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Closing the Circle News

Special Issue:

Environmental Management Systems



Federal Environmental Executive Appointed

On April 30, 2002, President Bush appointed John L. Howard, Jr. to be the new Federal Environmental Executive. Prior to assuming this position, Mr. Howard served as Senior Associate Director at the Council on Environmental Quality, where he worked on the Administration's environmental and natural resources policies. Mr. Howard served as the Environmental and Natural Resources Policy Adviser for then-Governor Bush from 1996 to 2000 and practiced law in Washington, DC, and Austin, Texas, for eight years.

Mr. Howard will chair the White House Task Force on Waste Prevention and Recycling, which was created to advocate, coordinate, and assist environmental efforts of the Federal community in waste prevention, recycling, and the affirmative procurement of recycled content and environmentally preferable products and services. The Federal Environmental Executive is appointed by the President to assist Federal agencies in implementing waste reduction and recycling programs and provides strategic direction to the Federal government on procurement of environmentally preferable products.

One of the key environmental issues that Mr. Howard will pursue is the expansion of the Federal government's implementation of environmental management systems. An environmental management system (EMS) is a tool that provides an organization with a method to systematically manage its environmental activities, products, and services, and helps it achieve its environmental obligations and performance goals. John Howard notes, "By integrating environmental considerations into their daily decisions through EMSs, federal

agencies can improve their environmental performance and prevent and reduce pollution. By becoming more efficient in managing natural resources and meeting environmental obligations, federal agencies also can realize cost savings."

On April 1, 2002, Mitchell Daniels, Director of the Office of Management and Budget, and James Connaughton, Chairman of the Council on Environmental Quality, wrote to all heads of federal agencies about how EMSs are an important tool for achieving President Bush's management and stewardship agenda. "Enhancing our environmental management capabilities empowers local resource managers' stewardship of the resources entrusted to their care and management.... We applaud the leadership those agencies have demonstrated and urge those agencies that have not begun developing and implementing EMS to begin that process."

EPA Administrator Christie Todd Whitman sent letters to all federal agencies requesting that they report on their progress in implementing EMSs. EPA will be reporting annually on the progress of the federal community in implementing EMSs. The report for calendar year 2001 will cover the first full year of implementation and will establish a helpful baseline for future improvements. These activities will help to implement Executive Order 13148, which requires all federal agencies to implement EMSs at applicable facilities by the end of 2005.

This issue of *Closing the Circle News* is devoted entirely to highlighting recent Federal agency efforts to develop and implement EMS. We hope that these examples will further your understanding of the benefits of an EMS and motivate you to start one at your facility. ■

Greening Agricultural Research



The Beltsville Agricultural Research Center (BARC) in Beltsville, Maryland, is the largest and most diversified agricultural research complex in the world with over 6,500 acres, several hundred buildings, and more than 1,200 professional staff onsite. Its mission, as part of the Agricultural Research Service, is to conduct research to develop and transfer solutions to national priority agricultural problems and provide information to ensure safe food and products, and enhance the natural resource base and the environment. The Beltsville Agricultural Research Center has created an Environmental Management System that combines the goals of Executive Order 13148, the recommendations of an Environmental Management Review by the EPA, and benefits of the research programs that are protective of the Chesapeake Bay watershed.

BARC's holistic action plan includes the creation of an Environmental Management System; a new environmental commitment expressed in the Director's policy; updated targets and objectives for environmental programs; more options for assessments and audits; and identification of coordinators/managers for all EMS components. Environmental Management Systems are now a part of everyone's job. All employees with responsibilities that could affect the environment have a related performance element that addresses environmental performance.

The innovation of the Research Center's EMS is it brings together all components of the research center into an

alliance aimed at environmental protection. It is not just a traditional research facility concerned with addressing the consequences and by-products of research, but is also conducting broader research to solve problems of nutrient over-enrichment and potentially toxic pollution from agricultural sources. BARC expanded its pollution prevention program so not only are the by-products of agricultural research being managed for pollution prevention, but research itself is part of the program.

BARC has reduced its energy needs, cut down on vehicle miles traveled, and increased efficiency by consolidating and relocating staff on its campus and closing smaller buildings. BARC diverts an average 100,000 to 150,000 gallons of discharge water a day from its wastewater treatment plant to a recycled water tank system for steam production, which saved \$20,000 per year in costs to buy water. BARC also uses the wastewater treatment plant effluent as an irrigation system for trees and shrubs.

BARC increased its use of "green" products by switching to a biobased hand cleaner, citrus-based degreaser, biobased fifth-wheel grease, biodegradable car wash, and biodegradable disinfectant and cleaners. Renovations are using 2,400 squares of recycled content tiles that are less expensive and have the look of slate required for historical preservation. They installed 3,000 square feet of carpet replacements with soy-based backing, and use 225,000 gallons per year of biodiesel fuel in the backup generators and heating oil. ■

Today, some of the Federal agencies taking the lead in using EMSs are:

Department of Agriculture
Department of Energy
Department of the Interior
Environmental Protection Agency
General Services Administration

National Aeronautics and Space Administration
United States Army
United States Air Force
United States Coast Guard
United States Navy
United States Postal Service

Focusing on Continuous Environmental Improvement

The NAVAIR Depot North Island San Diego Environmental Improvement Team was the first federal facility to successfully register to ISO 14001 in May 1999. NAVAIR Station, North Island is part of the largest aerospace-industrial complex in the Navy. The complex's 5,000 acres in San Diego and 130 commands bracket the city of Coronado from the entrance to San Diego Bay to the Mexican border.

The NAVAIR Station operates in a highly regulated area and operates several major industrial processes and equipment as well as hundreds of minor processes that utilize hazardous materials as a result of daily operations. Because of the amount and variety of industrial activities at the Air Station and the host of environmental regulatory drivers for different media areas, the challenge of identifying, prioritizing, budgeting and implementing relevant Pollution Prevention projects is enormous. To effectively address the array of environmental and industrial activity challenges while improving the

environment, the NAVAIR Station command implemented an EMS with the Environmental Improvement Team coordinating all the EMS related activities.

The primary objective to this EMS was to identify and implement Pollution Prevention projects to meet the facility's pollutant reduction goals and to assist the various units within the facility in coordinating their environmental improvement projects. Since the inception of the EMS in 1998, 46 objectives and targets have been identified, and 23 have been completed.

The NAVAIR Depot North Island's EMS has produced some excellent results, such as reductions in air toxics emissions by 23 percent, containerized hazardous waste by 34 percent, TRI substances by 77 percent, ozone depleting substances by 56 percent, electricity consumption by 7 percent, and water consumption by 33 percent. Along with the pollutant waste stream reductions were the cost



avoidance associated with this EMS. Since implementing the projects under this EMS, the NAVAIR Station has saved \$800,000 in hazardous material and waste in disposal costs and over \$100,000 in recycling.

Now, with Pollution Prevention as the center of the NAVAIR Station's Environmental Program, the organization looks to the Environmental Improvement Team as the catalyst to make improvement happen. The concept of "continual improvement" has made all units within the facility partners in the P2 process and helped them to go "beyond compliance." ■

Code of Environmental Management Principles

The Code of Environmental Management Principles (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. 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."

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. ■

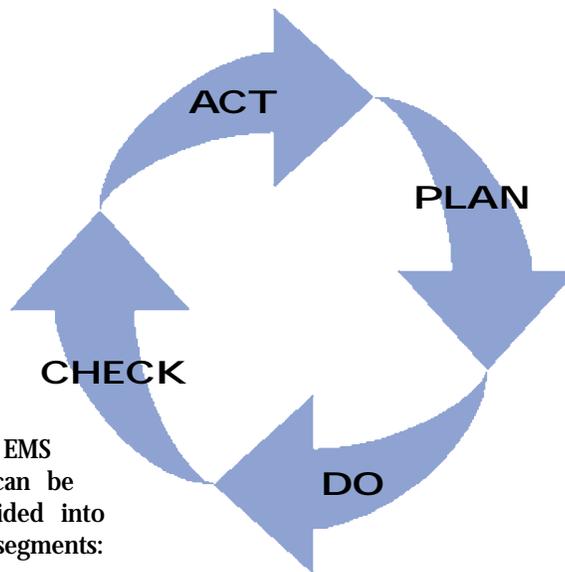
What is an Environmental Management System?

The use of voluntary environmental management systems (EMS) by organizations is increasing around the world due to heightened international interest in and commitment to improved environmental management practices by both the private and public sector. An EMS is a systematic approach to ensuring that environmental activities are well managed in any organization. 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 effective EMS can help identify the causes of environmental problems and then identify ways to eliminate them. It can save money by reducing waste, increasing efficiency and reducing costs associated with environmental compliance and liability. Not only does it focus on what environmental problems happen but also on why they happen. Over time, this systematic identification and correction of system deficiencies leads to better environmental and business performance.

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 of environmental considerations with other initiatives. An EMS approach builds in periodic review by top management and emphasizes continuous improvement instead of crisis management.

An EMS ensures that systems are in place to identify an organization's environmental impacts and to minimize these impacts when feasible. While improvements in particular program areas are expected, such as waste reduction, recycling, energy and water efficiency, it is the identification of all relevant environmental aspects and impacts that may lead to far greater environmental improvements than were previously expected. These systems are also useful for moving beyond compliance and making greater use of pollution prevention approaches.



The EMS concept can be easily divided into workable segments:

- Planning your environmental activities;
- Carrying out these activities;
- Checking your progress; and
- Adjusting efforts accordingly.

An EMS is essentially a continual cycle of planning, implementing, reviewing and improving the actions that an organization takes to meet its environmental obligations. 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.

The most prominent Environmental Management System standard now in place is the ISO 14001 International Standard, which was developed by ISO Technical Committee 207 in September, 1996. ISO 14001 outlines the elements that every environmental management system must have.

According to ISO 14001, the EMS must contain an environmental policy that states the organization will implement the prevention of pollution, continual improvement and environmental compliance. The organization must identify environmental aspects of its operations and determine the impact they have on the environment. Organizations around the world are now beginning to put in place EMS based on ISO 14001. Many are also becoming certified to the standard by third-party auditors.

Some unique and important characteristics of ISO 14001 are:

It is comprehensive. All members of the organization participate in environmental protection. The EMS considers all stakeholders, and there are processes to identify all environmental impacts.

It is proactive. It focuses on forward thinking and action instead of reacting to command and control policies.

It is a systems approach. It stresses improving environmental protection by using a single environmental management system across all functions of the organization. ■



Key Elements of an EMS

1) Policy Statement endorsed by top management

Obtaining top management commitment is the first essential element in developing a successful EMS. The importance of obtaining buy-in of agency or facility leaders cannot be over-emphasized. Once senior managers are engaged, work can accelerate on preparing an environmental policy statement. The policy statement should reflect the nature and scale of the organization's activities, and embody the organization's commitment to compliance with laws and applicable requirements, prevention of pollution, and continuous improvement.

2) Planning - identifying impacts, setting goals and targets, tracking, and developing systems

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. A key task is the identification of environmental objectives and targets. Objectives describe the organization's goals for environmental performance. Targets are specific and measurable intermediate steps that can be measured in terms of obtaining the objectives.

3) Implementation and Operation - assigning roles, training, communication, documentation, and preparedness

Successful implementation of an EMS requires clear articulation of environmental responsibilities across the various elements of an 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.

Other important parts of the implementation and operation element of an EMS include:

- Training, Awareness, and Competency
- Communication and Reporting
- EMS Documentation
- Operational Control
- Emergency Preparedness and Response
- Monitoring and Measurement

4) Checking and Corrective Action - establishing ways to monitor, identify and correct problems

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 focused towards continuous improvement

Management must periodically step back and evaluate the performance of the EMS as a whole. 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. ■

What EMS challenges do federal facilities face?

Staff at federal facilities face a variety of challenges in developing and implementing EMSs at their facilities. Some of these problems include:

- Lack of adequate environmental staff;
- Lack of annual training plans and mechanisms to track individual training needs and accomplishments;
- Lack of clear EMS policies, goals, objectives, and targets;
- Failure to communicate "lessons learned" to other federal facilities; and

- Lack of opportunity to gather ideas and feedback from other departments or groups.

What are some areas for improvement for facility EMSs?

- Agencies lack adequate environmental staff and formal training plans and mechanisms to track individual training needs and accomplishments
- Facilities lack formal environmental management programs
- Facilities lack facility-specific environmental policies, goals, objectives, or targets
- Facilities lack commitment to going

beyond compliance; facilities seek only to meet compliance requirements

- Work being done does not match job descriptions and performance evaluations
- Lessons learned (positive and negative) are not shared with other federal facilities, let alone with facilities within the same agency
- Staff are not asked for their opinion during the policy development
- Tenant organizations are not held responsible for adhering to a site's EMS
- Management is not aware of the work being done

National Park Service's Environmental Leadership Team

In the National Park Service, a unique partnership of programs and people have joined together to implement an Environmental Leadership Program. The team used an Environmental Management System approach to improve environmental performance and to institutionalize green/sustainable practices in the National Park Service. The combination of EMS principles with the Park Service's Strategic Greening Plan allowed them to meet environmental compliance while integrating green products and practices throughout the agency.

Significant accomplishments have already resulted from this effort including:

- new policies to formalize these efforts into their management system
- new tools to share information about greening activities (<http://www.nps.gov/renew>)
- an environmental leadership pilot training course was developed and presented to over 250 employees
- a complete environmental training curriculum is being developed.

Several examples show how individual parks are implementing the environmental leadership plan to address environmental impacts. The new propane-fueled shuttle buses at Acadia and Zion National Parks help spread the message of environmental leadership to park visitors who, by using this system, are practicing resource stewardship. The Chesapeake and Ohio Canal National Park embarked on



a highly successful Trash-Free Park Program which asks visitors to pack-out their garbage, thus reducing park operational costs while protecting the park resources. The Rocky Mountain National Park has become the first park in the country to be a "Clean Cities" park, enabling alternative fuel vehicles to be introduced not just in the park, but in the surrounding communities as well.

An agency-wide environmental auditing program was implemented and over 80 environmental audits were completed in FY 2000 at park facilities. They developed an audit guide checklist which evaluates operations for environmental health and safety compliance areas.

All of these were done concurrently with an agency-wide analysis of National Park Service environmental programs using the EPA Code of Environmental Management Principles. The National Park Service is the first federal agency to complete this analysis. ■

Cradle-to-Grave EMS for a Navy Ship Acquisition

Ms. Mary L. Wenzel, the Environmental, Safety and Occupational Health Manager for the Acquisition Program Office at the Naval Sea Systems Command in Bethesda, MD, developed and implemented the T-AKE Class Ships Program Office Environmental Management System. Due to her efforts, the T-AKE Program Office became the first Department of Defense acquisition program office to develop and implement an EMS and achieve ISO 14001 certification.



The EMS she developed establishes procedures to ensure that environmental safety and health concerns are identified early in the ship design process and throughout the life cycle of the ship class and thus significantly minimizing the potential for costly post-construction modifications.

The EMS provided a process to monitor the approval of designs and equipment necessary to ensure that the T-AKE Class ships achieve their projected waste stream reductions. The Navy compared the total pollutant mass loading of the 15 legacy ships with the T-AKE Class ships. The analysis shows that the T-AKE Class ships will achieve discharge reductions in sewage by 94 percent, graywater by 44 percent, bilgewater by 90 percent, evaporator brine by 71 percent, volatile organic compounds by 100 percent, SOx by 97 percent and CO2 by 65 percent. The 12 T-AKE Class ships will produce approximately 70 percent less waste than the exiting 15 ships during at-sea operation - a reduction of 5.74 million metric tons per year while decreasing annual shore disposal cost by more than \$5 million. ■

First Army Installation to be ISO 14001 Certified

Fort Lewis is the largest active military facility in Washington State with over 86,000 acres under management. Last year, they were awarded a Closing the Circle Award for their efforts to enhance their Army facility through the implementation of a certified EMS. The installation's implementation team completed a two year Department of Defense pilot program chartered to investigate the benefits and future role of EMSs within DOD's environmental programs. Their innovative efforts were certified in September 2000 - the first Army facility to achieve this accomplishment.

Benefits already realized through the installation's efforts include cost savings and avoidance in excess of \$1.0 million, reduction in air emission of 78 tons annually, and source reduction of 89 tons of hazardous chemicals used each year. Through various initiatives under the EMS plan, the installation achieved many of its goals, including a 70 percent reduction in hazardous waste, a 68 percent reduction in hazardous material usage, and a 60 percent reduction in Class I ozone depleting chemicals. Fort Lewis also has implemented an Affirmative Procurement Program to encourage the use of recycled content products. They have started several new programs including a \$6.2 million capital improvement in energy conservation programs. The Energy Savings Performance Contract is expected to reduce energy costs by more than \$5 million. The upgrades to the existing boilers resulted in nearly a 50 percent reduction in natural gas usage.

In partnership with the National Defense Center for Environmental Excellence, Fort Lewis continues to foster continual improvements in environmental stewardship with the development of EMS implementation guidance for other



military organizations. Fort Lewis led and mentored eight other participating DOD facilities in developing an EMS. Together they identified and addressed the environmental aspects and impacts of over 28,000 soldiers and family members, and approximately 5,000 civilian personnel training, working and living in the pristine and environmentally sensitive areas of western Washington.

The Implementation Team continues to promote and challenge others to join its grassroots EMS program. Success may not be measured best by dollars saved or reduction goals accomplished but instead by the shift in culture and a commitment to environmental leadership. ■

EMS Resources

ISO - International Organization of Standardization

<http://www.iso.ch>

Web site of the international standards body responsible for the development and publication of ISO 14001 and other standards.

International Environmental Systems

<http://www.iso14000.net>

This site has considerable information available. Some information is free; many elements, such as copies of ISO standards, require payment.

Resource on the Internet on EMS

<http://www.cleanerproduction.com/Ecolink/emspage.htm>

This list of over 100 links related to ISO 14001/EMS resources including practical tools, case studies and reports.

EPA's Environmental Management Systems

<http://www.epa.gov/ems/>

This site links to key information about EPA's efforts to develop policies and related materials about EMSs.

National Database on Environmental Management Systems

<http://www.eli.org/isopilots.htm>

This site provides information on the ISO 14001 national pilot projects. The database was developed to show the range of impacts on corporate, military and municipal facilities affected by the implementation of EMSs.

International Institute for Sustainable Development

<http://iisd1.iisd.ca>

This site has a wealth of information on sustainable development including the report "Green Standards: ISO 14000 and Sustainable Development."

Obtaining Resources for an EMS

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 reduces liability
- Eases deployment of new technologies: avoids high start-up and transition costs. ■

P2 and EMS

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. 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. Such benefits include:

- using pollution prevention as the primary means of achieving regulatory compliance
- helping a facility lower its risk profile and manage liabilities before crisis situations arise
- enhancing savings, as well as removing environmental management costs from overhead
- building public confidence by demonstrating that a facility understands the connection between its management practices and activities
- improving management of natural environmental resources and fostering sustainable development ■

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Containing a minimum of 30 percent postconsumer fiber.

The White House Task Force on Waste Prevention and Recycling wishes to thank the U.S. General Services Administration for their help and support in producing this newsletter.

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