Office of the
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Closing the Circle News

Special Issue: Environmental Management Systems

For the second time in three years, we are devoting an edition of *Closing the Circle News* to discussing the use of environmental management systems (EMS) in the Federal community. I am happy to say that the topics have matured and advanced in that short time. Whereas earlier articles dealt with implementation and initial awareness issues, this edition has more on innovative applications and success stories involving EMS.

In April, the White House Council on Environmental Quality and the Office of Management and Budget jointly issued a memorandum to Federal agencies about EMS implementation. You can find Next Steps in Successfully Meeting Executive Order Requirements for Effective Environmental Management on page 2. The memo encourages agencies to adopt and implement EMS and to establish firm dates for final completion of the EMS effort.

For this edition, we asked agencies and facilities to tell their story about EMS implementation. You will read about some innovative approaches in use of an EMS, as well as discussions on where we are going as we move into 2006 and beyond. I hope that this edition of *Closing the Circle News* will not only give you a perspective on how much progress has been made, and is being made, in the Federal community, but also that it will provide useful ideas and lessons learned for your own situations.

The through running theme of our approach to EMS is that it is the ideal management framework upon which we will identify, prioritize, manage, measure, and adapt our sustainable practices and environmental stewardship efforts. ■

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OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

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MEMORMANDUM FOR THE HEADS OF DEPARTMENTS AND AGENCIES

FROM: JOSHUA B. BOLTEN
DIRECTOR, OFFICE OF MANAGEMENT AND BUDGET

JAMES CONNAUGHTON
CHAIRMAN, COUNCIL ON ENVIRONMENTAL QUALITY

SUBJECT NEXT STEPS IN SUCCESSFULLY MEETING EXECUTIVE ORDER REQUIREMENTS FOR EFFECTIVE ENVIRONMENTAL MANAGEMENT

The President has long been committed to ensuring a strong environmental stewardship policy for the federal government. On April 1, 2002, the Office of Management and Budget (OMB) and the Council on Environmental Quality (CEQ) sent a letter to the heads of all federal agencies emphasizing the importance of developing an Environmental Management System (EMS). The letter reaffirmed the importance of Executive Order 13148 (April 2000) which established requirements for the implementation of EMS at all appropriate Federal facilities by December 31, 2005.

Subsequently, in January 2006, OMB launched new scorecard initiatives related to key Executive Order and statutory environmental management goals, with EMS as a fundamental requirement.

The Office of the Federal Environmental Executive is working closely with the agencies, to assess their status and progress in implementing EMS—about 15% of federal facilities have met the goal. We encourage all agencies to adopt and implement EMS. We would like your agency to work with us, through the new scorecard process, to establish a firm date for final completion of these efforts. EMS will help to better equip agencies with the information, resources, strategy, and feedback they need to ensure they are continuously improving their performance and reducing their environmental impact. EMS can be an integral component in helping Federal agencies accomplish their missions more efficiently and economically, and at the same time be better stewards of all of our essential natural resources.

We have asked the Federal Environmental Executive, Edwin Piñero, to continue to work with the agencies and EOP offices to ensure we fully meet and sustain our commitments and goals. Your continued leadership and senior direction are important and very much appreciated.

Building Environmental Sustainability and a Secure Nation

The Transportation Security Administration's (TSA) primary mission is to protect the security of the Nation's transportation systems to ensure freedom of movement for people and commerce. An important part of this mission is to protect communities and the natural environment affected by our transportation security activities.

Environmental Evolution

Understanding this mission, TSA's leadership recognized that the agency required an environmental program and in February 2004, the Office of Occupational Safety, Health, and Environment (OSHE) established an Environmental Branch. Since then, the Environmental Branch has worked aggressively to develop and implement an agency-wide Environmental Management System (EMS) covering multiple facilities.

A Vision for EMS

To comply with Executive Order 13148, TSA created a team that included the Department of Homeland Security (DHS), the Federal Environmental Executive, and TSA's OSHE staff. The EMS Team spent a great deal of time with stakeholder groups, in particular the field operations staff. Because security is mission critical to TSA, it was important for the EMS Team to understand the operational culture and high paced conditions of the airport operations. The information learned from the field allowed the EMS Team to develop realistic procedures and training programs that would ensure effective implementation of the EMS.

Risk Based Approach

Since TSA assumed control of aviation security, it has screened more than 2 billion passengers – an average of 1.8 million air travelers and 2.3 million pieces of luggage screened daily at more than 400 airports. TSA manages large volumes of hazardous materials and prohibited items (e.g., weapons, explosives, and incendiaries), and the screening force consumes a large volume of supplies and generates waste. In response to this, OSHE took a risk based management approach to understand and assess the relative environmental risk of these activities to TSA. OSHE developed scoring criteria correlated to environmental risk, commodity consumption, the likelihood of fines and penalties from regulatory agencies, and a potential negative impact on TSA's mission. The findings clearly confirmed that the larger the airport operation the greater the level of environmental risk. Using a scoring method for determining appropriate facilities, OSHE identified 128 airport operations for EMS implementation. Typical findings included lack of training and documentation, improper materials identification and storage, and improper container management.

EMS Implementation

During 2005 and early 2006, TSA developed policies, procedures, and training to implement and maintain the EMS. OSHE also analyzed the results of 435 environmental survey of all TSA operations and facilities. It started an EMS Pilot Program at the 24 largest airport operations with high levels of environmental risk. Core elements of the pilot program were training, awareness, and implementation strategies. The feedback provided from the 24 pilot airports gave OSHE the opportunity to assess the training material, resources committed, and the overall acceptance of the system. By March 2006, EMS Competency Training has been conducted at all airports included in the EMS Pilot Program to prepare them for EMS implementation.

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Airport Operations Scoring Criteria

- Number of employees at the facility
- Passenger and baggage throughput
- Amount of hazardous material accumulated
- Number of noncompliance deficiencies noted during audits
- The facilities status as a "Hub" or "Spoke" airport

TSA's EMS Goals

- Facilitate change for environmental sustainability and compliance
- Facilitate a conducive management model
- Build input and solicit feedback across TSA
- Build longevity into an EMS program

BUILDING from previous page

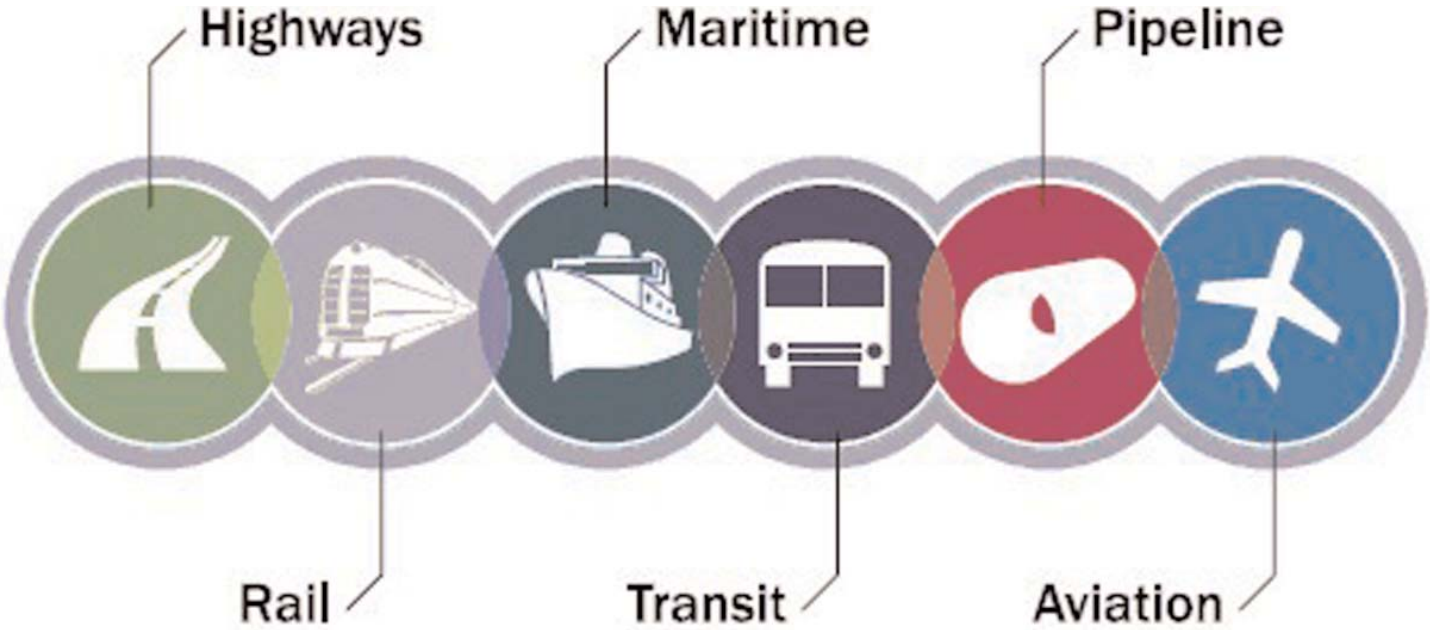
Training and Awareness

TSA takes a progressive approach to EMS training. Personnel are first given computer-based environmental training through TSA's OnLine Learning Center, which is updated annually for each employee. For example, the Transportation Security Officers receive EMS, Hazardous Materials (HM) training, HM transporter training, and spill response training. OSHE also uses its auditing staff to help airport operations needing "on the spot training." OSHE's strategy due to limited resources was to ensure that it not only had a staff capable of auditing but was able to provide critical training to its operations as well.

Results to Date

The initial EMS implementation activities resulted in improved communication and awareness concerning environmental initiatives within TSA. TSA's Environmental Training Program is being expanded to address its developing environmental programs. For example, to improve compliance with green purchasing requirements, training for purchasing staff has been developed, and TSA is working with the Defense Logistics Agency to track TSA purchases of green products. Also as a result of EMS implementation, more than 300 facilities now participate in TSA's recycling program.

Overall feedback on the EMS has been positive. TSA's initial successes with the program's development were due to partnering with internal and external stakeholders, receiving input, and designing the EMS to fit within its unique operations. TSA's success in the EMS Pilot Program implementation is due to the partnering by OSHE's field support staff and the airport operations staff. The valuable feedback collected during the pilot allowed OSHE to "fine tune" the EMS, which will ultimately provide benefit to airport operations as TSA implements the next phase of the EMS pilot. ■



Integrating Green Purchasing Into Your Environmental Management System (EMS)

The Federal government is one of the largest purchasers in the world. In fiscal year 2002, Federal agencies spent more than $250 billion for goods and services to support the activities of approximately 1.7 million employees in 60 agencies. In addition, Federal agencies spent another $15 billion on small purchases via purchase cards. Purchasing decisions can significantly influence the environmental performance of Federal facilities. By including environmental considerations in Federal purchasing decisions, government procurement and contracting processes can be used to purchase products and services that reduce an organization's environmental impacts.

The EMS process creates an opportunity for environmental and procurement personnel to work together with product users to determine the most effective mechanisms to ensure that staff understands the economic and environmental benefits of green purchasing. Green Purchasing refers to the practice of preventing waste and pollution by considering environmental impacts, along with price, performance, and other traditional selection factors, when making purchasing decisions. Green purchasing often is included within the definition of pollution prevention, since the selection and use of green products can reduce both the quantity and toxicity of waste streams.

Integrating Green Purchasing into Your Environmental Management System (EMS) was developed by the Environmental Protection Agency's (EPA) Environmentally Preferable Purchasing Team in response to requests from, and in partnership with, stakeholders, including EPA's Federal Facilities Enforcement Office; Office of Policy, Economics and Innovation; and Design for the Environment (DfE) Program; the White House Office of the Federal Environmental Executive; and several Federal facilities. The report is based on information obtained from multiple interviews with representatives of Federal facilities whose staff incorporated green purchasing into the elements of their EMS. The goal is to help Federal facilities integrate green purchasing into their EMS. The intended audience includes those tasked with implementing an EMS, reducing environmental impacts, meeting green purchasing requirements, and/or buying products and services in a Federal facility.

The report is organized around the 17 elements of an EMS that conforms to the International Organization for Standardization (ISO) 14001 (1996) Standard, because Federal agencies interviewed for this report indicated that they were either using the elements of ISO 14001 as the structure for their EMS or were familiar with these elements. To make the module easy to use, it is provided as an electronic document with both internal and external links.

Section 2, Integrating Green Purchasing into Your EMS, is the core of the report and provides:

- Key information about the requirements associated with each element of ISO 14001.
- Practical guidance and potential language for integrating green purchasing into procedures for each ISO 14001 element.
- Links to Federal facility examples for each element.

Section 3 provides links to additional information on:

- The genesis of the report.
- Environmental Management Systems.
- Links to Federal facility examples for each element.
- Federal green purchasing program requirements.
- Green product resources.
- Green purchasing training courses.

The document can be found on the web at www.epa.gov/epp/ems.htm. ■

The Air National Guard's Approach to EMS: Status and Successes

Successful implementation of Environmental Management Systems (EMS) at Air National Guard (ANG) facilities is a direct result of four critical elements:

(1) Excellent support from senior leadership:

The Air Force issued an EMS Implementation Plan, three modules of EMS implementation guidance and three levels of training: EMS Awareness, Practitioner, and Senior Leader.

(2) Knowledge of the capabilities and limitations of our installations:

Because each ANG Base has only one Environmental Manager, sometimes supplemented by a state Environmental Manager, it was evident, early on, that successful EMS implementation would require additional tools and guidance. In response, we developed and distributed an EMS Implementation Plan template and expanded an existing web-based tool to accommodate the implementation and management of EMS. This tool was instrumental in our success, as it simplified and expedited the EMS implementation process.

(3) The commitment and dedication of ANG personnel:

Following our guidance, each Base populated the web-based tool with all of the industrial shops and their processes and then used the tool to:

- Identify the aspects and impacts for each process.
- Score the aspects and impacts against five defined criteria and select Base-specific significant aspects.
- Develop objectives and targets for each significant aspect and draft Environmental Management Plans.

Once this process was complete, staff presented the EMS to the Base Environment, Safety and Occupational Health Council (ESOHC) for review and approval prior to submitting their self-declaration letter. We are proud to report that 78 of 79 appropriate ANG Bases declared an EMS in place prior to 31 December 2005. Only the Gulfport, MS facility was suspended due to damage from Hurricane Katrina.

(4) Maintenance of communication throughout the process:

In June 2004, the ANG began assessing EMS implementation status during external audits under the Environmental Safety Occupational Health Compliance Assessment Management Program (ESOHCAMP). These assessments allowed us to provide additional Base-specific EMS implementation training, correct non-conformances, and ensure that our implementation guidance was effective. Today, assessments against the EMS protocol provide objective evidence of the continual improvement process.

For the ANG, EMS implementation is the initial stage in a process to ensure long-term mission sustainability. Currently, the ANG is initiating aspect roll ups that facilitate awareness of base-wide environmental impacts and identify potential environmental restrictions that could impede the mission. In addition, the Air Force has made a commitment to expand from EMS to an Environmental, Safety and Occupational Health Management System (ESOHMS). Each ANG Base will transition from EMS to ESOHMS by adding Occupational Health and Safety program elements to the management system. This will provide us with the broad program oversight needed to continue to reduce risks and exposure and focus on sustaining, restoring, and modernizing the resources to support the ANG missions. ■

Fort Hood, 3M Benefit from Program and Receive Recognition from State

Fort Hood, TX is the first Federal facility to participate in the Federal Environmental Partners for Environmental Performance (PEP) program. The program – the brainchild of Council on Environmental Quality Chairman James Connaughton – is being promoted by Federal Environmental Executive Ed Pinero as an opportunity for Federal facilities to gain knowledge about EMS implementation from private industry, which already had years of EMS experience. "We started this program because we thought private industry; with its experience in EMS implementation had much to offer our Federal facilities," Pinero said.

The Texas Commission on Environmental Quality (TCEQ) facilitated the partnership between 3M Brownwood and Fort Hood. "We are proud TCEQ thought enough of our environmental work to recommend us," Steve James, 3M Plant Manager said. 3M's environmental engineer, Fred Kelly, also expressed gratitude by saying that he felt he'd learned just as much as the installation. "We have seen benefits of this program on both sides," Kelly said. "It's wonderful to see this program has served the needs of both Fort Hood and 3M," Pinero said.

The program's original kickoff was October 2004, and a memorandum of understanding was signed Oct. 2005. During the first year, Fort Hood sent representatives from the installation to 3M to observe their ISO certification audit, as well as their TCEQ National Leader Audit.

3M Brownwood was accepted into the TCEQ's Clean Texas program at the highest, Platinum level, and Fort Hood is at the next highest, Gold, level. Both entered the program in May 2006 during the annual TCEQ Trade Fair and were recognized at a luncheon. "The partnership did more to prepare us for our own audit than any training could have," Randy Doyle, Pollution Prevention Program Manager for Fort Hood said.

"The President's goals for the environment include being a good neighbor and conservation of resources," Pinero said. The PEP program helps Federal facilities become both. "This is an extension of the communities we call neighbors," Col. John Murray, the III Corps Chief of Staff said. Pinero said that the Federal government should lead by example. "This is the flagship. This is the pilot," he said.

Steve Burrow, Chief of Environmental Programs at the installation said the installation has gained much from the partnership. He said that since the program began, the installation has taken the opportunity to learn many things about EMS, and has learned a great deal from 3M. "They experienced some of the same hurdles as we have," Burrow said. "We feel this is a positive relationship and there is much to gain from their experience," he said. ■

GSA Sustainability and Environmental Management System

The General Services Administration's (GSA) Public Buildings Service is in the process of implementing a Sustainability and Environmental Management System (SEMS) in the Rocky Mountain Region. Over the past 18 months, staff at the Denver Federal Center has used the SEMS to determine environmental aspects and impacts from their daily business activities. These activities were divided into eight Environmental Management Programs Areas (EMPs). Eight Action Teams were created for the EMPs and included professionals working in these business areas within the region. The Action Teams included Air Emissions, Construction Demolition, Energy Usage, Greening Building Maintenance, Site Remediation, Storm Water Management, Waste Stream Management, and Water Usage. Future Action Teams will include NEPA (National Environmental Policy Act) and LEED (Leadership in Energy and Environmental Design) teams. The teams determined what significant environmental aspects must be addressed for each of their respective areas and wrote all of the necessary Operational Controls to help mitigate their business area's environmental impacts. They also set measurable goals in each area, such as reducing energy by a certain percentage each year for the Energy Team.

For example, the Construction Waste Team identified numerous environmental aspects and impacts and, from those, listed the following objectives: to reduce demolition waste going to the landfill and to recycle all materials possible from demolition projects. The Team wrote key Operational Controls, including a pre-demolition inspection checklist and construction waste flowchart. Both of these Operational Controls helped the Project Managers identify recyclable materials in the Statement of Work for the contracts so that the demolition contractors could identify and include the appropriate response in their bids. This also allowed the Federal Center staff a mechanism to track the amounts of demolition waste that were landfilled and recycled onsite. For example, GSA originally planned to dispose of more than 500 porcelain toilet fixtures at a local landfill, but using the EMS procedures, the Team identified the opportunity to reduce off-site waste

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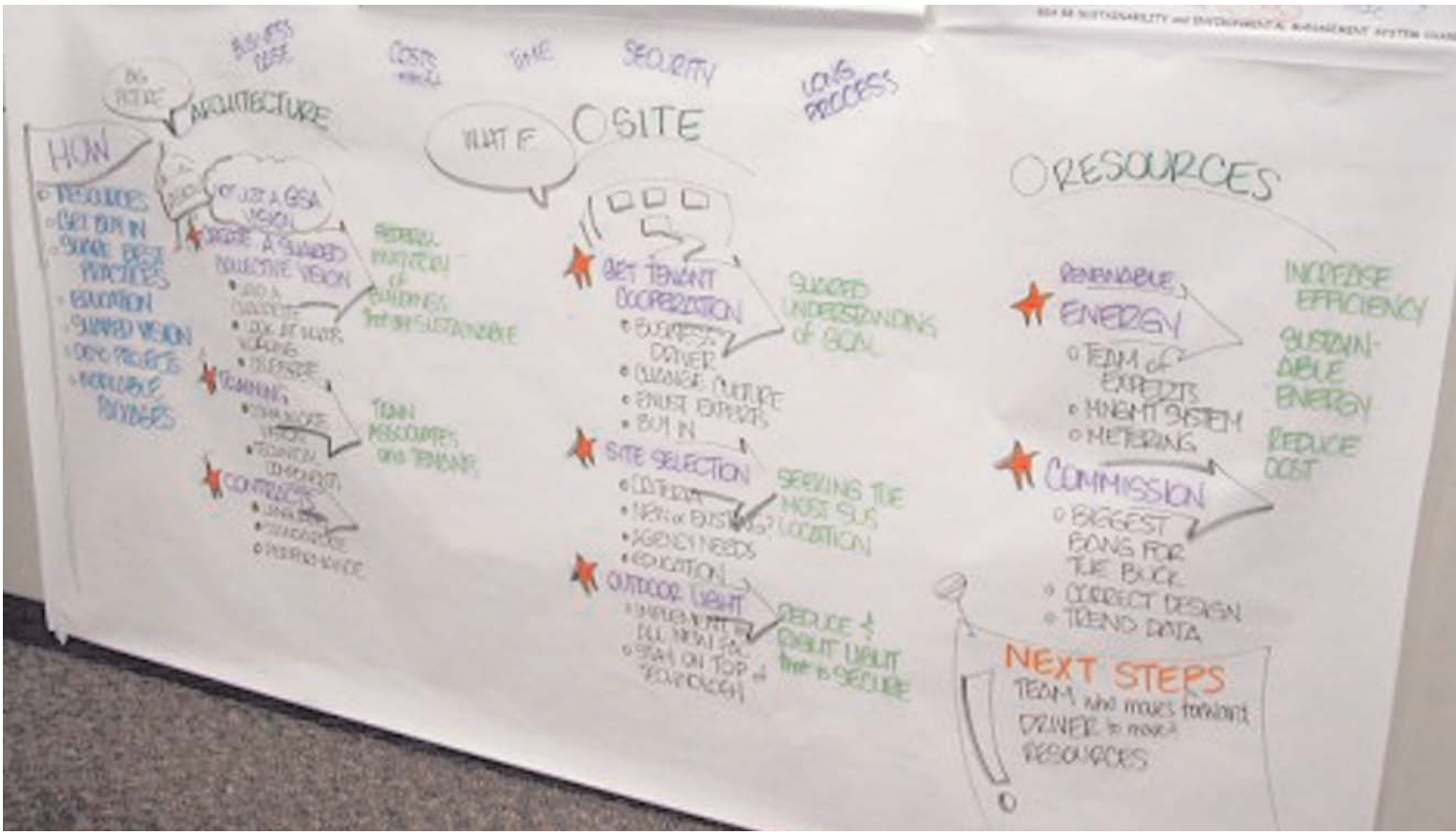

Battle Creek Federal Center Sets Pace for Federal System

For some Federal facilities, successful EMS implementation requires the cooperation of other agencies and organizations, such as landlords, tenants, and concessionaires. This is nowhere more evident than in the numerous locations where GSA is the landlord, and another agency is the tenant. Because all Federal agencies are affected by the EMS requirements under Executive Order 13148, typically there may be at least two, if not more, EMSs involved in a single location. Integrating these efforts is paramount to ensuring an efficient, and effective, EMS. As a demonstration of the commitment to lead by example, GSA and the Defense Logistics Agency (DLA) have partnered in a pilot project to learn how to best integrate the landlord and tenant EMSs in a manner beneficial to all parties.

DLA's Battle Creek, MI facility hosts the Federal government's first interagency EMS, which involves DLA Enterprise Support Battle Creek, Defense Logistics Information Service (DLIS), Defense Reutilization and Marketing Service (DRMS), General Services Administration (GSA), and Federal Environmental Executive Ed Pinero. In a Memorandum of Understanding signed Oct. 18, 2004, Mr. Pinero, DLA, and GSA established the Battle Creek agreement, including an EMS pilot study. The study identifies ways to improve collaboration between installation hosts and tenants. Battle Creek groups signing the agreement included DLIS, DRMS and GSA. The EMS pilot focuses on operation of the Hart-Doyle-Inouye Federal Center and is identifying practices that can be used across the Federal government.

According to Mr. Pinero, he is often asked about host-tenant EMS agreements. He called the agreement signed by tenants and the host at the Federal Center, which is owned by GSA, a "model" agreement.

For GSA, which manages 1,500 facilities, EMS implementation is a challenge. GSA is taking a "corporate" approach and can use the Battle Creek Federal Center EMS as an example for facilities across GSA. (See previous article on GSA's Rocky Mountain EMS.)

For DLA, strong host-tenant relationships are part of DLA's investment in EMS. Therefore, DLA wants to set the benchmark for effective collaboration.

DLA and GSA jointly established goals for energy conservation, water use and incorporation of recycling. The EMS team adopted the DRMS format for EMS objectives and targets and included those goals in the Federal Center EMS. Joint EMS implementation is providing impressive results. According to Nils Strand, Federal Center building manager, there has been an 11 percent reduction in energy use between the first quarter of 2005 and the first quarter of 2006 and significant reductions in the amount of solid waste produced. ■

GSA from previous page

disposal by crushing and recycling all of these materials onsite and using it for road-base. Consequently, 75,000 tons of materials were recycled instead of disposed in a local landfill.

GSA began the EMS process for the Denver Federal Center Campus and is now expanding the SEMS throughout GSA Region 8, which includes Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. Originally, LEED was incorporated into the existing Energy Usage Action Teams at the Federal Center. In the near future, a LEED Action Team will be designed to specifically handle LEED issues.

Region 8's SEMS workgroups are now entering the training phase of the system. In this phase, staff and contractors will be trained on the Operational Control procedures created by the Action Teams. Later this summer, once the required personnel have completed training, audits will commence to identify gaps and opportunities for improvement. In the meantime, the SEMS has been rolled out to the region with a kickoff planning charrette held on May 23, 2006 in Boulder, Colorado. At this charrette, key decision makers throughout the region in each Service Center and Business Line were invited to participate in the process. They were informed of what the Federal Center has already accomplished and asked for input on how best to roll the system out to the entire region, including development of new Action Teams needed to address more regional issues. The day long event was a huge success in that all involved became educated and committed to the process of employing sustainable practices throughout the region through the use of an Environmental Management System. ■

DoD Business Transformation Uses EMS Framework to Incorporate ESOH

Current and future challenges to national security make a compelling case for transformation within the Department of Defense (DoD). The highly flexible Armed Forces of the 21st Century require an equally flexible and responsive business support infrastructure that is capable of adapting to ever-changing conditions. To address these challenges, the Department has initiated a business transformation effort that will impact virtually all aspects of DoD business operations.

In October 2005, DoD established the Defense Business Transformation Agency (BTA) to guide the transformation of business operations throughout the Department of Defense and to deliver enterprise-level capabilities that align to warfighter needs. The BTA enables support to the warfighter by systematically improving DoD's business processes and associated information technology (IT) systems. In partnership with BTA and the DoD Components, the Office of the Deputy Under Secretary of Defense for Installations and Environment (ODUSD(I&E)), Business Enterprise Integration (BEI) Directorate is working to ensure the environment, safety and occupational health (ESOH) aspects of the DoD mission are an integral part of the on-going transformation.

BEI's approach to business transformation is founded on requirements – best business practices and data requirements – that are defined by the DoD Components to meet their transformational objectives. Through joint, collaborative business process reengineering (BPR) initiatives, BEI documents joint requirements. BEI then works with BTA, Office of the Secretary of Defense (OSD) functional organizations such as logistics, acquisition and personnel, and the DoD Components to integrate the requirements cross-functionally, and to build them into functional policies and the DoD Business Enterprise Architecture (BEA). The BEA is DoD's "blueprint" for business process transformation – it integrates functional activities, business processes, data requirements and IT system requirements to guide systematic business process improvement across all DoD functional areas.

The inherently "integrated" nature of the BEA makes it an ideal tool to advance the long-standing ESOH transformational objective of systematically integrating sound ESOH management into Defense business practices. Integration of ESOH into business practices is essential to sustainable operations, which is the overarching focus of DoD Directive 4715.1 ,"Environment, Safety, and Occupational Health (ESOH)."

Leveraging this DoD policy and the Defense Business Transformation initiative, the Department is building on the success of existing ESOH programs to evolve from "compliance management" to a mission-oriented focus on sustainable operations. In 2004, BEI worked with subject matter experts from the DoD Components

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Defense Supply Center Columbus EMS Results in Innovative Procedures

Defense Supply Center Columbus (DSCC) stepped up as the pacesetter for Defense Logistics Agency's (DLA) first On-site Verification Review. DSCC has an EMS conforming to ISO 14001:2004 and mission requirements. This was the chance to show that what was in the manual was operating on the ground. A three-member DLA HQ team rigorously verified EMS procedures across all DSCC functions. Reviewers were impressed. They found several best-of-class procedures, including:

- Strong and pro-active language integrating environmental considerations into DSCC base support contracts.
- Innovative computer "log-on" notes, computer "screen savers" and EMS web-site as part of general employee EMS awareness training.
- Impressive collaboration and shared information among different DSCC departments.
- Integration of the EMS into DSCC's Annual ESOH Work Plan. ■

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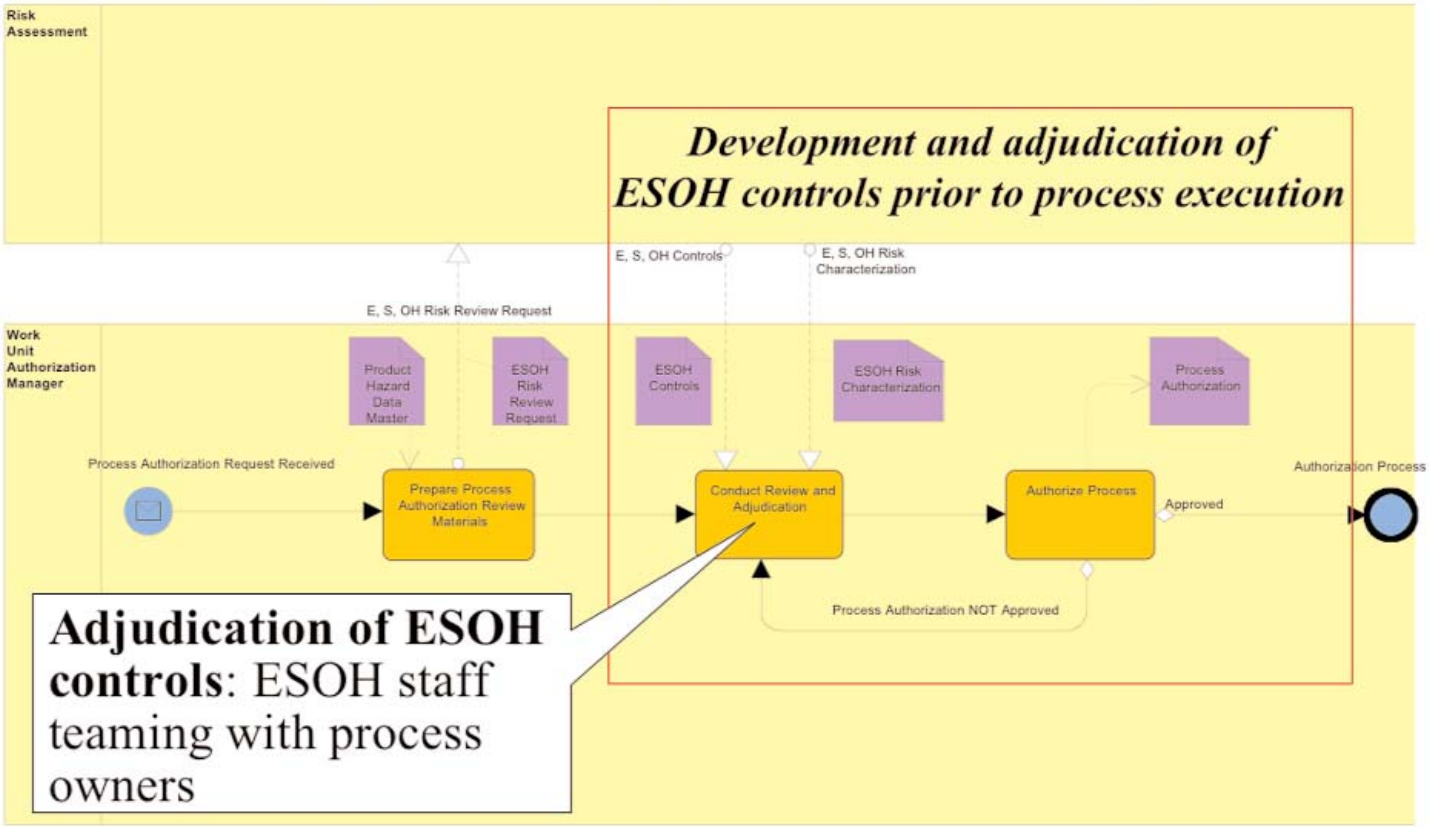
and OSD to establish the foundation for ESOH in the DoD BEA. BEI developed a high-level ESOH "activity model" entitled Perform Environment, Safety, and Occupational Health (ESOH) Services. Completion of this foundational product provided an initial ESOH presence in the DoD BEA using an environmental management system (EMS) framework. The ESOH activity model reflects "what" the ESOH community does in DoD, and breaks it down into high-level activities common to ESOH business processes: aspect identification, aspect assessment, ESOH risk assessment, ESOH solution development and implementation, and development of ESOH agreements.

BEI is continuing its work with the BTA and the DoD Components to support the Department's ESOH strategy (http://www.acq.osd.mil/ie/) and to expedite the Department's transformation toward sustainable operations. On-going ESOH initiatives include definition, valuation and reporting of environmental liabilities, hazardous materials management, and explosives safety management. These initiatives comprise a growing ESOH presence in the DoD BEA, as the BEA becomes an ever more effective tool for integrating sound ESOH management into business practices across DoD.

You can find more information on the ESOH content of the DoD BEA at http://www.acq.osd.mil/ie/bei/esoh-initiatives.htm and http://www.defenselink.mil/dbt/products/architecture/BEA_3_1_March_2006/iwp/default.htm. ■

Hazmat Process Authorization Sub-Process

How does your EMS "align" mission and ESOH priorities?



NASA Headquarters EMS Addresses Agency-wide Environmental Aspects

NASA conducts its missions through ten major centers and several component facilities in ten states. The centers are large complexes that may contain sub-orbital and orbital launch platforms, laboratories, rocket engine test stands, wind tunnels, hangars, and various industrial facilities. Much of NASA's direct interface with the environment occurs at its centers. During the development of the NASA EMS, however, it was recognized that the scope of each center's EMS and the extent of its control and influence over many program decisions was affected by NASA Headquarters. Furthermore, many of NASA's major programs involve multiple centers.

Therefore, the scope of the NASA Headquarters EMS includes not only Headquarters operations, but more importantly, the Headquarters program management activities. NASA Headquarters has responsibility for overall program management for most major programs, including the development of new programs, changes to existing programs to meet new operational or research requirements, and termination of ongoing programs (e.g., Space Shuttle). In fact, the NASA Headquarters program management activity was ultimately the primary driver in several of its key Agency-wide environmental aspects.

To ensure involvement of critical Headquarters organizations, the NASA Headquarters EMS team includes representatives from the four NASA Mission Directorates with the overall program management responsibility and appropriate Mission Support Offices (e.g., procurement, facilities, environmental, logistics). The EMS team followed the Agency EMS process for identifying environmental aspects and impacts as established by NASA Procedural Requirements 8553.1, NASA Environmental Management System (EMS). After identifying Headquarters environmental aspects, potential impacts and benefits to the NASA mission and the environment were determined based on the following impact categories:

- Safety and health.
- Natural and cultural resources
- Cost to NASA
- Mission impact
- Reputation and stakeholder relationship.
- Environmental legal and regulatory implication.

After factoring in potential severity and frequency of these impacts and benefits, four key environmental aspects were identified for NASA Headquarters:

- Environmental Impact Reviews - National Environmental Policy Act (NEPA).
- Institutional Sustainability.
- Historic, Archaeological, and Cultural Resources.
- Remediation/Restoration.

NASA Headquarters has realized several benefits resulting from implementation of the Headquarters EMS.

- Recognition of the potential impact of Headquarters activities on NASA's environmental footprint.
- Recognition of potential environmental aspects associated with changes in existing programs and termination of programs (e.g., addressing historic aspects of the shuttle).
- Improved coordination between the Environmental Management Division, Mission Directorates, and Mission Support Offices.

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Defense Supply Center Richmond's EMS Partnership Continues To Grow

The first regional EMS partnership in the nation, the Virginia Regional Environmental Management System (V-REMS), began in March 2003 through CEQ and OFFE assistance. Three years later, this partnership remains extremely healthy and has now grown from its original four local members to more than thirty members located throughout the Commonwealth of Virginia, and even includes EPA's Region III Headquarters in Philadelphia.

V-REMS joins all levels of government and the private sector to participate in coordinated activities to voluntarily address individual, group, and regional environmental challenges and mission performance. By freely sharing EMS and environmental best business practices and lessons learned throughout the program, all participants voluntarily strengthen working relationships, encourage beneficial interaction, and make a positive impact upon the environment. For example, by identifying a regional impact, such as air or water pollution, each team member could assess its contributions to that impact and how to reduce it.

The sharing of information and best environmental business practices among the partners capitalized on each players respective knowledge of EMS, so that no one entity had to go it alone and reinvent the wheel. The partnership has also resulted in the following measurable mission benefits and accomplishments:

1. Through boiler retrofit and enhancement, and the use of a cleaner burning fuel, a partner was able to reduce a heating boiler's sulfur emissions from 100 tons to 7 tons. This reduction also greatly simplified permitting requirements, saving mission funds.
2. Stormwater gardens have been constructed at many member locations. These rain gardens are really bioretention/biofiltration units whose soil is composed of 50 percent sand, 30 to 40 percent compost, and topsoil. This creates a very porous soil that rain quickly infiltrates, particularly the first flush from a storm, which contains most of the storm water runoff contaminants. Once in the soil, contaminants are naturally broken down and/or absorbed through a variety of chemical and biological processes.
3. The procurement and use of fluorescent bulb crushers at various member locations has resulted in the controlled and contained recycling of more than 3,000 bulbs and the recovery of more than 36,000 total milligrams of mercury.
4. By using time clocks and motion sensors to power down office lights during non-business hours, one partner expects to achieve monetary savings in excess of $167,000 per year.
5. A regional wastewater facility (and member) implemented storm water management solutions that helped the facility increase its annual revenue by $500,000 while also reducing effluent discharge.
6. Through the efforts of the partnership, two member school districts were successful in obtaining EPA grant funding to retrofit their school busses with cleaner technology. More that 20,000 students will benefit.

Current key initiatives within the partnership involve focusing the combined efforts of its members on specific environmental challenges unique to the Commonwealth of Virginia. Tasks groups are aggressively working E85 fuel usage, storm water mediation, various energy efficiency initiatives, and Chesapeake Bay improvements, to name a few. ■

NASA HEADQUARTERS from previous page

- Environmental Management Programs developed for four key Headquarters environmental aspects that support the NASA mission.
- High priority environmental aspects identified across the NASA Centers.
- Implementation of Headquarters EMS awareness training.

In conclusion, a comprehensive NASA EMS would not have been complete without a NASA Headquarters EMS. Key environmental aspects and impacts may be largely indirect for NASA Headquarters, but their overall effect for the Agency can be greater. Finally, the Headquarters EMS not only protects the environment, but supports the NASA mission. ■

Evolution of the EMS Metrics for Federal Facilities

For some years, the guidance for the annual report required by section 307of Executive Order 13148, "Greening the Government Through Leadership in Environmental Management," has asked each agency to provide a progress report on establishing an EMS at each of that agency's "appropriate" facilities. Initially, the guidance recognized that agency level support, both in the form of resources and leadership, was critical to the development of each facility's EMS. As a result, the annual report guidance questions focused on managerial mechanisms to provide those necessary elements. For example, agencies were expected to ensure that senior managers were trained to understand the benefits of EMS implementation and that facility level personnel had adequate agency level guidance to ensure successful EMS development.The guidance required each agency to describe if those actions had been taken.

Recognizing that proper EMS development can take considerable time, the Interagency Environmental Leadership Workgroup charged with developing the annual report guidance also began to focus on measuring progress towards EMS implementation across the Federal community. While metrics to address agency level support mechanisms remained important, it was clear that some measure of the status of facility level EMS efforts was necessary. Initially, agencies provided a count of the number of "appropriate facilities" that would be implementing an EMS. In more recent years, the annual report guidance asked agencies to determine the percentage of their facilities that had reached a given milestone in EMS development necessary to reach full implementation by the December 2005 deadline. The fact that most agencies were following an EMS framework similar to the ISO 14000 standard, allowed consistent metrics to be presented and measured across all Federal agencies. For example, for calendar year 2003, agencies were asked the percentage of facilities that had "identified and documented their significant environmental aspects," because that was seen as one of the first steps in EMS implementation. This format for EMS metrics continued through the annual report for calendar year 2005 when the metrics addressed completion of EMS documentation and management confirmation of conformance to the requirements of E.O 13148.

During the fall of 2005, in preparation for the facility level questions for calendar year 2006, the Interagency Workgroup determined that the focus of the EMS metrics should shift towards measurement of the effect of EMS implementation at Federal facilities. The guidance still requires facilities to describe the "maturity" of their EMS based on progress in carrying out the recognized elements of an EMS through management review. It also recognizes the cyclic nature of EMS implementation and the E.O. requirement for facilities to review their EMS annually. However, the 2006 guidance also requests facilities to outline the performance of their EMS in several ways. Facilities are requested to:

- Estimate the effect of their EMS on organizational features such as reduced risk to mission and improved community relations.
- Describe the effect of their EMS on a variety of environmental issues such as air quality and solid waste management.
- Describe their "EMS experiences," including successes, challenges, lessons learned, and benefits to agency mission.

It is anticipated that the 2006 metrics will be used through calendar year 2008 to ensure predictability for implementing facilities and to provide adequate long-term data on the effect of EMS implementation across the Federal community.

The 2006 facility level EMS metrics are meant to determine both the progress and performance of the EMSs implemented as a result of E.O. 13148 and are a critical component for continued progress of the Federal government's environmental program. Responses to the metrics will not only allow measurement of Federal progress towards the goal of EMS implementation, they will help inform senior Federal decision makers about the effectiveness of those EMSs at addressing environmental stewardship and sustainability goals. ■

The Federal Electronics Challenge and Environmental Management Systems

From the FEC resource document, "EMSs and the FEC: What's the Connection?"

Most Federal facilities rely on electronic equipment such as computers, printers, cell phones, and copiers to achieve their missions. When a facility investigates how its operations impact the environment, it may find that the adverse environmental impacts associated with electronic equipment use, such as energy consumption and solid and hazardous waste generation, are substantial and can be targeted for reduction. Purchasing environmentally and energy-efficient equipment, and managing and disposing of it in an environmentally sound way can help a facility reach its EMS targets. The Federal Electronics Challenge (FEC) can assist Federal facilities with integrating electronics into their EMSs.

The Federal Electronics Challenge

The FEC was developed to help Federal facilities and agencies to:

- Purchase greener electronic products.
- Reduce impacts of electronic products during use.
- Manage obsolete electronics in an environmentally safe way.

The Federal government, which purchases more than $60 billion worth of electronic equipment and services annually, has the opportunity to provide leadership in the environmentally sound and cost effective management of electronic assets. The FEC works hand in hand with Federal facilities and agencies as they implement best management practices throughout the electronics life cycle, all the way from procurement to disposition.

Connecting the FEC and EMS

The goal of an EMS is for an organization to achieve and demonstrate sound environmental performance by addressing the impact of its activities on the environment. The overall FEC program goal for partners is to reduce life-cycle environmental impacts of electronic products. An EMS provides the structure and framework to achieve that goal. The FEC and associated resources and guidance help Federal facilities achieve environmental improvements from better management of electronic equipment throughout its life cycle at the facility.

The FEC can provide helpful tools and assistance to "populate" the elements of an EMS, including:

- Identifying types of activities associated with electronics purchase, use, and disposition.
- Meeting EMS objectives through specific step-by-step activities.
- Identifying roles and responsibilities by building a knowledgeable team.
- Providing access to other Federal agencies' experiences.
- Developing goals and measuring progress.

The accompanying table illustrates how FEC goals and activities relate to significant aspects that might be identified in a Federal facility's EMS. A more provides a detailed crosswalk of FEC issues and EMS elements and FEC program equivalents. This table can also be viewed or downloaded at the FEC Web site: http://www.federalelectronicschallenge.net/resources/docs/ems_tool.pdf. To learn more about the Federal Electronics Challenge and EMSs, and to find out how your facility can sign up as a Federal Electronics Challenge Partner, please send an e-mail to info@electronicschallenge.net. ■

continued on next page

Using Lessons Learned in the Federal Electronics Challenge to Integrate Electronics Into Your Environmental Management System

Updated: 03/15/2006

EMS Element (ISO 14001)	Electronic Equipment Component	Examples of FEC Program Equivalents
4.2 Environmental Policy	A conforming Federal Facility Environmental Policy Statement can include green purchasing, energy efficiency, and recycling by reference in the commitments to compliance with legal and other requirements, and prevention of pollution. An organization also may include more direct commitments to environmentally sound purchasing, use, and end-of-life management of all equipment (including electronics).	The FEC requests that partners consider environmental factors in all electronics purchasing and end-of-life management decisions and give preference to those products and services designated by or recommended in federal green purchasing preference programs, as well as those products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.
4.3.1 Environmental Aspects	The procedure to identify environmental aspects and impacts must be applied to procurement (purchasing) and contracting, operation of equipment and management of equipment at end-of-life as activities you control or influence. Include procurement and contracting personnel, facility and equipment management officials and recycling or environmental specialists on the EMS Cross Functional Team identifying and ranking aspects and impacts. When identifying and prioritizing environmental aspects, consider the impacts of the life-cycle management of electronic equipment as criteria to trigger significance. Aspects may include: • Toxics releases • Impacts from asset management (equipment) • Energy use or materials use • Waste generation	Use the EMS activity/aspect identification process to identify electronic equipment purchase, use, and disposal activities that result in impacts to be managed by the EMS. Consider using FEC targeted impacts as triggers for significance in aspects assessment. The following examples are electronics-related activities that result in impacts that should be considered during the EMS significance determination: • Activity: purchase of new computers • Aspect: consumption of natural resources • Impact: depletion of natural resources • Activity: use of computers • Aspect: energy use • Impact: depletion of natural resources • Activity: disposal of computers • Aspect: disposal of hazardous materials • Impact: potential pollution of natural resources
4.3.2 Legal and Other Requirements	A conforming legal (and other requirements) procedure should identify all related laws, regulations, and Executive Orders that apply to equipment management activities. Electronic equipment management is affected by procurement and recycling-related requirements as well as general "greening the government" mandates and requirements. Any agency-specific procurement requirements, including your agency's Affirmative Procurement Plan and Environmentally Preferable Purchasing Strategic Plan[1] are considered "other requirements" and should be incorporated into legal and other requirements applicable to the EMS. For ISO 14001 systems, agreement to the FEC Memorandum of Understanding (MOU) by a parent agency is considered an "other requirement."	The FEC program provides a list of regulations, requirements and mandates that regulate the management of electronics. This resource is available online at: http://www.federalelectronicschallenge.net/resources/docs/fec_regs.pdf.
4.3.3 Objectives, Targets, and Environmental Management Programs	Determine realistic objectives, based on the commitment to pollution prevention, legal requirements, significant aspects, and mission requirements. Improving the life-cycle management of equipment to decrease environmental impacts may reduce the impact of significant aspects. Consider focusing on all purchases or services over a threshold amount, based on environmental impact and the amount of influence your facility has over the product or service providers. Establish Environmental Management Programs (EMPs) to achieve objectives and targets. EMPs can pursue green purchasing, materials use, energy efficiency, or recycling-related objectives and targets, and should include a timeframe within which each should be achieved.	Participation in the FEC can assist in establishing EMPs. Electronic equipment is an important resource for federal facilities and the life-cycle management of electronics can be a part of EMPs. The following are representative FEC goals with example objectives and targets: • Decrease Electronics Energy Use: Ensure that at least 50% of all monitors purchased are ENERGY STAR compliant. • Manage Electronics Materials Use: Demonstrate that 25% of electronic equipment is reused or refurbished within or outside your agency. • Improve Electronics Waste Management: Require that vendors providing electronics recycling and reuse services to minimize land disposal and incineration to the greatest extent possible.

[1] Existing Plans are listed at: http://www.ofee.gov/gp/gplinks.html.

EMS Element (ISO 14001)	Electronic Equipment Component	Examples of FEC Program Equivalents
4.4.1 Structure and Responsibility	Include procurement and contracting, integrated risk management and environmental specialist personnel on the EMS Implementation Team and clearly define their roles towards achieving your EMS electronics goals. Assign staff to identify the IT products and services currently purchased to support your activities, including who purchases them and how they are purchased. Assign responsibility and resources for EMPs to achieve green purchasing and equipment management objectives and targets.	The FEC provides a step-by-step process and examples of how to build a team focused on improving the life-cycle management of electronic equipment. This resource is available online at: http://www.federalelectronicschallenge.net/resources/docs/getstart.pdf.
4.4.2 Training, Awareness and Competence	Identify procurement training needs based on significant aspects and legal and other requirements for Federal green purchasing preference and equipment management programs. Train procurement and contracting staff and product users and encourage them to request goods and services that reduce environmental impacts and meet performance standards. Ensure that all individuals associated with purchase, use and disposition phases of the life cycle of electronics are aware of their responsibilities.	The FEC provides examples of activities and trainings that can help improve the life-cycle management of electronics and improve employee awareness. These trainings can help institute corrective actions for EMS nonconformance. FEC training materials can be found online at: http://www.federalelectronicschallenge.net/resources/presenta.htm
4.4.3 Communication	The Communication section should include guidance on who is responsible for internal communication on significant aspects, including those related to green purchasing and equipment management, as well as how often and to whom information will be disseminated. Consider including electronic stewardship results in external communications.	The FEC provides outreach materials to assist partners in communicating their involvement with, and success in, the FEC. A presentation intended to assist partners in promoting their program is available online at: http://www.federalelectronicschallenge.net/resources/docs/welcome_promoting.pdf
4.4.5 Document Control	Document control procedures should apply to all green purchasing documentation, including Affirmative Procurement and environmentally preferable purchasing plans, specifications, purchase orders and contracts, and lists of green products approved for purchase. Records of proper disposition of electronics are also addressed in this element.	Procedures and responsibilities for creation and modification of purchasing, use, equipment management and disposition documents may be applicable.
4.4.6 Operational Control	Ensure that all significant aspects related to life-cycle management of electronic equipment are addressed by operational controls. Develop and implement control procedures to ensure that product users, specification writers and the procurement and contracting personnel include an evaluation of environmental considerations, along with price, performance and availability, in the criteria for purchasing decisions and the selection of services. Communicate green purchasing and equipment management procedures and requirements to suppliers and contractors, especially those that provide goods and services for activities that have significant environmental aspects.	The EPA has a database of green contract language for more than 600 products and services, which is available online at: http://www.epa.gov/epp/database.htm. Operational control procedures should ensure that the management and purchases of products and services support the environmental policy, legal and other requirements and green purchasing and equipment management objectives and targets.
4.4.7 Emergency Response	Emphasize how the purchase of environmentally preferable products, and proper management of electronic equipment that may contain materials of concern, reduce the potential for incidents requiring emergency response.	The FEC encourages the purchase of electronics with reduced toxics constituents.

EMS Element (ISO 14001)	Electronic Equipment Component	Examples of FEC Program Equivalents
4.5.1 Monitoring and Measurement	A conforming procedure will document what green purchasing data to collect and how to collect and manage the data related to significant environmental aspects and requirements for reporting on green purchasing. When possible, measurements should quantify positive environmental impacts as well as progress toward meeting established green purchasing objectives and targets. For example, measure reductions in solid waste associated with purchases of environmentally preferable products, reductions in hazardous waste disposal associated with substitution of less toxic products, as well as reductions in energy and water use associated with products to increase efficiency.	In addition to tracking the amount of electronics purchased that are environmentally preferable, the FEC program encourages facilities to track their use of energy efficient electronic equipment and the volume of electronic equipment they reuse, donate and recycle. The FEC program encourages partners to develop baseline data and goals, and these can assist in measuring environmental performance related to electronics for a facility's EMS. The baseline survey is available online at: http://www.federalelectronicschallenge.net/forms/baselsurv5.pdf. Guidance for developing goals is available online at: http://www.federalelectronicschallenge.net/forms/goals5.pdf. The FEC program also asks partners to submit annual information on progress and provides recognition for achievements. The annual reporting form is available online at: http://www.federalelectronicschallenge.net/forms/repform.pdf. The FEC has designed information for facilities to exhibit how the improved life-cycle management of electronic equipment reduces environmental impacts. In particular, the FEC is working to develop an environmental benefit calculator for electronics that Partners can use to quantify environmental improvement. Information about the calculator is available online at: http://www.federalelectronicschallenge.net/resources/docs/enbencalc.pdf.
4.5.2 Nonconformance and Corrective and Preventive Action	Designate responsibility for investigating and correcting findings of non-conformance with the EMS requirements, in accordance with facility corrective action procedures.	EMS records procedures should capture relevant FEC activities.
4.5.3 Records	Identify green purchasing and recycling records, such as training, purchases of specific products, amount of material sent for recycling, donation or disposal, reports to management and government agencies and audits. Maintain these environmental records in accordance with facility EMS procedures.	The FEC program encourages partners to develop baseline data and goals, and these can serve as records for a facility's EMS. The baseline survey is available online at: http://www.federalelectronicschallenge.net/forms/baselsurv5.pdf. Guidance for developing goals is available online at: http://www.federalelectronicschallenge.net/forms/goals5.pdf. The FEC program also asks partners to submit annual information on progress and provides recognition for achievements. These forms can also serve as records for a facility's EMS. The annual reporting form is available online at: http://www.federalelectronicschallenge.net/forms/repform.pdf.
4.5.4 EMS Audit	Ensure that life-cycle equipment management EMS elements are included in the activities to be considered in either internal or external audits of the EMS.	EMS records procedures should capture relevant FEC activities.
4.6 Management Review	Ensure that progress toward achieving environmentally preferable life cycle management of electronic equipment objectives and targets and any related operational controls are discussed as part of the EMS Management Review. Ensure that the management review considers recommendations to improve facility life cycle equipment management efforts.	FEC Partners that receive recognition and are used as case studies can use the EMS Management Review to highlight these achievements and show progress toward commitments. Information on applying for FEC annual awards is available online at: http://www.federalelectronicschallenge.net/apply.htm.

REFERENCES

Information about the ISO 14001 standard is available online from the International Organization for Standardization, at: http://www.iso.org/iso/en/prods-services/otherpubs/iso14000/index.html.

CONTACT INFORMATION

If you have questions related to this resource or need other assistance with the Federal Electronics Challenge, please contact your Regional Champion. The list of FEC Regional Champions is available at http://www.federalelectronicschallenge.net/champions.htm.

Partners may also request technical assistance via email to partner@electronicschallenge.net.

FEDERAL ELECTRONICS CHALLENGE

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Office of the Federal Environmental Executive

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