazardous Waste Management and Pollution Prevention Team manages an Environmental Information Management System (EIMS) to track their environmental project status. The bureau also maintains a

tracking system for internal and external NEPA actions. The Team maintains a full time consultant on-site at headquarters as an environmental information advisor.

Information management projects considered by the Hazardous Waste Management and Pollution Prevention team are ranked like all other projects based on established environmental criteria. These projects include green products databases, web site design, document conversion to web-compatible files for uploading.

DOI and the bureau have a number of electronic environmental information management/ communications systems. The Park Facility Management Division manages a Green Alert bulletin board on which NPS personnel can post information on environmental compliance, pollution prevention, and sustainable design and practices. The IPM program of the Environmental Quality Division has an on-line pesticide application approval and reporting system. The bureau also maintains a "Renew" web site that provides information on energy and water efficiency and sustainable design. OEPC maintains a web site that provides some policy and guidance and provides links the CERL Team Guide for those with password access. Regional web sites also provide information on sustainability and NEPA program compliance.

In addition to distribution of materials by electronic means, hard copy documents such as manuals and memorandum are distributed as needed. The typical distribution is to regional support office environmental program coordinators who distribute the materials to the field.

Under Development and Planned

The PMIS, which is a Service-wide interactive, web-based system is likely to supercede the existing EIMS. However, it is anticipated that the functionality (e.g., environmental ranking criteria) of the existing system will be maintained.

The CERL Team Guide is planned to be used to update federal regulatory requirements. The NPS is developing a Service-wide audit reporting and tracking system to support the national audit program currently under development.

The Hazardous Waste Management and Pollution Prevention team is planning to offer Envirofact Sheets, guidance documents and other environmental management tools on the web. As part of the Environmental Leadership implementation plan, this web site may be integrated with other NPS environmental management web sites such as the Renew energy and sustainable design site.

Recommended Next Steps

The following next steps are recommended to improve the existing, underway and planned information management, communication and documentation systems at the NPS.

Ë **Develop an integrated environmental information strategy**. Such a strategy should include the following:

- Assessment of critical information needs;
- Inventory of existing information sources;
- Strategy that integrates existing tools (national and regional, internal and external), considers emerging technologies and has an architecture that will provide for expansion; and
- Implementation program to address information gaps by priority.

The NPS should establish or rely upon a periodic organization-wide update (e.g., newsletter) to provide a reliable communication mechanism for routine but important information.

- **Develop and implement guidance on centralized filing and recordkeeping systems at the regional and park level for all environmental records and documents.** Such an approach will help assure compliance with regulatory reporting and recordkeeping requirements and facilitate park/region internal reporting. It can also be helpful in identifying environmental management deficiencies on an ongoing basis and at the time of audits, and will provide a consistent program which environmental program managers and superintendents will understand even if transferred from one location to another.

- **The Concessions Division should develop electronic (Internet) and other systems to effectively transmit environmental program information and data to concessioners (e.g. policy and procedures, environmental audit data).**

PRINCIPLE 4: PERFORMANCE AND ACCOUNTABILITY

Performance Objective 4.1 -- Responsibility, Authority, and Accountability

The agency ensures that personnel are assigned the necessary authority, accountability, and responsibilities to address environmental performance, and that employee input is solicited.

Existing

Park superintendents and regional directors maintain line responsibility for park and regional activities, respectively.

Regional environmental program coordinators have been identified in each region. These coordinators address Hazmat, CERCLA, underground storage tanks, and solid waste programs. Staff range from a single coordinator in a region, to coordinators for each of the programs. NEPA environmental compliance coordinators are also present in each region. These staff have no line authority. Their role is primarily advisory; they also assist in the annual environmental budget prioritization process.

Regional environmental audit coordinators have been designated to conduct the NPS internal audit program in their regions. This is not a new position, but an additional duty for the existing regional environmental program coordinators.

Park level environmental coordinators have been established in less than 15 percent of the parks. Environmental program management responsibility at the park resides with the superintendent. Maintenance staff, the park safety officer, or others conduct day-to-day operations, often as a collateral duty.

Under Development and Planned

The NER is developing an accountability management system for its park superintendents. The system includes a best practice measurement criteria on Environmental Leadership which states that the park must, "meet or exceeds all environmental laws, and fosters sustainability in all aspects of park operations."

Under the Service-wide environmental audit program, NPS plans to develop park-level audit points of contact. These individuals may be responsible for coordinating the audit and follow-up actions. A Service-wide environmental coordinator position has also been proposed. This coordinator would help implement the NPS Environmental Leadership strategy currently under development. The coordinator would be responsible for overseeing multi-directorate environmental management activities including some with regulatory compliance aspects (e.g., hazardous waste management, affirmative procurement). Direct line responsibility for compliance would still reside with the Director, Regional Directors, and Superintendents.

The Environmental Leadership training which was piloted in April 1998 provides awareness of management responsibility for environmental compliance programs.

Recommended Next Steps

The following next steps are recommended to more fully address Objective 4.1.

- **Assign responsibility and authority to manage environmental programs and ensure environmental compliance at each park**. These individuals should be responsible for managing environmental information systems and assuring environmental training and facility management requirements are met at the park level. They should be responsible for all overseeing all aspects of environmental management so that environmental compliance can be addressed through an integrated approach. They should be answerable to the superintendent on park environmental performance. The time commitment for this position should be commensurate with the

complexity of the park and associated environmental programs/issues. The position may be accomplished as one of several assigned duties at a smaller park. At a larger park, the duties may be full-time.

- **Establish environmental coordinators in each region**. These individuals would serve as a single environmental management point of contact for oversight and coordination of regional environmental programs and a technical support clearinghouse to the parks. Responsibilities would include environmental information dissemination, coordinated reporting and budget requests, and integration of tasks with multi-program implications (e.g., green procurement that involves facility management (requisition) and administration (contracting and procurement). Efforts of individual regional program coordinators would not necessarily be eliminated, but could be facilitated and coordinated. The coordinator would be accountable for ensuring parks and headquarters have the information necessary to be environmentally compliant.

- **Establish a policy on environmental accountability and include this in the Service-wide environmental policy (see Objective 1.1)**. This policy could serve to standardize expectations across the bureau. The policy should establish environmental compliance as a minimum requirement for parks, not as a best management practice.

- **Provide a Service-wide environmental coordinator with the authority to resolve conflicting spheres of authority and designate line responsibility where not established** (e.g., emergency response, water and air pollution control). This position should not be expected to have full responsibility for overall bureau environmental performance.

Performance Objective 4.2 -- Performance Standards

The agency ensures that employee performance standards, efficiency ratings, or other accountability measures, are clearly defined to include environmental issues as appropriate, and that exceptional performance is recognized and rewarded.

Existing

The DOI and the NPS have award programs for exceptional environmental achievement. DOI and NPS environmental achievement awards may be given to specific individuals, project teams, or external stakeholders (organizations and contractors). DOI and NPS also established awards for natural resource stewardship (Departmental Conservation Award and Directors Award for Natural Resource Management).

Environmental criteria have been incorporated into performance standards for most regional environmental program coordinators and for a number of NPS headquarters staff (6 to 8 full-time equivalents). These individuals reside primarily in the Hazardous Waste Management and Pollution Prevention Team and Environmental Quality Division. The performance criteria for these personnel are for duties in an advisory capacity, which are not based on park/region/bureau performance.

Environmental performance is infrequently used as a performance measure for park staff. Only a small number of park have staff accountable for environmental programs (safety officers or environmental protection specialists).

Under Development and Planned

The development of standardized Environmental Leadership language is planned for position descriptions and performance standards as part of the Service-wide Environmental Leadership program.

Incentive programs (monetary rewards and publicity) are planned to promote Centers of Environmental Excellence in the NPS. It is anticipated that monetary rewards will help offset some of the cost associated with

providing assistance outside standard job requirements. The existing NPS environmental awards program is planned to be expanded to include all career fields and programs. Monetary awards and protocols for regional and park Environmental Leadership rewards are planned.

Recommended Next Steps

The following next steps are recommended to enhance the performance standards and reward programs at the NPS:

- **Measure personnel performance in light of the environmental responsibilities that have been assigned**.

- **Develop organizational environmental compliance goals.** Use this information to develop and customize regional and park level goals.

- **Ensure that park-level personnel with environmental management and/or compliance responsibilities have those responsibilities included in their performance standards.** Link individual environmental compliance and management performance standards with organizational goals. Also ensure that personnel environmental performance goals are linked specifically to compliance as well as other sustainable practice measures.

- **Ensure that performance criteria are formally incorporated into the managerial and employee performance evaluation process.** Performance goals and standards are not effective unless they are instituted. Make sure that environmental criteria are adequately weighted based on the level of accountability and responsibility. Provide means to penalize poor performance as well as reward good performance.

- **Institutionalize environmental compliance into the NPS** by fostering the development of environmental compliance as a professional and valued career path in the NPS. In addition, make environmental management experience a required Knowledge Skills and Abilities (KSA) for NPS Managers. This will 1) institutionalize an understanding of environmental management importance and issues in senior management (having experienced it first-hand) and 2) generate a pool of professionals to do the environmental management work by creating the market.

- **Promote the DOI and NPS environmental achievement awards** so that they become valued rewards within the department/bureau and also with other Agencies. As a bureau that has a mission responsibility of environmental stewardship, an environmental achievement award should be highly valued. Recognition by the Director and public promotion of the program and recipients should be considered as well as monetary compensation.

- **Develop an environmental recognition program for concessioners that have demonstrated consistent environmental compliance and implemented "beyond compliance," pollution prevention, and sustainable operations.**

PRINCIPLE 5: MEASUREMENT AND IMPROVEMENT

Performance Objective 5.1 -- Evaluate Performance

Sub-Objective 5.1.1: Gather and Analyze Data -- The agency institutes a systematic program to periodically obtain information on environmental operations and evaluate environmental performance against legal requirements and stated objectives, and develops procedures to process the resulting information.

Existing

For the past few years, selected NPS regions have developed and implemented systems to collect environmental performance data. These have included:

- Environmental audits in the SER where a contractor has completed five audits to date.
- CAPs in the MWR, where 14 of 56 park units have been addressed and in the NER, where 3 of 96 park units have been addressed. CAPs are traditional environmental compliance audits with an emphasis on pollution prevention as a preferred approach for follow-up actions. The MWR also includes safety and health issues in the CAP scope.
- Pollution prevention opportunity assessments (P2OAs) conducted in the IMR. Since 1995, 79 of 81 park units have been addressed.
- RCRA Subtitle C compliance audits completed by the Alaska Department of Environmental Conservation. These audits are funded by EPA through the EPA/DOI partnership. Of the 13 planned, two have been completed.

In 1998 the NPS initiated a national environmental auditing program in response to DOI Departmental Manual 515, Chapter 2. Initial steps taken to establish the new program included assignment of a national program manager and regional program managers. A national program orientation and planning meeting was held (10/98) with all regions participating. Substantial regional input was incorporated into the national program.

The US Public Health Service (PHS) conducts sanitation orientated evaluations of park-units independent of the audit program. These address water and wastewater treatment systems and food services.

Under Development and Planned

The NPS plans to strengthen the national auditing program to ensure consistency in evaluation, follow-up, and information management, including reporting. To do this, the following are expected:

- Development and dissemination, internally and externally, of an audit program guide that will document key aspects of the national program, including expectations for regional program implementation.
- Development and implementation of an auditor training program. Currently envisioned as week of hands-on auditing instruction and a periodic refresher course.
- Development and dissemination of NPS audit tools, including: compliance-focused checklists emphasizing pollution prevention and sustainable practices, NPS functional summaries, reporting formats, and compliance assistance tools such as fact sheets. In the initiation phase, the national program is expected to provide regional program staff with these tools. The tools will specify minimum national program requirements. Regional audit program staff will be allowed to customize the tools to address unique regional needs or priorities, as long as national program needs are met.

- Development and deployment of an audit information management and reporting system. Data on audit findings and corrective action status will be maintained in a regional/national database to facilitate efficient periodic and ad-hoc analyses and reporting. The database is expected to be used to evaluate environmental performance and identify areas requiring additional attention.

- Development and implementation of a NPS audit protocol that is unique to NPS facilities and operations. The protocol will be designed for an internal audit function and wide-ranging staff experience and expertise.

- Development of audit criteria for evaluating management support for environmental programs at the park-unit level.

- Development and implementation of an audit data utilization plan. Audit data will be used in management-level decision-making on topics including: project funding, training, policy, staff performance evaluations, and environmental management program planning.

The NER and the PWR plan to develop supplemental audit criteria. In the regard, the NER is developing "green" audit criteria and the PWR is developing "sustainability" audit criteria. These criteria may be addressed during regional audits or by a separate evaluation process.

Recommended Next Steps

The following are recommended next steps to more fully address Sub-Objective 5.1.1.

- **Develop and implement a quality assurance (QA) function for the audit program**. At a minimum, the QA function should be designed to ensure national consistency in auditing and evaluate the effectiveness of the audit program. Suggested quality indicators include: (1) number and severity of audit findings; (2) number and timeliness of corrective actions; and (3) quantities of pollution prevented. Quality indicators should be linked to audit program performance objectives.

- **Ensure that root cause analysis is included in park-level audits**. Root cause issues should be addressed as both audit findings and as the basis of corrective actions. Root cause analysis should be linked to EMS issues already planned to be addressed in audit criteria and account for portions of the CEMP relevant to park-units.

- **Ensure that all audit functions remain independent and objective**. To be independent, auditors must be organizationally separate from the facilities and operations audited. To be objective, auditors must not have an actual or perceived conflict of interest; must not suffer negative consequences or enjoy rewards resulting from audits; and must not have a general bias that affects their work. To do this, NPS may find it necessary to implement organizational changes, such as creating an independent audit group.

- **Ensure that audit data and information is widely used in NPS facility and organization management**. Audit information should be heavily weighted and integrated into project planning, budgeting, and performance evaluation decisions. Audit information should routinely be considered by senior management as a reliable indicator of environmental performance at the park level and higher.

- **Ensure that facility-level concession operations are included in the service-wide environmental auditing program currently being implemented and that environmental performance results should be tied to contract evaluation.**

Sub-Objective: 5.1.2: Institute Benchmarking -- The agency institutes a formal program to compare its environmental operations with other organizations and management standards, where appropriate.

Existing

Formal and documented benchmarking activity comparing the NPS environmental organization against others and standards has not occurred. To a large extent, NPS environmental staff consider their organization and activities unique, and therefore incomparable.

During the interview portion of this review, various NPS staff indicated that they were leaders in environmental management simply because, "they were the Park Service." Thus, there appears to be a perception that NPS environmental management is a de facto standard for other organizations, and therefore it is not necessary to benchmark against other organizations.

A few NPS staff expressed some interest in understanding how their EMS and compliance record compared with other civilian federal agencies; however, evidence of a widespread NPS commitment to a comprehensive inter-organizational understanding was absent. Such an absence seemed incongruous with the recently launched Environmental Leadership program. However, "Leadership" in this case, seems to refer to the development of leadership internal to the NPS, not of the NPS compared to other organizations. This approach overlooks the potential benefit of learning from others.

Informal benchmarking activities have included:

- Occasional NPS staff participation in EPA Regional and headquarters roundtable discussions;
- Staff participation in the DOI environmental and energy task groups;
- Staff participation in internal (NPS and DOI) environmental meetings as presenters or attendees; and
- Staff participation in external interest groups and professional associations, especially related to sustainability.

It is entirely possible that NPS is an EMS leader in some areas, however, benchmark data to demonstrate such leadership was not available.

Under Development and Planned

Formal EMS benchmarking activities were neither under development nor planned.

Recommended Next Steps

Benchmarking offers an attractive path to NPS EMS performance improvement through adoption of practices already proven to be effective by other organizations. To do this the NPS should take the following steps:

- **Identify specific management areas most likely to benefit from benchmarking**. These include key EMS elements defined by the CEMP (e.g., auditing, training, and others) and key NPS functional or organizational characteristics (e.g., civilian federal agency, natural or cultural resource management, or eco-tourism). These may be public or private.
- **Participate in or conduct periodic documented benchmark studies.** Use the resulting information to advance development of a refined EMS.

- **Explore a formal EMS protegee relationship with a more advanced organization in each of the targeted areas identified in the previous step**. One organization is not likely to be a perfect mentor in all relevant areas so several may be necessary.

- **Maintain a constant level of benchmark activity with other DOI bureaus and offices**. Given many similarities among these organizations, the participants (NPS and other DOI units) should reap significant short-term benefits. This activity will likely result in a more cohesive and cost-effective DOI-wide EMS.

- **Explore the possibility of mentoring another organization**. By serving as a mentor, the NPS should be motivated to maintain a more advanced EMS. The mentored organization may be public or private. A regional or state park organization may be a good candidate.

- **Support and encourage active staff participation in relevant professional organizations and conferences**. This should be considered an essential activity for key staff career advancement.

Performance Objective 5.2 -- Continuous Improvement

The agency implements an approach toward continuous improvement that includes preventive and corrective actions as well as searching out new opportunities for programmatic improvements.

Existing

Suggestions for environmental management improvement within NPS are generally encouraged. Some specific mechanisms include:

- Annual regional NPS environmental coordinators meetings. At past meetings a list of action items for improvement was developed and included in staff objectives.

- The Green Alert BBS is an internal electronic communication system to share information on environmental experiences. The BBS also has been used to solicit input on environmental issues and to post notices on issues of broad interest.

- The MWR newsletter “CAP Tion” focuses on sharing information on audits (i.e., CAPs) lessons learned, compliance issues, and pollution prevention.

- Informal networks of focused interest groups. Some examples include the sustainability task group, and groups on solid waste management. Additionally, when groups assemble for regional training, (e.g., HAZWOPER) there is often informal discussion about ideas for environmental program improvement.

- The PWR assembles a meeting of zone coordinators annually where EMS issues are raised.

- Environmental projects are considered and discussed at annual budget meetings. These typically focus on facility (e.g., building) improvements.

It is clear that NPS staff eagerly seek information on EMS improvements in multiple ways; however, operating procedures for environmental management are evaluated by NPS regions and headquarters on an as-needed, rather than periodic, basis. In addition, “sustainability champions” actively seek lessons learned from other agencies, the commercial sector, and international organizations. In general, the onus for continuous improvement efforts appears to lie with committed individuals. An organization-wide continuous improvement mechanism addressing the NPS EMS was not apparent.

Under Development and Planned

- The environmental audit program is expected to be used extensively to identify opportunities for improvement.
- The audit tools "EnviroCheck Sheets" will provide information on lessons learned to educate both auditors and staff at audited entities during site visits.
- Regional based audit programs will allow internal comparisons and sharing of best management practices.
- Root-cause analysis will be included in audit findings to identify underlying needs which, if addressed, will prevent future occurrences.
- Audit data will be extrapolated to identify national or regional needs so they can be addressed earlier.
- The Draft Environmental Leadership program training is expected to include lessons learned in key environmental management system areas. Examples include procurement, training, response, and waste management.

Recommended Next Steps

The following steps are recommended to the NPS to establish and maintain a continuous improvement process.

- **Seek ways to integrate compliance issues into other environmental or green initiatives**. All related initiatives must acknowledge the importance of regulatory compliance.
- **Conduct periodic review of operating procedures**. Most aspects of NPS operations are addressable by an EMS. Consequently, all NPS operational procedures should be reviewed periodically for current EMS issues. This includes, for example, internal operations, concessioner and other contracted relationships, and visitor programs. Ensure that identified improvements are incorporated into the next planning cycle.
- **Formalize an organization-wide EMS improvement suggestion system.** The system should be open to staff, concessioners, visitors or others. Ensure that suggestions are considered by management with sufficient knowledge of EMS objectives and with authority to implement. Consider implementing a reward system for “best” suggestions.
- **Employ results of environmental audit program and related root cause analyses to identify opportunities for EMS improvement** (not just compliance) and periodically assess the effectiveness of corrective actions.
- **Establish partnerships with "Best in Class" organizations** to jump start ideas for EMS improvement. These leading organizations can be identified from benchmarking activities. See related recommendations in 5.1.2 on mentor and protégée relationships.

MATRIX OF CEMP FINDINGS AND RECOMMENDATIONS

Principle 1: *Management Commitment*
Performance Objective: *1.1 Obtain Management Support*
Sub-Objective: *1.1.1 Policy Development - The agency establishes an environmental policy followed by an environmental program that complements its overall mission strategy.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Current policy (1988) addresses environmental aspects (e.g. recycling, waste management) as part of overall Management Policies. Compliance addressed in : • CH 2: NEPA • CH 4: Air and Water • CH 9: Water, Wastewater, Hazmat, Toxic Waste, and Solid Waste. **Overall "compliance" is implicit.** **2. Special Directives and Staff Directives (considered internal working policy) address waste management, USTs, ISWAPS, pesticide use, and other environmental programs.**	*Entire policy system is under revision at this time.* **1. Existing Management Policies are under review (~10 year cycle), providing opportunities to address environmental aspects more directly. Broad call for involvement.** **2. Various efforts addressing environmental policy:** • Proposed EL initiative includes environmental principles which, if approved, could become policy. • Proposed NR initiative addresses environmental compliance in Principle No. 9. "The NPS will comply with all environmental laws and apply the highest standards of environmental stewardship to its operations." *(EL , NR, and other initiatives with environmental aspects have growing key stakeholder involvement.)* • Concessions Operations is revising environmental policy applicable to contracted services. • Hazmat policy collection under review.	**1. Share results of initiatives (e.g. EL and NR) internally and externally (e.g. concessions) through management training (e.g. EL) and "normal" channels.** **2. Obtain additional input on NPS policy goals through EL initiative senior stakeholder meeting.**	**1. Develop a comprehensive environmental policy. In doing this:** • Account for: (1) traditional (e.g. compliance); (2) planned (e.g. sustainability); and (3) independent efforts underway. • Prepare draft and final policy with wide internal and external participation. • Use policy development as a consensus building exercise for key stakeholders at all levels. • Set goals for key environmental indicators. **2. Include environmental policy in staff and stakeholder education (e.g Compass I, II). Make sure message gets out through periodic and management supported promotion (e.g. brochure, contract language, awareness training, web page, posted document).** **3. Include specific reference to concessioners in environmental**

Principle 1: *Management Commitment*
Performance Objective: *1.1 Obtain Management Support*
Sub-Objective: *1.1.2 System Integration - The agency integrates the environmental management system throughout its operations, including its funding and staffing requirements, and reaches out to other organizations.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Annual HWMPP team project review funding occurs with selection based on relevance to four categories: Waste Reduction and Management; Fuel Storage; Contaminated Sites; and Technical Support. Each category has ranking criteria; system to be integrated into a Project Management Information System (PMIS). **2. Environmental due diligence reviews occur with property transfer.** **3. Annual report to DOI on project status and resources for site restoration. Included in DOI FY Accountability Report.** **4. Concessions Operations has an environmental coordinator on staff.** **NPS Comments/Additions** **1. Annual natural resources funding allocation process.** **2. Contaminants Technical Advisory Group quarterly meetings.**	**1. Regional support capability is being made more broad (e.g. multimedia) through internal audit program.**	**1. Through the proposed environmental audit program:** • A park-level POC is to be established in advance of the site visit; and • Responsibility for environmental management and specific corrective actions will be specified. **2. Incorporate environmental audit program data into budget/funding decisions.**	**1. Develop and provide "awareness" level training to all levels of management (different than environmental training in 3.1).** **2. Broaden scope of environmental criteria (e.g. waste and water) to review all project funding requests in one integrated environmental aspects evaluation.** **3. Acknowledge Service-wide need for funding and personnel allocated specifically to environmental compliance.** **4. Develop a Concessions Division environmental policy that mandates concessioners comply with "Concessions Environmental Guidelines"** (see Principle 3.2). **5. Modify concessions contracts and facility operating plans to include performance criteria.** **6. Incorporate environmental program needs into Concessions Program budget process.**

Principle 1: *Management Commitment*
Performance Objective: *1.2 Environmental Stewardship and Sustainable Development - The agency strives to facilitate a culture of environmental stewardship and sustainable development.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Stewardship and sustainability are founding philosophies of the NPS. **2. Sustainable Design Guidelines and web site.** **3. A few regions (e.g. NER, NCR) offer training in green procurement and sustainable design.** **4. Sustainable Re-Development Addendum's to selected GMPs (e.g. GCNP).** **5. Management Policies and internal direction (e.g. Natural Resources, Concessions Operations) include sustainable design.** **6. Draft Environmental Leadership Towards Sustainability training.** **7. Design for Environment concepts incorporated into building design.** **8. NPS experts participate in external projects (Easter Island, Australia).** **9. NPS cost recovery program (PRP search manual, CERCLA manual).**	**1. Training telecast via satellite on sustainability in partnership with academia (Denver Service Center).** **2. Annual DOI environmental meeting participation with focus on sustainability (and other environmental topics).** **3. DOE-sponsored sustainability initiative with DOI-focused on transportation** **4. NR initiative.** **5. NER/PWR sustainability initiatives.**	**1. Assistant Secretary directed EL initiative focused on sustainability.** **2. National Renewable Energy Laboratory (NREL) Memo of Understanding focused on sustainability.**	**1. Account for existing and planned environmental management responsibility (e.g. compliance) in sustainability initiatives.** • Link sustainability coordinators with compliance coordinators to facilitate harmony. • Merge and coordinate various environmental initiatives (e.g. DOI, DOE-NREL, EPA, NPS) **1. Ensure integration of sustainability and stewardship initiatives in NPS environmental management system. Build a system that will address all current issues and be sufficiently flexible to address future needs.** **2. Link and increase awareness of understanding and dealing with environmental impacts (e.g. NEPA).** **3. Enhance enforcement capability (i.e., additional resources) and posture for actions damaging NPS resources (e.g., illegal dumping).**

Principle 2: **Compliance Assurance and Pollution Prevention**
Performance Objective: *2.1 Compliance Assurance - The agency institutes support programs to ensure compliance with environmental regulations and encourages setting goals beyond compliance.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Compliance guidance distributed via standard means for: hazwaste, solid waste, CERCLA, tanks, water and wastewater treatment, NEPA, pesticide management. **2. Participate in EPA/DOI partnership.** **3. Other regional (e.g. IMR) EPA/DOI partnerships exist; EMR's being implemented at several parks.** **4. Rely on DOI/OEPC and ad-hoc sources for regulatory updating.** **5. P2/sustainability is a preferred enviromental management approach.** **6. Two HQ groups focused on compliance: park operations and education - hazmat, hazwaste; natural resources - NEPA, air, water, pesticides.** **7. Regional Initiatives: P2OAs in IMR (76); Compliance Assistance Projects (CAPs) in the MWR and NER (12); and contracted audits in the SER(5).** **8. Draft Envirocheck Sheets and training for 21 audit criteria areas.**	**1. Twenty nine EnviroFacts on waste streams, compliance, and environmental management programs for parks; to be disseminated on the Internet.** **2. National Environmental Audit Program:** • Baseline compliance; • Identify needs for compliance guidance; • Encourage P2 as an approach; • Elevate issues to upper management; • Encourage self audit and reporting; and • Addresses non-regulated risks. **1. Participate in EPA/CFA Task Group.** **2. Regional pilot program in hazard analysis (IMR).**	**1. Periodic audits of each park-level facility.** **2. Track corrective actions via new information system (Environmental Audit Program).** **3. Establish standard records management system.** **4. Establish "beyond compliance" goals and assure completion.** **5. Additional EnviroFacts and Envirocheck Sheets.** **6. Concessionaire self-audit program.**	**1. Establish a reliable regulatory updating system to communicate changing needs to parks.** **2. Develop multimedia compliance workgroup to ensure all environmental program areas are addressed and program environmental compliance requirements and program and goals can be evaluated comprehensively.** **3. Include compliance liability risk assessment as a park-level management decision tool.** **4. Seek opportunities with DOI (OEPC) for cost-effective solutions to Department-wide challenges.** • Lessons learned. • Cost sharing solutions benefiting other bureaus and offices. For example: * training * policy * QA - audits * regulatory updating * reporting

Principle 2: **Compliance Assurance and Pollution Prevention**
Performance Objective: *2.2 Emergency Preparedness - The agency develops and implements a program to address contingency planning and emergency response situations.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Regulatory programs include: • SPCC Plans • Facility Response Plans **1. Dam, Bridge, and Road Safety program** **2. NRDA component (e.g. oil spill)** **3. Incident Command (IC) system; national and regional incident commanders; superintendent IC training via Parks and Education Fire Management Program** **4. Preventive Maintenance and Rehabilitation programs** **5. >500 HAZWOPER trained staff nationally.** **6. Fully established emergency response teams at some parks (e.g. Padre Island).**	**1. Hazard Analysis Pilot at five parks in IMR.** **2. Plan Automated Response and Communications System (PARCS) software to develop integrated contingency plans.** **3. Directors Order #79 on emergency response clarifies roles and responsibilities.**	**1. SPCC FRP and RCRA contingency requirements for parks to be screened in NPS environmental audit program.**	**1. Establish park-level ER task forces and procedure for periodic park-level emergency planning task force review.** **2. Identify non-regulated, but unacceptable, risk areas (e.g., known PCB contamination below action levels, non-NPS transport incidents on NPS property) and include in preparedness programs.** **3. Seek advanced prevention programs for remote or highly sensitive areas.** **4. Implement Integrated Medical Monitoring program (e.g. RPP gaps).** **5. Provide awareness to parks on emergency response team support requirements (training, H&S Plan, equipment, etc.).** **6. Confirm programs for:** • EAPs (OSHA) • RCRA Contingency Plans (EPA) • "One" Plan Utilization **7. Expand superintendent IC training beyond parks by including fire management requirements.**

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Principle 2: **Compliance Assurance and Pollution Prevention**
Performance Objective: *2.3 Pollution Prevention and Resource Conservation - The agency develops a program to address pollution prevention and resource conservation issues.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. National evaluation of recycling in NPS conducted in 1993. Waste stream analysis conducted in 10 parks in 1995. 2. National Integrated SW Management program established: policy, guidance, training; waste reduction/recycling goals. 3. Most parks have established SW recycling programs; feasibility studies conducted for composting at larger parks. 4. P2 is a preferred management approach. 5. P2 assessments in the IMR (76); sustainability assessments in regions (e.g. PWR). 6. LCC and material reuse is promoted through NPS Sustainable Design Guidelines. Some regional sustainability guidelines (MWR, NER). 7. Energy conservation projects/audits completed through NPS/FEMP and university (JMU) partnerships. 8. Green product cost differential underwriting program through HQ.	1. Green product selection database pilot in IM region. 2. Green procurement, waste reduction, recycling EnviroFacts. 3. Full scale alternative energy projects (PV, geothermal) via NPS/FEMP partnership. 4. Concessionaire polices being developed which encourage waste reduction and green procurement. 5. Environmental Leadership training includes modules on waste management with P2 focus and contracted relationships with focus on EPP principals. 6. Chemical substitution fact sheets (IM region).	1. Green procurement pilot for concessionaire operations at Yellowstone. 2. Green procurement, water conservation, energy conservation, and solid waste management screening during environmental auditing. P2 opportunities to be addressed in audits. 3. NPS/University/FEMP partnership energy audits (6+ parks). 4. Standard contract language encouraging green procurement. **NPS Comments/Additions** 1. Employ P2 strategies as a means of reducing potential compliance liabilities (e.g., toxics use reduction/ elimination)	1. Update waste stream analyses for NPS to determine current recycling/reuse opportunities and to track ISWAP success.

Principle 2: **Compliance Assurance and Pollution Prevention (Continued)**
Performance Objective: *2.3 Pollution Prevention and Resource Conservation - The agency develops a program to address pollution prevention and resource conservation issues.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
NPS Additions/Comments **1. Developed SOP for solid waste stream characterization.**		**1. Implement pollution prevention and waste reduction programs at parks based on environmental audit program recommendations.** **2. Integrate EPP purchasing into NPS procurement procedures (national program and in parks).** **3. Conduct P2 opportunity assessments (PPOA) in all NPS regions or include PPOA in audit program protocol.** **4. Develop and implement Service-wide green procurement programs.**	

Principle 3: **Enabling Systems**
Performance Objective: *3.1 Training - The agency ensures that personnel are fully trained to carry out the environmental responsibilities of their positions.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Environmental awareness training has occurred sporadically on: USTs, hazmat, and solid waste management; and periodically (10x+/yr) for HAZWOPER (PHS). **2. Customized HAZWOPER training available (~10 per yr.) to cover:** • HAZCOM (4 hr) • HAZWOPER Refresher (8 hr) • HAZWOPER (24 hr) • P2 (2-4 hr) **1. BLM environmental compliance training program is available to NPS.** **2. Distance learning pilot (via IU) on EnviroFacts occurred 11/98.** **3. Draft environmental leadership training piloted (4/98).** **4. Courses in solid waste, CERCLA, hazwaste and fuel storage tanks, and NEPA offered over last five years.** **5. Annual pesticide management training.** **6. Regions have additional unique**	**1. Distance learning program pilot in hazardous waste management.** **2. Environmental Leadership Towards Sustainability training pilot for management.**	**1. Explore effectiveness of distance learning for environmental requirements.** **2. Environmental training core curriculum analysis.**	**1. Update training needs assessment by NPS career path and environmental management program; address full dissemination of training beyond first line workers.** **2. Implement joint training opportunities with other DOI bureaus and offices.** **3. Pursue EPA as a training resource (regions/HQ).** **4. Pursue other government training source opportunities (e.g. DOD/COE).** **5. Form an integrated training function addressing:** • Health and Safety • Natural Resources • Energy • Sustainability • Environmental Compliance and Beyond • P2 • EMS **6. Develop means of verifying that**

<u>Principle 3:</u> Enabling Systems (Continued)
<u>Performance Objective:</u> *3.1 Training - The agency ensures that personnel are fully trained to carry out the environmental responsibilities of their positions.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
			7. Conduct a training needs assessment for concessioners. **8. Conduct awareness training for concessioners.**

Principle 3: **Enabling Systems**
Performance Objective: *3.2 Structural Supports - The agency develops and implements procedures, standards, systems, programs, and objectives that enhance environmental performance and support positive achievements of organizational environmental and mission goals.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Internal and External NEPA program through EQD. Guidelines established. 2. New NPS-wide PMIS budget prioritization processes can include environmental ranking criteria. A priority ranking process is in place for HWMPP specific program funding. 3. Manuals and guidance containing operational procedures have been prepared or updated: (e.g. Solid Waste (ISWAP) ('96), Hazwaste Handbook ('94); CERCLA Manual (rev. '98); Tank Manual ('96); Pesticides ('97); Loss Control (OSHA programs) ('91); Public Health ('93)). 4. Draft EL strategy provides EMS-based plan for NPS. 1,2,3-yr plans and estimated funds. Developed based on stakeholder input. Active ELI workgroup.	1. Level I and II policy review for environmental programs completeness and to reflect ELI goals. Part of ongoing Directives Management Program revisions and 10-yr Level I Management Policies review. 2. Revised PHS (water and wastewater treatment), risk management, and NEPA guidelines. 3. Updated HAZWOPER training manual. 4. ELI training which will provide awareness training in EMS, sustainability, contracted relationships, and others. 5. Natural Resources Initiative establishes goal for environmental stewardship through environmental compliance. 6. Revised lands acquisition guidance and forms.	1. Integrate GPRA and EL to establish measurable goals tied to NPS strategic plan. 2. Implement EL strategic plan. 3. Policy Office review of policies to address new Directive Management System requirements (e.g. policy in level I and II, implementation guidance in Level III). 4. EL/NR integration between DOE/NPS. 5. Encourage development of and promote existing or new Centers of Environmental Excellence.	1. Integrate all environmental related initiatives throughout organization (e.g. ELI, NRI, energy, risk management, and sustainability). 2. Develop Park Strategic Environmental Management Plans. 3. Establish internal management review program and conduct periodic evaluation (e.g. annual) to ensure currency. 4. The Concessions Division should develop "Level 3" guidelines that outline operational requirements for concessioners to comply with federal, state, and local regulations, and DOI and NPS policy (at a minimum).

Principle 3: **Enabling Systems**
Performance Objective: *3.3 Information Management, Communication, Documentation - The agency develops and implements systems that encourage efficient management of environmentally-related information, communication, and documentation.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. HWPPT manages an Environmental Information Management System (MS/Access) to track their environmental project status. Parallels FEDPLAN. **2. NEPA tracking database.** **3. Green Alert bulletin board system.** **4. Sustainable design web site.** **5. Regional web sites provide information on sustainability and NEPA.** **6. Resident FTC environmental information advisor (HWPPT).** **7. Information management projects are ranked for implementation as are all other projects – based on environmental criteria (HWPPT) such as green products database.** **8. Hard copy documents distributed (manuals) as needed.**	**1. PMIS (interactive web-based) likely to supersede EIMS but maintain functionality.** **2. NPS to use CERL Team Guide for Federal and state regulation updating for Service-wide environmental audit program. Will link with NPS audit checksheets.** **3. Developing audit reporting and tracking system.**	**1. Web page offering EnviroFacts, guidance documents, and other environmental management tools.**	**1. Develop integrated environmental information strategy.** • Inventory critical information needs. • Identify universe of existing information sources. • Address information gaps by priority. **1. Establish or rely upon a periodic organization-wide update (e.g. newsletter) to provide a reliable communication mechanism for routine, but important information.** **2. Develop and implement guidance on centralized filing and recordkeeping system (region and park-level).** **3. The Concessions Division should develop electronic (Internet) and other systems to effectively transmit environmental program information and data to concessioners (e.g. policy and procedures, environmental audit data).**

Principle 4: **Performance and Accountability**
Performance Objective: *4.1 Responsibility, Authority, and Accountability - The agency ensures that personnel are assigned the necessary authority, accountability, and responsibilities to address environmental performance, and that employee input is solicited.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Regional environmental program coordinators identified (hazmat/waste, CERCLA, USTs, solid waste); no line authority. **2. WASO and Regional environmental audit coordinators designated.** **3. Park-level environmental coordinators established in parks (<15%).** **4. Park superintendent and regional directors maintain line responsibility, authority, and accountability for park or region activities.**	**1. Accountability management system for superintendents. Best practice for environmental leadership "meets or exceeds all environmental laws…"** **2. Environmental Leadership training providing awareness of management responsibility for environmental compliance programs.**	**1. Park-level environmental coordinators/ points of contact at all parks.**	**1. Assign responsibility and authority to a specific individual to ensure environmental compliance at park-level.** **2. Establish policy on environmental accountability and include in Environmental Policy (see 1.1).** **3. Review performance in light of environmental responsibility issues (see 4.2).** **4. Service-wide environmental Coordinator position.** **5. Empower environmental coordinator position with authority to resolve conflicting spheres of authority and designate clear responsibility where not established (e.g. emergency response, water pollution control).** **6. Regional environmental coordinator positions.**

Principle 4: **Performance and Accountability**
Performance Objective: *4.2 Performance Standards - The agency ensures that employee performance standards, efficiency ratings, or other accountability measures, are clearly defined to include environmental issues as appropriate, and that exceptional performance is recognized and rewarded.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. DOI and NPS award programs for exceptional environmental achievement. **2. In many cases environmental program coordinator performance goals are established by supervisors which do not have environmental performance responsibility or accountability.** **3. Environmental performance standards are not clearly defined for many environmental program personnel (particularly park-level).** **4. Environmental criteria are incorporated into performance standards for regional support staff (0.5-2 FTE/ region), HQ (6-8 FTE) as advisors but infrequently at the park-level as managers or environmental protection specialists.**	**1. Procedures for the evaluation of superintendent performance.** **2. Incentives to encourage development of Centers of Environmental Excellence.**		**1. Develop environmental compliance performance goals, then address P2/sustainability. Use to develop customized regional or park standards.** **2. Link individual environmental compliance and management performance standards with organizational goals, then address P2/sustainability.** **3. Develop procedures for evaluation of environmental compliance performance, then address P2/sustainability.** **4. Develop procedures for rewarding or penalizing responsible staff based on environmental compliance performance, then address P2/sustainability.** **5. Elevate visibility of environmental achievement awards, particularly with respect to other agencies, then address P2/sustainability.**

<u>Principle 4:</u> Performance and Accountability (Continued)
<u>Performance Objective:</u> *4.2 Performance Standards - The agency ensures that employee performance standards, efficiency ratings, or other accountability measures, are clearly defined to include environmental issues as appropriate, and that exceptional performance is recognized and rewarded.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
			6. Institutionalize environmental program accountability by specifying environmental performance criteria in managerial and employee performance evaluations. Recognize importance of environmental management in staffing. • Formalize concept of one lead point-of-contact responsible for environmental management at each park. • Formalize coordinated and integrated HQ advisory and management environmental function. • Make environmental management experience a required KSA for management. **7. Develop an environmental recognition program for concessioners.**

Principle 5: **Measurement and Improvement**
Performance Objective: 5*.1 Evaluate Performance*
Sub-Objective: *5.1.1 Gather and Analyze Data - The agency institutes a systematic program to periodically obtain information on environmental operations and evaluate environmental performance against legal requirements and stated objectives, and develops procedures to process the resulting information.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Regional activities: • MWR, NER – Compliance Assistance Projects. • IMR – Pollution Prevention Opportunity Assessments. • SER – Contracted Audits. • AR – RCRA Compliance Audits conducted by state. **1. National environmental audit program manager.** **2. Regional and park environmental staff participating in audit program development.** **3. PHS park evaluation process covers water and wastewater treatment and food service.**	**1. National environmental audit program with:** • Audit program guidance document. • Auditor training program. • Audit criteria focusing on compliance and screening for P2 and sustainable practices. • An information management and reporting system. • Unique audit protocol. • Audit criteria for evaluating park management support for environmental program. **2. NER "green" audits.** **3. PWR sustainability audits.**	**1. Develop corrective action tracking and issue forecasting system.** **2. Audit data utilization plan to:** • Identify environmental program needs (e.g. training, policy). • Set priority to funding and project decisions. • Encourage and reward top performance. • Transfer solutions internally (lessons learned). **1. System for updating audit criteria.** **2. System for addressing state and local audit criteria.**	**1. Develop and implement a quality assurance function to evaluate audit program performance.** **2. Include root cause analysis in audit program criteria.** **3. Create independent audit group.** **4. Integrate audit information and reporting (e.g. corrective actions) with related systems (e.g. projects and budget). Make sure audit program data is used in project and program decision-making.** **5. Ensure that facility-level concession operations are included in the environmental auditing program and that environmental performance results are tied to contract evaluation.**

Principle 5: **Measurement and Improvement**
Performance Objective: 5*.1 Evaluate Performance*
Sub-Objective: *5.1.2 Institute Benchmarking - The agency institutes a formal program to compare its environmental operations with other organizations and management standards, where appropriate.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Some interest in benchmarking. **2. Some participation in EPA Regional Environmental Roundtable.**			**1. Participate in benchmark studies for appropriate sectors such as:** • Federal • Resource Management • Eco-Tourism **to learn about environmental practices proven to be effective.** **2. Explore establishing an EMS protégé relationship with a more advanced organization such as Forest Service.** **3. Explore the possibility of mentoring another organization:** • Federal: land management • Resource Management: museums, International World Heritage sites. • Eco-Tourism: concessionaires, recreation, tourism, hospitality • Full participation in EPA Roundtables **4. Consider benchmarking against other DOI bureaus.**

Principle 5: **Measurement and Improvement**
Performance Objective: 5.*2 Continuous Improvement - The agency implements an approach toward continuous environmental improvement that includes preventive and corrective actions as well as searching out new opportunities for programmatic improvements.*

EXISTING	UNDER DEVELOPMENT	PLANNED	RECOMMENDED NEXT STEPS
1. Suggestions for environmental program management improvement are encouraged generally and specifically through: • Annual regional environmental coordinators meeting. • Green Alert BBS. • Informal networks (e.g. sustainability taskgroups). • PWR annual zone coordinators meeting. • Contaminants Technical Advisory Group. **1. Operating environmental management procedures are evaluated as needed by region (e.g. new staff) and at HQ (e.g. new budgeting system).** **2. Sustainability champions actively seek to borrow lessons learned from other organizations (internationally).**	**1. Environmental audit program to eventually address root cause of current deficiencies and, through information sharing, prevent future occurrences.** **2. Draft ELI training includes lessons learned in key environmental management issues.**		**1. Establish partnerships with "Best in Class" organizations to jump start ideas for improvement (See potential mentors 5.1.2).** **2. Formalize an environmental management improvement suggestion system. Include staff, concessionaires, and visitors.** **3. Explore the possibility of champions from various initiatives (e.g. sustainability); adopt and include environmental compliance as part of their mission.** **4. Employ results of environmental audit program to identify opportunities for improvement and assess effectiveness of corrective actions.**

List of Acronyms

BLM – Bureau of Land Management
CAP -- Compliance Assistance Project
CFA – Civilian Federal Agency
COE – Corps of Engineers
DfE – Design for Environment
DoD – Department of Defense
DOE – Department of Energy
DOI – Department of the Interior
EL – Environmental Leadership
EMR – Environmental Management Review
EMS – Environmental Management System
EPA – Environmental Protection Agency
EPP – Environmentally Preferable Products
EQD – Environmental Quality Division
FEMP – Federal Energy Management Program
GCNP – Grand Canyon National Park
GMP – General Management Plans
GPRA – Government Performance Results
HWMPP – Hazardous Waste Management and Pollution Prevention
IC – Incident Command
IMR – Inter-Mountain Region
ISWAP – Integrated Solid Waste Alternatives Program
IU – Indiana University
JMU – James Madison University
KSA – Knowledge, Skills and Abilities
MOU – Memorandum of Understanding
NEPA -- National Environmental Policy Act
NER – Northeast Region
NPS – National Park Service Act
NREL – National Renewable Energy Laboratory
NR – Natural Resource
OEPC – Office of Environmental Policy and Compliance
OSHA – Occupational Safety and Health Administration
P2 – Pollution Prevention
PHS – Public Health Service
PFMD – Park Facility Management Division
PMIS – Project Management Information System
PPOA – Pollution Prevention Opportunity Assessment
PWR – Pacific West Region
RPP – Respiratory Protection Program
SER – Southeast Region
SOP – Standard Operating Procedure
ST – Underground Storage Tank

Implementation Guide for the Code of Environmental Management Principles for Federal Agencies (CEMP)

The following documents are in ***Adobe Acrobat*** format. If you do not have the Acrobat Reader and/or need basic information or configuration instructions click here.

Front Page

Introduction

- What is the Code of Environmental Management Principles (CEMP)?
- What is an Environmental Management System (EMS)?
- Is the CEMP an EMS Standard?
- How does the CEMP tie into other EPA programs?
- What you will find in this document

Federal Agency Responses to the CEMP

- CEMP Development Process
- Responses from Federal Agencies and Departments

Management Commitment (Principle 1)

- 1.1 Obtain Management Support
- 1.1.1 Policy Development
- 1.1.2 System Integration
- 1.2 Environmental Stewardship and Sustainable Development

Compliance Assurance and Pollution Prevention (Principle 2)

- 2.1 Compliance Assurance
- 2.2 Emergency Preparedness
- 2.3 Pollution Prevention and Resource Conservation

Enabling Systems (Principle 3)

- 3.1 Training
- 3.2 Structural Supports
- 3.3 Information Management, Communication, Documentation

Performance and Accountability (Principle 4)

- 4.1 Responsibility, Authority and Accountability
- 4.2 Performance Standards

Measurement and Improvement (Principle 5)

- 5.1 Evaluate Performance
- 5.1.1 Gather and Analyze Data
- 5.1.2 Institute Benchmarking
- 5.2 Continuous Improvement

Cemp Self-Assessment Matrix

- How the Cemp Matrix Works
- Moving From Level to Level

Appendix 1. Agency Responses Tables and Figures

- Table 1 Summary of Agency Responses to the CEMP
- Figure 1 Environmental Processes in a Management System
- Figure 2 Pollution Prevention Act Environmental Management Hierarchy
- Figure 3 Federal Agency Environmental Compliance Management System

Principles of Cemp Self-Assessment Matrix

- Principle 1: Management Commitment
- Principle 2: Compliance Assurance and Pollution Prevention
- Principle 3: Enabling Systems
- Principle 4: Performance and Accountability
- Principle 5: Measurement and Improvement

Contact Information

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