

Introduction to a Chesapeake Bay-Focused Environmental Management System (EMS)

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**U.S. Environmental Protection Agency (USEPA)
Region 3**



Chesapeake Bay Program
A Watershed Partnership

Introduction to a Chesapeake Bay-Focused Environmental Management System

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Introduction to a Chesapeake Bay-Focused Environmental Management System

Formal environmental management systems (EMS) emerged in the early 1990s, offering organizations a systematic approach to identification and management of the potential environmental consequences of their operations. EMS provides an effective framework for identifying and managing environmental responsibilities, including those of greatest concern to the local community. Implementing an EMS requires active participation of senior leadership in a variety of strategies to integrate environmental and key mission activities and continuously improve environmental performance.

In April 2000, President Clinton signed Executive Order 13148, establishing EMS implementation requirements for all federal facilities. A subsequent executive order, EO 13423, retained the EMS requirement as the primary management approach for addressing environmental aspects of internal agency operations and activities. The U.S. Environmental Protection Agency (EPA), as the principal steward for the environment, has taken a leadership position by providing training and encouragement to assist organizations in implementing effective EMSs.

What is the Chesapeake Bay Program?

Chesapeake Bay is our country's largest and most productive estuary, stretching more than 200 miles from Havre de Grace, MD to Norfolk, VA. Its 64,000 square mile watershed is fed by 48 major rivers, 100 smaller rivers, and thousands of streams and creeks. The watershed covers all or parts of six states: Maryland, Virginia, Pennsylvania, New York, Delaware, West Virginia and the District of Columbia. The Chesapeake Bay watershed is an intricate system of terrestrial and aquatic habitats. The open water, underwater grasses, marshes, wetlands, streams and forests provide food and shelter for 3,600 species of plants and animals and more than 15 million people, with another 2.8 million expected by the year 2020.

Healthy water contains a balanced amount of nutrients, as well as sufficient oxygen and sunlight to support living creatures. As development pressures increase, however, the watershed receives an overabundance of the nutrients, nitrogen and phosphorus. Local rivers and streams now transport large quantities of sediment and pollution downstream into Chesapeake Bay, reducing native underwater grasses, reef acreage and the population of oysters. In addition, the watershed is losing thousands of acres of wetlands and forest coverage.

The Chesapeake Bay Program (CBP) is a unique regional partnership whose mission is the protection and restoration of the Chesapeake Bay ecosystem for future generations. The Chesapeake Bay Program partners include the states of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the Environmental Protection Agency, representing the federal government; and participating citizen advisory groups.

In June 2000, the Bay Program partners adopted Chesapeake 2000, an agreement to guide restoration activities throughout the Bay watershed through 2010. More recently, Executive Order 13508, Chesapeake Bay Protection and Restoration, directs the federal government to take a larger role in the Chesapeake Bay restoration, including actions at federal facilities in the watershed to reduce the amount of pollutants released from federal lands. These agreements state specific goals for Bay restoration and provide environmental performance commitments that can be targeted through an organization's EMS.

Training Objectives

Consumers, governments and industry all are seeking ways to reduce the environmental impacts of their activities to ensure their long-term sustainability. The primary objective of this training course is to encourage development and implementation of an EMS that incorporates local environmental priorities. In particular, this course outlines an EMS that focuses on protection of the Chesapeake Bay.

Specifically, this training course will:

- Provide an overview of the elements of an EMS according to ISO 14001:2004, the international consensus standard for EMS;
- Describe possible approaches to developing an EMS that reflects watershed priorities; and
- Present tools and techniques EMS implementers may use to develop and communicate EMS concepts and affect change within an organization.

The course is organized around the elements of the International Organization for Standardization's (ISO) EMS Standard, ISO 14001:2004. For an overview of the mission and procedures of the International Organization for Standardization and information on how to purchase ISO standards, go to www.iso.org.

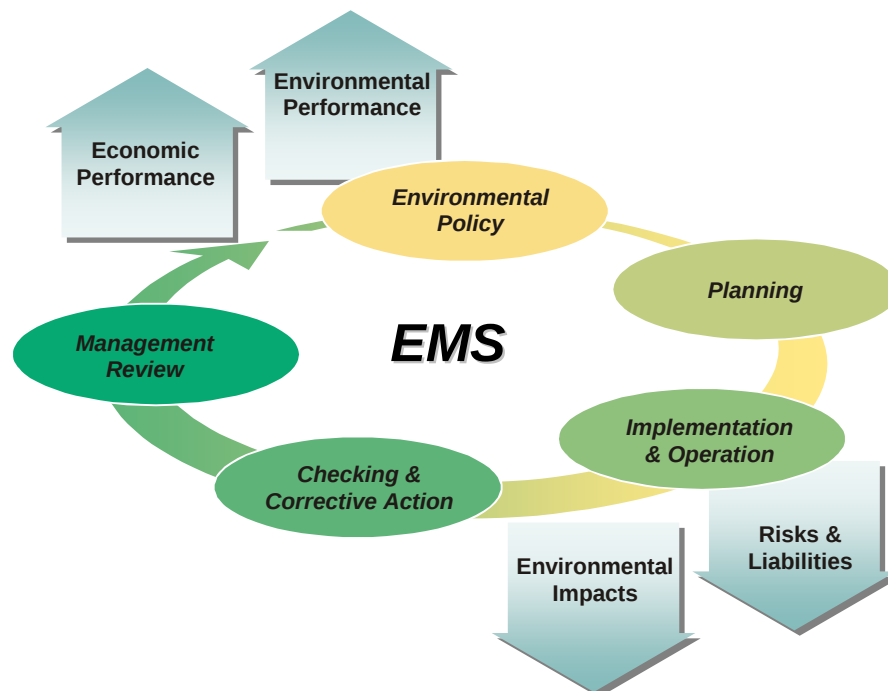
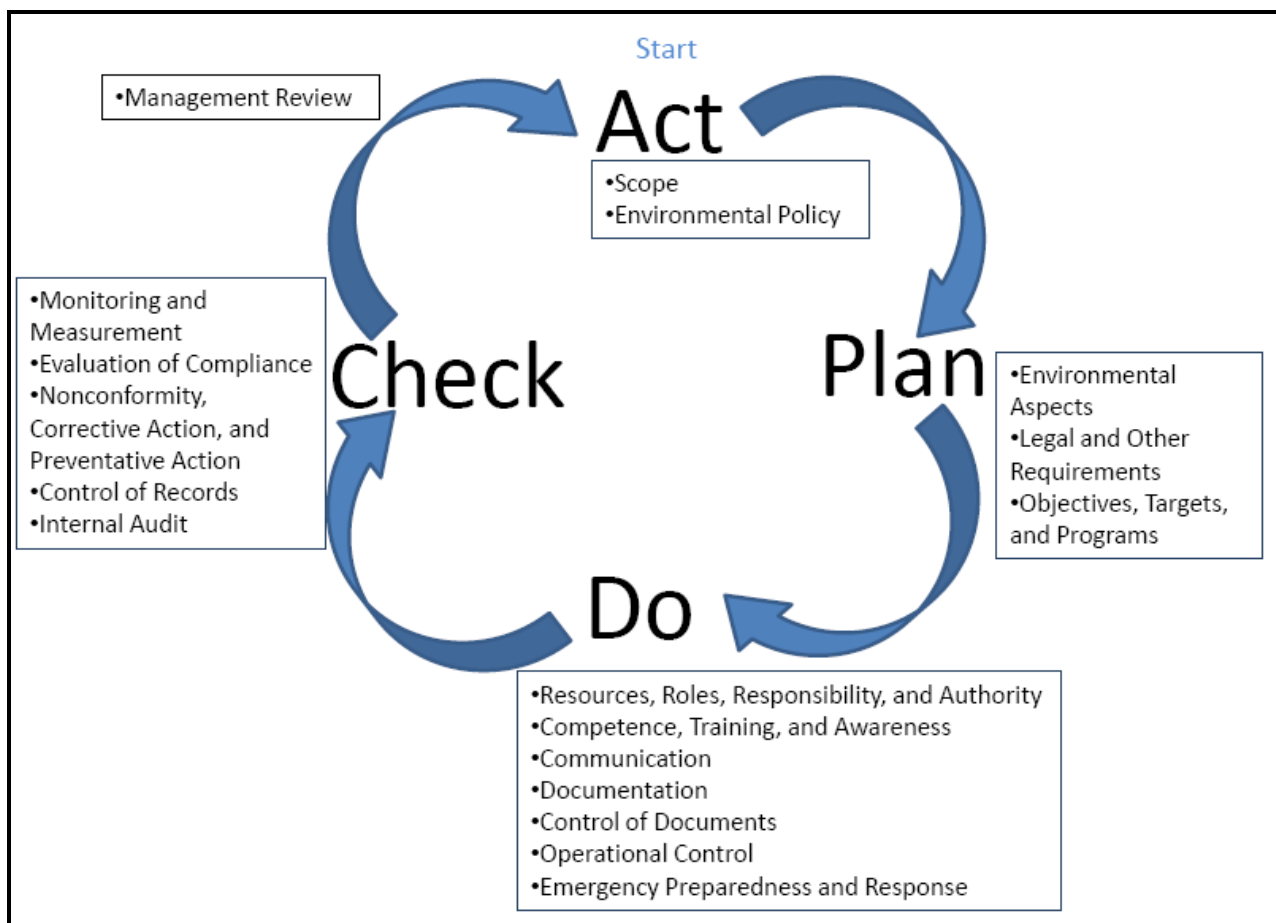


Figure 1- ISO 14001 Continual Improvement Cycle

An EMS is a set of interrelated elements used to establish and implement an organization's environmental policy and manage those activities, products and/or services that interact with the environment. ISO 14001:2004 specifies requirements for implementing these elements to comprehensively manage environmental responsibilities and deliver on the commitments made by top management in an environmental policy statement. The expectation is that the elements are repeated as an iterative process that will lead to continual improvement of environmental management and environmental performance across the organization.

**Figure 2 - ISO 14001 Continual Improvement Cycle
Elements of an EMS (ISO 14001:2004)**



The pages that follow present more detail on the specific requirements of each of the EMS elements, as well as possible approaches to customizing these elements to focus on Chesapeake Bay restoration and sustainment goals.

1. Scope of the EMS

Requirements:

Define and document the scope of the environmental management system.

Implementation:

Defining the scope of the EMS allows your organization to evaluate which facilities, activities and services will participate in the EMS. Will the EMS be fence-line to fence-line or will you implement incrementally? Which tenants, contractors and/or other service provider activities will be included within the scope of the EMS?

Once you have determined the scope of your EMS, brief senior leadership to ensure that they concur. Document the approved EMS scope in a hard copy or electronic document. Ensure that the scope of the EMS is reviewed by senior leadership during the annual Management Review.

Chesapeake Bay Focus:

- Ensure that the scope of the EMS includes all activities, products and services that have the potential to contribute pollutants to the Chesapeake Bay watershed and/or diminish the quality of habitat for the living resources of the Bay (e.g., wetlands alternations). Include all sources of air emissions, wastewater discharges, including stormwater, and use of pesticides and the Chesapeake Bay Chemicals of Concern (see Appendix 2).

2. Environmental Policy

Requirements:

Ensure that top management (an individual or a group of individuals with executive responsibility for the organization) defines the environmental policy for your organization. The policy must be appropriate to the environmental impacts of your activities, products or services and provide a framework for setting and reviewing environmental objectives and targets. The policy must include commitments to:

- continual improvement,
- prevention of pollution, and
- compliance with applicable environmental legal and other requirements.

The policy must be communicated to all persons working for or on behalf of the organization and must be available to the public.

The policy must be documented, implemented, and maintained.



Implementation:

The environmental policy is the focal point for EMS implementation. It demonstrates your organization's top-level commitment to environmental excellence. The policy becomes a contract between top management and the entire organization. The EMS implementation team is responsible for designing a system that fulfills the commitments stated in the policy.

Work with senior leadership to develop an environmental policy statement that is appropriate to the mission and the environmental footprint of your organization. Review the environmental policy statement carefully to ensure that it includes all of the ISO 14001-required content, prior to issue. Document the environmental policy in either hard copy or electronic format and issue it through your organization's appropriate channels.

Communicate the environmental policy to staff, contractors, service providers, suppliers and any others working on your behalf. Potential tools for communication include staff meetings, annual training, new employee orientation, posting the environmental policy on your internal website and on bulletin boards in shops, offices and break rooms, and any other mechanisms that your organization uses to communicate new environmental policies and procedures.

Work with your Public Affairs Office to ensure that the environmental policy is available to the public. The policy may be posted on an external, public website, if top management concurs.

Ensure that the environmental policy statement is reviewed by senior leadership during the annual Management Review. Revisions to the policy must be communicated to all appropriate personnel and made available to the public.



Chesapeake Bay Focus:

- Establish Bay restoration goals as “other requirements to which the organization subscribes” by including language in the environmental policy statement that links your EMS to the executive-level goals of the Chesapeake Bay Program, e.g., Executive Order 13508 (See Appendix 1).
- Include a specific commitment to Chesapeake Bay restoration and sustainability.
- Commit to pollution prevention activities focused on Chesapeake Bay Chemicals of Concern (See Appendix 2).



Example:

“To achieve the stewardship commitment within Executive Orders 13423 and 13508 and other Bay Agreements, we will carefully manage the environmental impacts of our activities and the facilities we use.

As an organization located in the bay watershed, we will:

Integrate Chesapeake Bay restoration goals into efforts to continually improve our own environmental performance ;

Set meaningful pollution prevention goals to reduce the environmental impacts associated with our work ;

Maintain full compliance with environmental regulations and, to the extent possible, federal executive orders ;

Share environmental management successes with other organizations in the Chesapeake Bay watershed to enable them more effectively to manage the environmental impacts of their facilities and contribute to the achievement of the goals related to the restoration and protection of Chesapeake Bay.

Realization of our environmental goals will be achieved through a proactive management system based on international consensus standards. We invite stakeholders within the Chesapeake Bay watershed to comment on our environmental management initiatives by contacting us at www.abc.gov.”

3. Environmental Aspects



Requirements:

Establish a procedure to identify the environmental aspects of the activities, products and services that you control or have influence over, within the defined scope of your EMS. Take into account new developments and new or modified activities, products and services.

Determine those aspects that have or can have significant impacts on the environment and establish your EMS around these significant aspects.

Document and maintain this information.



Implementation:

Environmental aspects form the “backbone” of the EMS. The significant aspects identified by your organization further shape the scope and focus of the EMS. It is the significant aspects for which ISO 14001 requires the development of improvement goals

(i.e., objectives and targets) and management programs. Each organization sets its own criteria for determining which environmental aspects are significant. This requires an assessment of the scale of environmental impacts among all of the organization's environmental aspects. Those aspects with the largest impacts should become the significant aspects.

Identify all of your target activities, products and services. Establish a procedure for determining the environmental aspects and impacts associated with each, and then use the procedure to develop a list of environmental aspects and impacts associated with the operations of your organization. A sample aspects and impacts analysis might look like the following:

Activity	Environmental Aspects	Environmental Impacts
Laboratory	Hazardous waste Solid waste Air emissions Waste water discharge	Degradation of land Air quality degradation Surface water degradation
Grounds Maintenance	Stormwater Air emissions/exhaust Solid waste	Surface water degradation Air quality degradation Degradation of land
Offices	Electricity consumption Solid waste Universal waste	Resource depletion Degradation of land Air quality degradation Surface water degradation

Each organization assesses the risk associated with its environmental impacts using appropriate criteria for determining which environmental aspects are significant. Those aspects whose impacts meet significance criteria will become your significant aspects. Senior leadership should assist in determining the criteria you will use to determine which aspects are significant. Potential significance criteria might include:

Potential Significance Criteria
Magnitude and Likelihood of impact Risk to Chesapeake Bay Regulatory status Mission impact Community concerns

Assign values and apply the criteria to each aspect within the scope of your EMS. Among all significant aspects, those with greatest magnitude and likelihood of environmental impact may be your organization's initial significant aspects to target for improving performance and reducing risk. Present the results of your significance determination to senior leadership and ask for their concurrence.



Chesapeake Bay Focus:

- Establish significance criteria that reflect risks to Chesapeake Bay. Risks might include potential discharge of chemicals of concern, sediment runoff, habitat loss, point source discharges, etc.
- Ensure that procedures for reviewing the environmental impacts of new projects are effective. Add criteria that focus pre-project planning on environmental aspects and impacts that most affect the Chesapeake Bay. Minimize impacts by reviewing alternatives early in the planning process.



Examples:

See Appendix 3, the *Worksheet for Determining Significant Aspects*. Many federal organizations have developed Agency-specific guidance on the development and application of criteria to identify significant aspects. You also may wish to consult references such as the Joint Services P2 Technical Library's [EMS Library](#).

4. Legal and Other Requirements



Requirements:

Establish and maintain a procedure to identify and access applicable legal and other requirements and determine how these requirements apply to your organization's environmental aspects. The term "other requirements" refers to any non-regulatory requirements such as voluntary programs, trade association criteria, and/or Executive Orders.



Implementation:

ISO 14001 addresses compliance with legal and other requirements in several ways. First, it requires a commitment to compliance in the environmental policy statement, the document against which the effectiveness of the EMS is tested over time. Second, it requires a procedure for identification of the regulatory and other requirements that are in effect at any given time. The term "other requirements" refers to any non-regulatory requirements such as voluntary programs, trade association criteria, and Executive Orders. Also, legal and other requirements are considered when setting objectives and targets. In addition, your organization's ability to maintain compliance is assessed through the internal audit and reported to senior leadership during the management review. All of these requirements ensure a high level of awareness and action related to compliance with legal and other requirements.

Determine how your organization identifies the environmental regulatory and other requirements that are in effect at any given time. Consider those environmental requirements that may be managed by others, such as green procurement or contracting requirements. Identify the legal or other requirements associated with each environmental aspect. You may want to consider developing a register or list of all applicable requirements. Annual review and updates to the register will allow you to demonstrate that you are maintaining your commitment to compliance with legal and other requirements.



Chesapeake Bay Focus:

- Identify Chesapeake Bay executive-level strategy documents (e.g., EO 13508, *Chesapeake 2000*, see Appendix 1 and Appendix 5) as “other requirements to which the organization subscribes.”
- Create a register of legal and other requirements that are specific to each significant aspect. Include Chesapeake Bay Program directives as other requirements.

5. Objectives, Targets and Programs



Requirements:

Establish, implement, maintain and document measurable (where possible) environmental objectives and targets consistent with the environmental policy including the commitments to compliance, prevention of pollution and continual improvement. Consider legal and other requirements, significant environmental aspects, technological options, financial, operational, and business requirements, and the views of interested parties in setting the objectives and targets.

Establish, implement and maintain programs to achieve the objectives and targets. These programs should include designated responsibilities, resources and time frame for completion.



Implementation:

Objectives and targets are two of the EMS elements that formalize the continual improvement ethic within the EMS. **Objectives** are broad, long-term environmental goals and **targets** are the incremental steps that will lead to achievement of the objectives. Although it is most common for organizations to determine objectives and targets for each significant environmental aspect, it is also likely that not all objectives and targets can be completed at the same time. The expectation is that, with the concurrence and support of top management, your organization will pursue those objectives and targets that create the greatest environmental performance improvements.

Your organization should establish at least one objective and supporting targets for each significant environmental aspect. Objectives and targets should be endorsed by senior leadership, prior to implementation.

Create formal, documented programs for each objective that describe the work to be completed, who will perform the work, and set dates for reporting progress and for completion of each task. Assign responsibility for each target and each action that will lead to achieving the target. Determine resource needs, including labor hours, and obtain management approval.



Chesapeake Bay Focus:

There are many opportunities to link EMS objectives and targets to the goals stated in the Chesapeake Bay executive-level strategy documents (e.g., EO 13508, *Chesapeake 2000*, See Appendix 1 and Appendix 5) and/or the tributary-specific strategies that are being developed by the states in the Bay watershed. There are a number of quantitative and qualitative statements in these documents that provide excellent starting points for discussion of organization-specific objectives and targets.

- Set quantitative targets that contribute to achieving the goals within tributary-specific watershed implementation plans.
- Based on your significance rankings, consider objectives and targets for reduction in the purchase, use and disposal of Chesapeake Bay chemicals of concern. Consider priority areas such as stormwater (e.g., sediment) control, stream buffers, or maintenance of forested areas.
- Contact local watershed groups for input on objectives and targets. Consider local watershed management plans and/or tributary allocations when setting targets.



Example:

Defense Supply Center Richmond (DSCR) has an EMS objective to improve stormwater management. One target they have met is to establish three storm water raingardens, bioretention/biofiltration units that contain 50% sand, 30 to 40% compost, and 10-20% topsoil. The gardens create a very porous soil that promotes infiltration and decreases the load on DSCR's storm water system. To intercept oil and greases leaking from vehicles, the rain gardens have been placed at the drainage points of a vehicle maintenance facility and various parking lots. Throughout the gardens, DSCR planted a variety of native plants: winterberry, sweet spires, compact sweet spires, blue flag iris, cardinal flower, calycanthus, and Virginia bluebells.

See Appendix 4 for additional examples of Chesapeake Bay focused objectives and targets.

6. Resources, Roles, Responsibility and Authority



Requirements:

Management must make resources, including labor, infrastructure, technology and funding, available to establish, implement, maintain and improve the EMS. Your organization must appoint an EMS Management Representative to ensure that the EMS is effectively implemented and maintained. The Management Representative also should be the primary liaison with senior leadership. In addition, your organization should define, document and communicate environmental roles, responsibilities and authorities to enhance environmental performance.



Implementation:

Establishing and documenting environmental responsibilities raises the level of environmental accountability throughout your organization. The goal is to document current responsibilities for day-to-day environmental control, as well as those responsible at the system level for keeping the EMS in continual improvement mode. Documented responsibilities also allow the organization to identify ongoing training needs to ensure that those who are responsible not only know they are responsible but are competent to address those responsibilities.

Work with senior leadership to appoint an EMS Management Representative who will take responsibility for implementing and maintaining an effective EMS that conforms to ISO 14001:2004 and your organization's EMS guidance. Ensure that the EMS Management Representative has access to and communicates effectively with senior leadership.

Document environmental responsibilities throughout the organization in position descriptions, organization charts, and/or plans and procedures. Responsibilities that must be established are at both the activity level (e.g. who is responsible for ensuring that the grease trap has been inspected and cleared as necessary on a regular basis), and at the system level (e.g., who is responsible for leading the EMS team and planning the annual Management Review). Demonstrate that environmental responsibilities are communicated to all personnel, tenants, contractors and other service providers.



Chesapeake Bay Focus:

- Demonstrate commitment to Bay restoration goals by allocating resources to achieve objectives and targets that have been focused on Bay priorities.
- Designate the individuals responsible for completing targets, communicate these roles and responsibilities and get management buy-in on time frames and level of effort.

- Assign responsibility for interfacing with the Chesapeake Bay Program and communicating the latest knowledge on Bay priorities back to the organization.



Example:

See Appendix 6 and Appendix 7 for an example of an Environmental Management Program Form, which documents EMS responsibilities.

7. Competence, Training and Awareness



Requirements:

Ensure that any person performing a task that has the potential to cause a significant environmental impact is competent on the basis of education, training or experience. Maintain records of the education, training and/or experience. Identify environmental training needs. Provide training or otherwise meet these needs. Maintain training records.

Establish, implement and maintain procedures to communicate to all personnel working for you or on your behalf:

1. the importance of conforming to the environmental policy, environmental procedures and the EMS;
2. the significant environmental aspects and impacts associated with their work;
3. their EMS roles and responsibilities; and
4. the potential consequences of not following specified procedures and the benefits of improved personal performance.



Implementation:

Your organization must ensure that those who are responsible for environmental management activities receive appropriate training and are competent to perform their responsibilities. Training is important at the activity level where, for example, improper use of equipment could lead to environmental harm. Training also is important for general EMS awareness. Only when everyone in the organization is aware of the environmental policy statement commitments and the EMS objectives and targets will they be able to effectively support continual improvement in the environmental performance of the management system.

Determine whether those individuals responsible for activities associated with any significant aspect have appropriate environmental education, training or experience. Ensure that you have access to records confirming that these individuals are competent.

Identify all of your organization's environmental training needs, including those that may be managed outside of the environmental program, such as government purchase card

training. Determine how you will ensure that all initial and refresher training is provided. Determine how you will document all environmental training and maintain training records.

Establish awareness training procedures to communicate the required environmental and EMS information to all personnel including tenants, contractors and other service providers.



Chesapeake Bay Focus:

- Establish or modify new employee orientation to include an EMS overview and explicit mention of the commitment to Chesapeake Bay protection.
- Schedule annual EMS awareness training that includes examples of potential Bay impacts from your organization's activities.
- Incorporate examples of actual or potential Chesapeake Bay impacts into all environmental training.
- Pay close attention to activity-level training wherever deviation from procedures could lead to a direct and uncontrolled release within the watershed.



Example:

See Appendix 6 and Appendix 7 for an example of an Environmental Management Program Form, which documents the details of competence and training for a single aspect.

8. Communication



Requirements:

Establish, implement and maintain procedures for internal communication within the organization and for external communication, including receiving, documenting, and responding to external interested parties.

Decide whether to communicate externally about the significant environmental aspects and document the decision. If your organization wishes to communicate its significant aspects, develop a procedure to accomplish this.



Implementation:

Consider how information relevant to the EMS will be disseminated throughout your organization, at a specific activity level, system wide and externally. If a set point on a piece of equipment requires a change because a new operational procedure has been established, how will the operators of the equipment be informed?

If a neighbor of your facility has a concern about an environmental attribute of the facility operations, how will that information be communicated to the EMS Team and top management so they can consider how to address the concern?

This requirement also requires each organization to consider the extent to which you will communicate actions you are taking relative to your significant environmental aspects. The goal should be to communicate as much as possible about your environmental performance without revealing mission-critical or other sensitive information.

Establish an internal communication procedure that includes all those tools used to disseminate information relevant to environmental management throughout your organization. These may include staff meetings, briefings to senior leadership, issuance of policies and procedures, an internal newsletter etc. Address communication up and down the management chain, as well as horizontally throughout your organization.

Develop a process to ensure external stakeholder (i.e. community member or neighbor) concerns are communicated to the EMS Team and top management so they can consider how to address them. You may want to work with your Public Affairs staff to define their procedures for external communication specific to environmental concerns.

Ensure that senior leadership decides whether your significant environmental aspects will be communicated to the public. Document this decision in hard copy or electronic format. If external communication is approved, Public Affairs can assist you in determining the appropriate mechanism such as posting the significant aspects on an external website or issuing a press release.



Chesapeake Bay Focus:

- Ensure that external communication is targeted to interested parties associated with Chesapeake Bay, such as local watershed groups or state watershed implementation contacts.
- Highlight environmental performance improvements that contribute to Bay priorities in press releases, annual environmental reports and public web sites.
- Pay close attention to establishing effective activity-level environmental and EMS communication procedures to ensure that information that could potentially impact the Bay is provided to appropriate personnel.

9. Documentation



Requirements:

Document the following elements of the EMS:

- Environmental Policy,
- Objectives and targets,
- Description of the scope of the EMS,
- Description of the main elements of the EMS and their interaction, referring to related documents,
- Documents and records required by ISO 14001:2004, and
- Documents and records essential to the “planning, operation and control” of those activities related to the significant environmental aspects.



Implementation:

ISO 14001 mandates documentation of key elements of the EMS to minimize possible negative impacts associated with deviation from procedures. Many organizations have created an EMS Manual to describe the core elements of the system and how they interact. This manual also points to other important EMS documents; for example, there may be safety documents such as a Spill Prevention Control and Countermeasure (SPCC) or Chemical Hygiene Plan that contain important directives related to environmental performance (e.g., safe handling and spill cleanup procedures). The EMS Manual describes all of these documents that contain environmental information.

Establish EMS documentation, either paper or electronic, that includes all of the required content. Many organizations choose to create a web-based or hard copy EMS Manual that includes descriptions of the organization-specific approach to each core element of the EMS. The manual references other important EMS documents such as system-level procedures, activity-level procedures, and records. Include any additional documents and records specific to those processes associated with your organization’s significant aspects.



Chesapeake Bay Focus:

Not Applicable.



Example:

See Appendix 6 and Appendix 7 for an example of an Environmental Management Program Form, which presents a detailed list of records that pertain to a specific aspect.

10. Control of Documents

Requirements:

Establish, implement and maintain a procedure to:

- Approve documents for adequacy before they are issued,
- Review, revise and re-approve documents,
- Identify changes to and current revision status of documents,
- Make sure the appropriate versions of documents are provided at points of use,
- Keep documents legible and identifiable,
- Control documents of external origin, and
- Identify and control obsolete documents.

Implementation:

This requirement ensures that only documents that are currently in effect are available to members of the organization. This avoids the potential environmental harm that could result from implementing guidance that may have been replaced by new procedures.

Develop procedures to ensure that documents are reviewed and reissued, as required or as needed. Ensure that personnel access only the current versions of regulations, policies, procedures and instructions and that obsolete documents retained for historic purposes are clearly identified and controlled. Many organizations maintain the current versions of plans and guides in a web-based format. Printed documents often include a disclaimer stating that the printed version is uncontrolled or that the printed version is valid only for 24 hours.

Chesapeake Bay Focus:

Not Applicable

11. Operational Control

Requirements:

Identify and plan functions associated with significant environmental aspects to ensure that they are carried out under specified conditions. Establish, implement, maintain and document procedures to control the potential for deviation from compliance, pollution prevention, continual improvement and/or objectives and targets. State the required operating criteria in the procedure. Establish, implement, maintain and communicate procedures for significant environmental aspects of goods and services used by your organization. Communicate applicable procedures and requirements to suppliers, including contractors.



Implementation:

Operational control refers to the tools used by your organization to control and minimize the environmental impacts of a specific activity. They may include written documents, such as policies and standard operating procedures, or equipment that minimizes emissions. Operational controls are critically important to an effective EMS. They are linked to both roles and responsibilities and training because effective oversight of operational controls reduces the potential for uncontrolled releases to the environment.

Develop and implement operational controls for any activity associated with a significant aspect. Review each activity associated with a significant aspect and the controls for that activity to ensure that the controls are adequate. Also evaluate whether the activity is performed in accordance with the controls. Review the adequacy of operational controls for those significant aspects associated with supplier or contractor goods and services. Strengthen oversight of the adequacy and implementation of operational controls. Maintain records that demonstrate careful management of operational controls including equipment maintenance and calibration, as well as operator training.



Chesapeake Bay Focus:

- Document and take credit for the procedures, controls, and other resources that you currently dedicate to controlling environmental impacts that could harm the Bay.
- Continually improve environmental performance by creating new or upgrading existing operational controls. When making investment decisions for environmental controls, weight those that contribute to Chesapeake Bay priorities most favorably.
- Inventory all operational controls and review those associated with the potential release of Chesapeake Bay Chemicals of Concern. Carefully maintain these controls.



Example:

See Appendix 6 and Appendix 7 for an example of an Environmental Management Program Form, which includes a document control number.

12. Emergency Preparedness and Response



Requirements:

Establish, implement and maintain procedures to identify and respond to potential emergency situations or accidents that could impact the environment to prevent or mitigate those environmental impacts. Periodically review and revise emergency preparedness and response procedures, particularly following an emergency or accident. Periodically test these procedures, where practicable.



Implementation:

Substantial environmental harm can result from unplanned and uncontrolled releases that result from emergencies. This EMS element requires thoughtful planning (and practice where possible) of containment procedures that will be undertaken in the event of an emergency such as a chemical spill or fire. Often, emergency plans and procedures are captured in health and safety documents (e.g. Full Spectrum Threat Response, Occupant Emergency or SPCC Plans), referenced by the EMS Manual. The goal is to protect the employees during an emergency and to contain and minimize harm to the environment.

Review existing emergency preparedness and response procedures for adequacy. Ensure that an after-action report is generated following each accident or emergency that may harm the environment. Identify requirements for routine testing of emergency procedures (e.g., spill response) and ensure that periodic testing is scheduled and carried out.



Chesapeake Bay Focus:

- When designing emergency containment procedures, place special emphasis on pathways that would allow spills and other emergencies to affect local water conditions.

13. Monitoring and Measurement



Requirements:

Establish, implement and maintain procedures to regularly monitor and measure those key characteristics of your operations and activities that may have a significant impact on the environment. Document information on performance, operational controls and objectives and targets.

Ensure that monitoring and measurement equipment is calibrated or verified and maintained. Maintain records of calibration and maintenance.



Implementation:

Your organization should maintain data to confirm that proper procedures are being followed (e.g., operational controls and the calibration of equipment), to indicate trends in overall environmental performance, and to track progress toward achieving your objectives and targets. Monitoring and measuring results are used by the EMS Team and top management to judge whether the system is effective. The data also is used by auditors to determine whether the organization has allocated sufficient resources through its management programs to fulfill its objectives and targets.

Establish or review and update procedures for tracking key environmental performance indicators. Track progress toward achieving EMS objectives and targets. Establish or review and update procedures to ensure that equipment is maintained according to the manufacturer's recommendations. Establish or review and update procedures to ensure that appropriate environmental equipment is calibrated or verified.



Chesapeake Bay Focus:

- Review monitoring and measuring of performance indicators for processes that purchase, use and discharge Chesapeake Bay Chemicals of Concern (See Appendix 2).
- Monitor the implementation and maintenance of EMS procedures and operational controls such as Stormwater Pollution Prevention Plans.
- Include indicators to track progress toward achieving EMS objectives and targets and their impact on activities associated with significant environmental aspects. Include Bay indicators where appropriate.



Example:

See Appendix 9 for an example of an Environmental Management Program Form that documents monitoring and measurement of one significant aspect.

14. Evaluation of Compliance



Requirements:

Establish implement and maintain procedures for periodically evaluating compliance with applicable legal requirements and keep records of the compliance evaluations.

Establish implement and maintain procedures for periodically evaluating compliance with other requirements to which your organization subscribes and keep records of the evaluations.



Implementation:

It is important to assess the status of your organization's commitment to compliance and most federal agencies have an established process for auditing compliance and documenting their findings. Follow your organization's established procedures for assessment of compliance with legal and other requirements. Many federal organizations conduct internal compliance audits annually, supplemented by an external

compliance audit every three to five years. Executive Order 3423 requires that heads of agencies establish programs for environmental compliance reviews and audits.



Chesapeake Bay Focus:

- Emphasize assessment of compliance with those legal and other requirements that protect the Chesapeake Bay. Examples include air permits, NDPES permits, Stormwater Pollution Prevention Plans and requirements for proper storage and disposal of chemicals of concern

15. Nonconformity, Corrective Action and Preventive Action



Requirements:

Establish, implement and maintain procedures for addressing actual and potential nonconformities and taking corrective and preventive action. Procedures should include requirements for:

- Identifying and correcting nonconformance and mitigating its impacts,
- Determining the root cause and taking action to avoid recurrence,
- Evaluating the need for preventive action measures and implementing those measures appropriate to the magnitude of the problem and its impacts,
- Documenting the results of corrective and preventive actions,
- Reviewing the effectiveness of corrective and preventive actions, and
- Making any necessary changes to the EMS documentation.



Implementation:

There are two distinctly different requirements in this element: corrective actions for procedural nonconformances that have occurred, and preventive actions for those environmental incidences that could occur. The standard requires analysis of the root causes of nonconformances and prompts us to consider changes to procedures as necessary to prevent recurrence. An effective corrective and preventive action program will allow your organization to learn from identified nonconformances and demonstrate continual improvement through corrective and preventive action.

Follow your organization's procedures for developing, implementing and maintaining a Corrective Action Plan. For each finding of actual or potential nonconformance, perform root cause analysis and identify the appropriate preventive or corrective action. Implement the corrective action and evaluate its effectiveness in preventing recurrence. Document the results of the corrective action.



Chesapeake Bay Focus:

- Place special emphasis on corrective actions for processes that have a high potential to impact the Bay, such as those processes that involve chemicals of concern.
- Establish a reward system for employees who pursue preventive actions that minimize releases that may impact the Bay.

16. Control of Records



Requirements:

Establish and maintain legible, identifiable and traceable records of efforts to meet EMS requirements and results achieved. Establish, implement and maintain a procedure for the identification, storage, protection, retrieval, retention and disposal of records.



Implementation:

Records are auditable evidence that your organization is doing what it said it would do elsewhere in the EMS documentation. Review your organization's record keeping procedures. Determine those EMS activities for which records are required. Ensure that records of EMS activities are managed in accordance with local procedures and all legal requirements. Confirm that appropriate records of EMS activities are accessible to staff and auditors.



Chesapeake Bay Focus:

- EMS records can be objective evidence of the Bay focus of the EMS. Specific opportunities to reflect the Bay orientation can include awareness training materials, EMS Team minutes, audit results and preventive and corrective actions, monitoring and measuring results, management review minutes, etc.



Example:

See Appendix 6 and Appendix 7 for an example of an Environmental Management Program Form which documents records for one significant aspect.

17. Internal Audit



Requirements:

Conduct internal audits of the EMS at planned intervals to determine whether the EMS has been properly implemented and maintained and conforms to ISO 14001 and your internal EMS procedures.

Establish, implement and maintain audit procedures that include the audit criteria, scope, frequency and methods as well as the responsibilities for planning, conducting and reporting audit results and disposition of audit records. Selection of auditors and conduct of audits should ensure the objectivity and impartiality of the audit process. The audit program should consider the environmental importance of the activity and the results of previous audits.

Provide information on the results of audits to management



Implementation:

An internal audit of the EMS by individuals trained to perform EMS audits provides feedback that your organization can use to verify the status of EMS initiatives and the overall well being of the EMS. The observations made by auditors who have not been members of the EMS Team provides an alternative perspective on conformance with ISO 14001 and your internal EMS procedures and nearly always leads to improvements in the system.

Establish an EMS audit protocol that will allow you to evaluate whether your EMS conforms to ISO 14001, meets your organization's EMS requirements, and whether you are following your internal EMS procedures.

Ensure the audit team includes individuals who have been trained to perform EMS audits as well as individuals who are familiar with your organization and your environmental programs. Conduct internal audits annually, or as directed by senior leadership.

Document the audit findings of non-conformance and develop and implement a corrective action plan. Brief senior leadership on the audit results.



Chesapeake Bay Focus:

- Ensure the audit evaluates the status of programs and priorities related to environmental policy commitments specific to the Chesapeake Bay.

18. Management Review



Requirements:

Top management must review the EMS regularly to evaluate its suitability, adequacy and effectiveness and identify opportunities for improvement. The content of the management review should include:

- The results of internal audits and compliance assessments,
- Communication from external interested parties,
- Environmental performance of the organization,
- Status of objectives and targets,
- Status of corrective and preventive actions,
- Follow-up from previous management reviews,
- Changing circumstances, and
- Recommendations for improvement.

Maintain records of each Management Review, including any decisions regarding revisions to the policy, objectives and targets or other elements of the EMS.



Implementation:

Management review is a formal process that engages senior leadership in a critical review of the organization's ability to fulfill the commitments in the policy statement. It ensures that top management will periodically focus exclusively on to the organization's environmental obligations and issues. The management review provides an opportunity to make the leadership aware of the organization's environmental performance trends and the value returned to the organization by the EMS.

Conduct a formal Management Review of the EMS according to the schedule determined by your agency or your senior leadership. Document the management review and manage the record according to your organization's procedure for control of records.



Chesapeake Bay Focus:

- Present the results of monitoring of Chesapeake Bay indicators.
- Present results of any Bay-related pollution prevention activities, including chemicals of concern replaced or reduced, stormwater run-off controls installed, etc.
- Present information and communications from Bay-related organizations.

Appendix 1

Executive Order 13508 Text on Federal Facilities

- Executive Order 13508
 - EO Strategy, released May 2010
 - Federal Action Plan, released September 2010
-

Excerpts from Executive Order 13508 published May 2009:

PART 2 – SHARED FEDERAL LEADERSHIP, PLANNING, AND ACCOUNTABILITY

202(c) strengthen storm water management practices at Federal facilities and on Federal lands within the Chesapeake Bay watershed and develop storm water best practices guidance: ...The DOD shall lead on storm water management practices at Federal facilities and on Federal lands under subsection (c).

202(e) expand public access to waters and open spaces of the Chesapeake Bay and its tributaries from Federal lands and conserve landscapes and ecosystems of the Chesapeake Bay watershed; ...the DOI shall be lead on subsection (e).

PART 5 – REDUCE WATER POLLUTION FROM FEDERAL LANDS AND FACILITIES

Sec. 501. Agencies with land, facilities, or installation management responsibilities affecting ten or more acres within the watershed of the Chesapeake Bay shall, as expeditiously as practicable and to the extent permitted by law, implement land management practices to protect the Chesapeake Bay and its tributary waters consistent with the report required by section 202 of this order and as described in guidance published by the EPA under section 502.

Sec. 502. The Administrator of the EPA shall, within 1 year of the date of this order and after consulting with the Committee and providing for public review and comment, publish guidance for Federal land management in the Chesapeake Bay watershed describing proven, cost-effective tools and practices that reduce water pollution, including practices that are available for use by Federal agencies.

Excerpts from the Executive Order Strategy, published May 2010

Restore Clean Water

EPA will coordinate the effort to reduce stormwater pollution from federal facilities and lands and to implement federal land management practices that protect forests, wetlands and waterways

Federal agencies will contribute to Watershed Implementation Plans.

Federal agencies with property in the watershed will provide leadership and will work with the Bay jurisdictions in the development of their Watershed Implementation Plans to:

- Estimate nutrient and sediment loads delivered from federal lands to the Bay by providing information on property boundaries, land cover, land-use, and implementation of management practices.
- Identify pollution reductions from point and non-point sources associated with federal lands that will help restore water quality...

Waste load and load allocations and reduction plans for individual federal facilities and installations will be set following one of two general approaches: a) states would establish explicit load reduction expectations for individual federal facilities as part of the WIP process; or b) based on broad load reduction goals established by the state, individual federal facilities/installations would develop Federal Facility Implementation Plans that would demonstrate to the state how the facility proposes to achieve needed load reductions. In either case, the states and the District would ultimately decide what loading reductions to propose for federal facilities in its WIP.

Federal facilities/installations that decide to develop Federal Facility Implementation Plans to demonstrate how they will achieve the needed load reductions will use their determined nutrient and sediment loads and consider, at a minimum, the following in targeting and achieving their ultimate load reductions:

- Assess properties to determine the feasibility of installing urban retrofit practices and implementing non-structural control measures that reduce volume and improve quality of stormwater runoff.
- Align cost-effective urban stormwater retrofits and erosion repairs with TMDL goals and states' two-year milestones.
- Assess and implement appropriate non-structural practices to control stormwater runoff from developed areas and to reduce, prevent or control erosion from unpaved roads, trails and ditches.
- Consider the full spectrum of nutrient and sediment sources at a particular facility or installation to assess the ideal approach to achieve the needed nutrient and sediment reduction.

To support these decisions, each federal agency will provide spatial property boundary data for their respective facilities and lands to EPA to assist in determining a baseline pollutant load estimate from their facilities by October 2010. Federal agencies are providing initial

land-use coverages in spring 2010 to support states and the District in the development of Watershed Implementation Plans.

Federal agencies will complete these actions on a schedule to support states and the District as they develop draft and final Phase I Watershed Implementation Plans prior to EPA's establishment of the TMDL, draft and final Phase II Plans and commitments as part of the two-year milestone process...

Implement sustainable land management practices and programs into all federal capital improvements, public works management and energy management projects.

As directed by Section 502 of the Chesapeake Bay Executive Order, EPA will publish guidance for federal land management activities in the Bay watershed by May 2010. This guidance addresses agriculture, urban/suburban development, septic systems, forestry, buffers and hydromodification. As directed by Section 501 of the Executive Order, each federal agency with land, facilities or installation management responsibilities affecting 10 or more acres in the Chesapeake Bay watershed will implement the Section 502 guidance as expeditiously as practicable and to the extent permitted by law.

Federal agencies will incorporate Section 502 guidance considerations as part of their overall strategy to meet load reductions assigned to them by states and the district under Chesapeake Bay TMDL WIP Phase II plans.

Respond to Climate Change

Agencies will develop adaptation strategies to manage vulnerable habitats and public infrastructure on federal lands to increase resiliency to climate change impacts.

Develop adaptation strategies to manage vulnerable habitats and public infrastructure on federal lands to increase resiliency to climate change impacts.

The federal interagency climate team will coordinate the major federal landholding and granting agencies to establish a strategy to conduct assessments that identify potentially vulnerable habitats and infrastructure on federal lands, federally managed lands and lands receiving federal funding in the Bay watershed. Federal agencies can use this strategy as a tool for informing management decisions in regard to the potential impacts of climate change on unique resources. USGS and FWS will provide outreach support for this effort beginning in 2011

Excerpts from the Fiscal Year 2011 Action Plan

Restore Clean Water

WQ.1.a: Federal agencies will contribute to Watershed Implementation Plans. Led by EPA, due Oct-Nov 2011

1. Each Federal agency will provide spatial property boundary data for their respective facilities and lands to EPA to determine baseline pollutant load estimates through modified version of Phase 5.3 watershed model
2. Include federal facilities load allocations in the appropriate State Phase II WIPs or develop Federal Implementation Plan (FIP) that meets load allocations proposed by State or District
3. Identify pollution reductions from point and non-point sources associated with Federal lands, and commit to actions, programs, policies and resources necessary to reduce N, P, and sediment by specific dates

WQ.3: Ensure the federal government leads by example in reducing pollution from federal lands and facilities. Led by EPA, due Sep 2011

4. Work with states to ensure Federal Facilities achieve and maintain compliance with regulatory requirements through a federal compliance workgroup
5. Pursue Federal Facilities Compliance Agreements where appropriate EPA Sep 2011

Appendix 2

Chesapeake Bay Program Chemicals of Concern

Nitrogen

Phosphorous

Polychlorinated Biphenyls (PCBs)

Polyaromatic Hydrocarbons

Benzo(a)pyrene	Fluoranthene	Acenaphthene
Indeno[1,2,3-cd]pyrene	Phenanthrene	Benzo(b)fluoranthene
Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Acenaphthylene
Benzo(a)anthracene	Fluorene	Anthracene
Pyrene	Chrysene	2-Methylnaphthalene
Dibenzo(a,h)anthracene	Naphthalene	

Organophosphate Pesticides

Chlorpyrifos
Malathion

Organochlorine Pesticides

Toxaphene	DDT
Dieldrin	Endrin aldehyde
Endosulfan, alpha & beta	DDE
Aldrin	Methoxychlor
Chlordane	

Mercury

Other Metals

Lead	Nickel	Thallium
Cadmium	Zinc	Beryllium
Copper	Chromium	Arsenic
Iron	Selenium	Silver
Antimony		

Priority Pollutants

1,4-Dichlorobenzene
Dioxins/Furans
2,4-Dimethylphenol
Hexachlorobenzene
Phenol

Cyanide

Appendix 3

Worksheet for Determining Significant Aspects (Including Chesapeake Bay-Focused Significance Criteria)

Significance Criteria							
Aspect	Activity	Impacts	Regulatory Status	Risk: Likelihood & Magnitude	CB Chemicals of Concern	Other water quality impacts	Total
Stormwater	Grounds Maintenance	Release of Pollutants: fertilizer and pesticides	0	Likelihood 3 Magnitude 1	3	3 - sediment	10
	Vehicle Maintenance Facility	Release of Pollutants: oils, grease, fuels	3	Likelihood 1 Magnitude 3	3	0	10
	Construction Activities	Release of Sediment	0	Likelihood 3 Magnitude 2	0	3 - sediment	8
Air Emissions	Vehicle Maintenance Facility	Release of Pollutants: VOCs	0	Likelihood 3 Magnitude 2	0	0	5
	Operation of Vehicle Fleet	Release of Pollutants: NOx, Particulates, PAHs	0	Likelihood 3 Magnitude 1	3	0	7
Wastewater	Vehicle Maintenance Facility – Septic	Release of Pollutants: Nitrates	0	Likelihood 3 Magnitude 1	3	0	7
	Main Building - Municipal	Release of Pollutants: Nitrates	1	Likelihood 2 Magnitude 2	3	0	8

Regulatory Status: 3 = regulated with history of non-compliance
 1 = regulated, compliant
 0 = not regulated

Chemicals of concern: 3 = yes
 Other WQ impacts 0 = no

Likelihood: 3 = high
 2 = medium
 1 = low

Magnitude: 3 = high
 2 = medium
 1 = low

Appendix 4

Sample Chesapeake Bay Focused EMS Objectives and Targets

Aspect	Objective	Targets	Measure of Completion
Stormwater	Identify and implement lawn maintenance that will reduce the use of chemical fertilizers and pesticides.	Form a workgroup and prepare a draft lawn maintenance plan within four months of workgroup formation. Prepare a lawn maintenance plan that uses integrated pest management and other techniques to reduce the application of pesticides by at least 20%.	Draft workplan delivered to EMS team within four months of workgroup formation
		Implement the final lawn maintenance plan within three months of finalization.	Plan implemented within three months of finalization. EMS documents edited to reflect new procedures
Stormwater	By 2010 ensure that fertilizer, soil amendments and compost used on federal lands include a minimum of 20% poultry litter or animal manure nutrients from sources within the Chesapeake Bay watershed	Identify sources of fertilizer, compost and other soil amendments manufactured from poultry litter and/or animal manure from sources in the watershed. Obtain samples for testing and confirm that the product meets performance requirements	Report on performance of fertilizer, compost and/or other soil amendments within 18 months.
		Perform cost benefit analysis and initiate purchase agreements	Annual procurement plans include procurement of fertilizer, compost and/or soil amendments with >20% poultry litter or animal manure nutrients from Chesapeake Bay watershed.
Air Emissions	Reduce air emissions from vehicle fleet usage	Convert the vehicle fleet to at least 50% hybrid vehicles by 2008.	Annual procurement plans include hybrid vehicle procurement.
		Within three months, review vehicle routing procedure to eliminate duplicate routes. Report recommendations to Operations Branch and implement changes that will reduce miles driven.	Vehicle dispatcher provides recommendations within three months. Operations Branch implements recommendations, edits procedures.

Appendix 5

Example Goals from Toxics 2000 and Chesapeake 2000 to Consider When Setting Objectives and Targets

LIVING RESOURCE PROTECTION AND RESTORATION C2K
Goal: <i>Restore, enhance and protect the finfish, shellfish and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem.</i>
Exotic Species
• Identify and rank non-native, invasive aquatic and terrestrial species, which are causing or have the potential to cause significant negative impacts to the Bay's aquatic ecosystem. • Substantially reduce and, where possible, eliminate the introduction of non-native species carried in ballast water. • Implement voluntary ballast water management programs for the waters of the Bay and its tributaries.
VITAL HABITAT PROTECTION AND RESTORATION C2K
Goal: <i>Preserve, protect and restore those habitats and natural areas that are vital to the survival and diversity of the living resources of the Bay and its rivers.</i>
Wetlands
• Achieve a no-net loss of existing wetlands acreage and function. • By 2010, achieve a net resource gain by restoring 25,000 acres of tidal and non-tidal wetlands.
Forests
• Meet our riparian forest buffer goal of 2,010 miles by 2010. • Conserve existing forests along all streams and shorelines. • Promote the expansion and connection of contiguous forests through conservation easements, greenways, purchase and other land conservation mechanisms.

WATER QUALITY PROTECTION AND RESTORATION
Goal: <i>Achieve and maintain water quality necessary to support aquatic living resources of the Bay and its tributaries.</i>
Nutrients and Sediments C2K
• By 2010, correct the nutrient- and sediment-related problems in the Chesapeake Bay and its tidal tributaries from the list of impaired waters under the Clean Water Act. • Achieve and maintain the 40% nutrient reduction goal. • Begin implementation of revised Tributary Strategies to achieve and maintain the assigned loading goals.
Chemical Contamination C2K
• A Chesapeake Bay free of toxics by reducing or eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bioaccumulative impact on the living resources that inhabit the Bay or on human health.
Priority Urban Waters C2K
• Support the restoration of the Anacostia River, Baltimore Harbor, and Elizabeth River and their watersheds as models for urban river restoration in the Bay basin.
Point Sources T2K
<i>Chemical Release Reductions</i>
• By 2010 reduce by at least 20% the 1998 Toxics Release Inventory chemical releases and off-site transfers for treatment and disposal from 1998 levels by working with publicly and privately owned treatment works and industries (including air sources) throughout the watershed. Particular emphasis shall be placed on reducing chemicals at the source. • By 2006, reduce by 40% Toxics Release Inventory chemical releases and off-site transfers from 2001 levels from federal facilities (including air sources). • By 2006, in impacted areas and areas at risk, reduce by 50% chemicals of concern from 2001 levels from priority federal facilities.
<i>Sustainable Business Development</i>
• New companies in the Bay watershed strive for zero release of chemical contaminants through pollution prevention and other methods in cooperation with the departments responsible for economic development within each jurisdiction.

Nonpoint Sources T2K
<i>Chemical Contaminant Reductions</i>
• Complementing state and federal regulatory programs to go beyond traditional point source controls, including non-point sources such as groundwater discharge and atmospheric deposition, by using a watershed-based approach • Implement projects and programs that reduce storm water chemical contaminant loads through pollution prevention measures, innovative site design, best management practices or other technologies. • Implement projects and programs that reduce the use of pesticides, promote less toxic alternatives, or employ other voluntary efforts that ultimately reduce pesticide loads to the watershed. • Reduce nonpoint sources of chemicals to the <i>Regions of Concern</i> by at least 30%, through the implementation of pollution prevention means and other voluntary nonpoint source programs
<i>Chemical Contaminant Prevention</i>
• Reduce the potential risk of pesticides to the Bay by targeting education, outreach and implementation of Integrated Pest Management and specific Best Management Practices on those lands that have higher potential for contributing pesticide loads to the Bay. • Reduce chemical contaminants at the source by working with landowners to prevent chemical contaminants from being deposited on their lands as a result of lawn care, vehicle maintenance and other activities. • Reduce chemical contaminants at the source by working with the development community to develop construction materials and techniques and landscaping designs that reduce pollution at the source. • Ensure that the appropriate stormwater management technologies are in place to offset any residual chemical contaminant loads from newly developed lands

SOUND LAND USE C2K
<i>Goal: Develop, promote and achieve sound land use practices which protect and restore watershed resources and water quality, maintain reduced pollution loadings for the Bay and its tributaries, and restore and preserve aquatic living resources.</i>
Land Conservation
• Expand the use of voluntary and market-based mechanisms such as easements, purchase or transfer of development rights or other approaches to protect and preserve natural resource lands. • Permanently preserve from development 20% of the land area in the watershed by 2010.
Development, Redevelopment, and Revitalization
• Reduce the rate of harmful sprawl development of forest and agricultural land in the Chesapeake Bay watershed by 30 percent measured as an average over five years from the baseline of 1992-1997 • Promote redevelopment and remove barriers to investment in underutilized urban, suburban and rural communities by working with localities and development interests. • Encourage the development and implementation of emerging urban storm water retrofit practices to improve their water quality and quality function.
Transportation
• Promote the coordination of transportation and land use planning to encourage compact, mixed use development patterns, revitalization in existing communities and transportation strategies that minimize adverse effects on the Bay and its tributaries. • Reduce the dependence on automobiles by incorporating travel alternatives such as telework, pedestrian, bicycle, and transit options. • Opportunities to purchase easements to preserve resource lands adjacent to rights of way and special efforts for stormwater management on both new and rehabilitation projects. • Encourage the use of clean vehicle and other transportation technologies that reduce emissions.

STEWARDSHIP AND COMMUNITY ENGAGEMENT C2K
Goal: <i>Promote individual stewardship and assist individuals, community- based organizations, businesses, local governments, and schools.</i>
Education and Outreach
• Make education and outreach a priority to achieve public awareness and personal involvement on behalf of the Bay and local watersheds. • Provide information to enhance the ability of citizens and community groups to participate in Bay restoration activities on their property and in their local watershed. • Provide students and teachers alike with opportunities to directly participate in local restoration and protection projects, and to support stewardship efforts in schools and on school property. • Highlight cultural and historical ties to the Bay, and provide multi-cultural and multi-lingual educational materials on stewardship activities and Bay information.
<i>Community Engagement</i>
• Identify small watersheds where community-based actions are essential to meeting Bay restoration goals-in particular wetlands, forests buffers, stream corridors, and public access. • Identify community watershed organizations and partnerships. Assist in establishing new organizations and partnerships where interest exists.
<i>Government by Example</i>
• Expand the use of clean vehicles technologies and fuels on the basis of emission reductions, so that a significantly greater percentage of each signatory government's fleet of vehicles use some form of clean technology. • Address stormwater management to control nutrient, sediment, and chemical contaminant runoff from state, federal and District owned land.

Appendix 6

Environmental Management Program Form- example

Environmental Management Program Form							
Significant Environmental Aspect: Waste Generation	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">Document</td> <td></td> </tr> <tr> <td style="text-align: center; padding: 2px;">Control Code:</td> <td>ESC EMS-11.00</td> </tr> <tr> <td style="text-align: center; padding: 2px;">Date:</td> <td>August 6, 2002</td> </tr> </table>	Document		Control Code:	ESC EMS-11.00	Date:	August 6, 2002
Document							
Control Code:	ESC EMS-11.00						
Date:	August 6, 2002						
1. Objective(s): a. To maintain compliance with Federal, State and local regulations concerning waste disposal. b. To maintain, follow and practice the emergency preparedness, spill response and containment procedures as specified in the ESC Chemical Hygiene Plan (CHP), Spill Prevention, Control and Countermeasures Plan (SPCC) and Occupant Emergency Plan (OEP). c. To perform root cause analysis of waste release (e.g., spills) incidents to find opportunities to prevent future releases within 30 days. d. To gather and evaluate baseline data on the amount and types of hazardous and non-hazardous wastes generated, recycled and/or disposed of, then develop strategies (if possible or feasible) to reduce the amount of waste generated and/or disposed of, or increase the amount of waste recycled and/or reused. e. Maintain and promote the awareness and involvement of ESC employees to specific facility/laboratory opportunities that have been identified to reduce the generation of wastes, or increase the amount of wastes recycled and/or reused.							
2. Target(s): a. 100% compliance with all waste disposal regulations. b. To perform annual updates, quarterly drills with no deviations from the CHP, SPCC, and OEP. c. Complete root cause analyses of waste releases (e.g., spills) and provide strategies to prevent future releases within 30 days. d. Determine base amounts for recycled materials, hazardous wastes and non-hazardous wastes generated and disposed of by the facility, within 6 months of initial meeting between EMS Team and EMP Workgroup. Determine whether opportunities exist to reduce facility wastes (both hazardous and non-hazardous wastes) by employing source reduction, substitution, recycling and reuse, then develop strategies (if possible or feasible) to reduce facility/laboratory waste generation, within 6 months of baseline data accumulation. e. Increase awareness and involvement of ESC staff regarding their impacts related to waste generation through activities such as training courses, holding brown-bag lunches, reports to the ESC Board, e-mail notifications, and posting information.							
3. Reason for Significance: a. Appears on the ESC "High Significance Report" b. Legal and other requirements. c. Existing program.							
4. Potential Environmental Impacts:							

Environmental Management Program Form

a. Release of pollutants

5. Specific Legal and Other Requirements:

- a. OSHA, 29 CFR Part 1910 Occupational and Health Safety Standards
 - 1910.120 Hazardous Waste Operations and Emergency Response. Cleanup, corrective actions, voluntary cleanup, TSD facilities, emergency response
 - 1910.134 Respiratory Protection Standard. Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, must be provided wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered
- b. EPA, 40 CFR Part 243, RCRA, “Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste”
- c. EPA, 40 CFR Part 246, RCRA, “Source Separation for Materials Recovery Guidelines”
 - 246.200: High-grade paper generated by office facilities of over 100 office workers must be separated at the source of generation, separately collected, and sold for the purpose of recycling.
- d. EPA, 40 CFR Part 260, RCRA, “Hazardous Waste Management System: General”
 - Provides definitions of terms, general standards, and overview information applicable to parts 260 through 265 and 268
- e. EPA, 40 CFR Part 261, RCRA, “Identification and Listing of Hazardous Waste”
 - Identifies those solid wastes which are subject to regulation as hazardous wastes under parts 262 through 265, 268, and parts 270, 271, and 124 of this chapter and which are subject to the notification requirements of section 3010 of RCRA
- f. EPA, 40 CFR Part 262, RCRA, “Standards Applicable to Generators of Hazardous Waste”
 - 262.10(c) A generator who treats, stores, or disposes of hazardous waste on-site must only comply with the following sections of this part with respect to that waste: Section 262.11 for determining whether or not he has a hazardous waste, §262.12 for obtaining an EPA identification number, §262.34 for accumulation of hazardous waste, §262.40 (c) and (d) for recordkeeping, 262.43 for additional reporting additional reporting.
- g. EPA, 40 CFR Part 266, RCRA, “Standards for the Management of Specific Hazardous Wastes

and Specific Types of Hazardous Waste Facilities”

- Products produced for the general public’s use that are used in a manner that constitutes disposal and that contain recyclable materials are not presently subject to regulation

h. EPA, 40 CFR Part 268, RCRA, “Land Disposal Restrictions”

- identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be land disposed

ii. EPA, 40 CFR Part 270, RCRA, “General Application Permit Requirements”

- basic EPA permitting requirements, such as application requirements, standard permit conditions, and monitoring and reporting requirements

j. EPA, 40 CFR Part 273, RCRA, “Standards for Universal Waste Management”

- 273.1(a) Requirements for managing batteries, pesticides, thermostats, and lamps

k. EPA, 40 CFR Part 761, TSCA, “Polychlorinated biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”

- Subpart A, “General” Establishes prohibitions of, and requirements for, the manufacture, processing, distribution in commerce, use, disposal, storage, and marking of PCBs and PCB Items
- Subpart B, “Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”
761.35 Storage for Reuse
- Subpart C, “Marking of PCBs and PCB items”
761.40 Marking Requirements
761.45 Marking Formats
- Subpart D, “Disposal Requirements”
761.50 Applicability
761.60 Disposal Requirements
761.61 PCB Remediation Waste
761.64 PCB Disposal of wastes generated as a result of research and development activities authorized under 761.30(j) and chemical analysis of PCBs
761.65 PCB Storage for Disposal
761.79 PCB Decontamination Standards and Procedures
- Subpart G, “PCB Spill Cleanup Policy”
761.125 Requirements for PCB Spill Cleanup. Reporting, disposal, and precleanup requirements apply to all spill of PCBs at concentrations 50 ppm or greater which are subject to TSCA decontamination requirements
761.205 Notification of PCB Waste Activity
- Subpart J, “General Records and Reports”
- Subpart K, “PCB Waste Disposal Records and Reports”

l. 49 CFR 172.101, “Purpose and Use of Hazardous Materials Table”

- Hazardous Materials Table designates the materials listed as hazardous materials for

transportation. For each listed material, the table identifies the hazard class or specifies that the material is forbidden in transportation, and gives the proper shipping name or directs the user to the preferred proper shipping name. In addition, the Table specifies or references requirements for labeling, packaging, quantity limits aboard aircraft and vessels.

m. COMAR 26.13. Disposal of Controlled Hazardous Substances

- 26.13.02. Identification and Listing Of Hazardous Waste. Contaminated soils and other solids recovered from spills or removed from old disposal sites containing PCB at concentrations of less than 50 ppm shall be disposed of at approved sites only if they do not otherwise qualify as a hazardous waste under this regulation.
- 26.13.02. Hazardous waste includes any residue or contaminated soil, water, or other debris resulting from the cleanup of a spill, into or on any land or water, of any commercial chemical product or manufacturing chemical product or manufacturing chemical intermediate or mixtures containing polychlorinated biphenyls (PCBs) at concentrations greater than 50 ppm. The hazardous waste number for these mixtures is MX 01.
- 26.13.03. Standards Applicable to Generators of Hazardous Waste. Accumulated hazardous wastes are subject to regulation under COMAR 26.13.03-26.13.07 and 26.13.10 and the applicable notification requirements of §3010 of RCRA.
- 26.13.05.D3. Special Requirements for Hazardous Waste Generated by Small Quantity Generators. In order for hazardous waste to be excluded from regulation under this chapter, the generator may not accumulate on site at any time acute hazardous wastes in quantities greater than 1 kilogram or more than a total of 100 kilograms of any hazardous waste not otherwise regulated under §D(3)(a) of this regulation.
- 26.13.03.05E. If <500 kg of hazardous waste and <1 kg acute hazardous waste is accumulated on site, then the waste may be accumulated for 180 days.

n. Executive Order 13101, “Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition”

- Section 101, 102, 401. Prevent pollution whenever feasible; acquire environmentally preferable products. Consider the following factors in acquisition planning: use of biobased products; use of recovered materials; reuse of product; life cycle cost; recyclability; use of environmentally preferable products; waste prevention (including toxicity reduction or elimination); and ultimate disposal.
- Section 402. Affirmative Procurement Programs. Develop and implement affirmative procurement programs. Agencies shall ensure that their affirmative procurement programs require 100 percent of their purchases of products to meet or exceed the EPA guideline unless written justification is provided that a product is not available competitively within a reasonable time frame, does not meet appropriate performance standards, or is only available

at an unreasonable price.

- Section 502(c). Designation of Items That Contain Recovered Materials (CPG). Once items containing recovered materials have been designated by the EPA in the Comprehensive Procurement Guidelines, agencies shall modify their affirmative procurement programs to require that, to the maximum extent practicable, their purchases of products meet or exceed the EPA guidelines.
- Section 505. Minimum Content Standard for Printing and Writing Paper. Agencies shall meet or exceed the following minimum materials content standards when purchasing or causing the purchase of printing and writing paper: (a) For high speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white wove envelopes, writing and office paper, book paper, cotton fiber paper, and cover stock, the minimum content standard shall be no less than 30 percent postconsumer materials beginning December 31, 1998.
- Section 601(a)(2). In addition to white paper, mixed paper/cardboard, aluminum, plastic, and glass, agencies should incorporate into their recycling programs efforts to recycle, reuse, or refurbish pallets and collect toner cartridges for remanufacturing. Agencies should also include programs to reduce or recycle, as appropriate, batteries, scrap metal, and fluorescent lamps and ballasts.
- Section 705. Recycling Programs. Each agency shall initiate a program to promote cost-effective waste prevention and recycling of reusable materials in all of its facilities. Designate a recycling coordinator for each facility.

Executive Order 13148, "Greening of the Government Through Leadership in Environmental Management."

- Section 204. Release Reduction: Toxic Chemicals. Each agency shall reduce its reported Toxic Release Inventory (TRI) releases and off-site transfers of toxic chemicals for treatment and disposal by 10 percent annually, or by 40 percent overall by December 31, 2006.
- Section 205. Use Reduction: Toxic Chemicals and Hazardous Substances and Other Pollutants. Each agency shall reduce its use of selected toxic chemicals, hazardous substances, and pollutants, or its generation of hazardous and radioactive waste types at its facilities by 50 percent by December 31, 2006.
- Section 304. Pollution Prevention Return-on-Investment Programs. Each agency shall develop and implement a pollution prevention program at its facilities that compares the life cycle costs of treatment and/or disposal of waste and pollutant streams to the life cycle costs of alternatives that eliminate or reduce toxic chemicals or pollutants at the source. Each agency shall implement those projects that are life-cycle cost-effective, or otherwise offer substantial environmental or economic benefits.
- Section 305(b). Policies, Strategies, and Plans. By March 31, 2002, each agency shall ensure that its facilities develop a written plan that sets forth the facility's contribution to the goals

and requirements established in this order. The plan should reflect the size and complexity of the facility. Where pollution prevention plans or other formal environmental planning instruments have been prepared for agency facilities, an agency may elect to update those plans to meet the requirements and goals of this section.

- Section 307. Annual Reports. Each agency shall submit an annual progress report to the Administrator on implementation of this order. The reports shall include a description of the progress that the agency has made in complying with all aspects of this order, including, but not limited to, progress in achieving the reduction goals in sections 502, 503, and 505 of this order.
- Section 402. Facility Compliance Audits. Within 12 months of the date of this order, each agency with an established regulatory environmental compliance audit program may elect to conduct EMS audits in lieu of regulatory compliance audits at selected facilities within 6 months of development of EMS program.
- Section 501. Toxics Release Inventory/Pollution Prevention Act Reporting. (a) Each agency shall comply with the provisions set forth in section 313 of EPCRA, section 6607 of Pollution Prevention Act, all implementing regulations, and future amendments to these authorities, in light of applicable EPA guidance.
- Section 502. Release Reduction: Toxic Chemicals. (a) Beginning with reporting for calendar year 2001 activities, each agency reporting under section 501 of this order shall adopt a goal of reducing, where cost effective, the agency's total releases of toxic chemicals to the environment and off-site transfers of such chemicals for treatment and disposal by at least 10 percent annually, or by 40 percent overall by December 31, 2006.
- Section 503. Use Reduction: Toxic Chemicals, Hazardous Substances, and Other Pollutants. To attain the goals of section 205 of this order: (a) Within 18 months of the date of this order, each agency with facilities shall develop and support goals to reduce the use at such agencies' facilities of the priority chemicals on the list under subsection (b) of this section for identified applications and purposes, or alternative chemicals and pollutants the agency identifies under subsection (c) of this section, by at least 50 percent by December 31, 2006.

6. Performance Indicators:

- a. No regulatory findings for waste generation being listed on any internal or external compliance inspection report.
- b. Annual review of CHP, SPCC, OEP, training records of employees and inventories of materials and supplies for spill cleanup and containment. Quarterly evacuation drills and biennial mock spill response exercises with Fire Department Haz-Mat teams.
- c. All root cause analyses of waste releases (e.g., spills) and provide strategies to prevent future releases completed within 30 days.
- d. Final report containing baseline amounts for recycled materials, hazardous wastes and non-hazardous wastes generated and disposed of by the facility, within 6 months of initial meeting between EMS Team and EMP Workgroup.

- e. Final report containing opportunities identified to reduce facility hazardous and non-hazardous wastes (by employing source reduction, substitution, recycling and reuse) and potential strategies (if possible or feasible) to reduce facility/laboratory waste generation, within 6 months of baseline data accumulation.
- f. Documentation of training sessions, brown bag lunches, etc. being conducted within one year of finalizing the baseline within one year of baseline data accumulation.

7. Program Description:

The Environmental Science Center (ESC) is a consolidated facility housing offices and extensive chemical and microbiological laboratories from several different EPA organizations. The office activities result in the generation of non-hazardous solid wastes, while the laboratory activities result in the generation of diverse chemical and microbiological wastes of varying quantities and toxicities, as well as additional non-hazardous solid wastes. The ESC, classified as a large quantity generator by the State of Maryland, is allowed to accumulate hazardous waste on site for no more than 90 days and can generate more than 1 kg of acutely hazardous waste or more than 100 kg of hazardous waste per month. The ESC's Safety, Health and Environmental Management (SHEM) Manager is also the facility's Hazardous Waste Manager, who along with the ESC Waste Committee, develops waste disposal policy and procedures for the ESC that are in accordance with all Federal, State, County and Fort Meade requirements for all aspects of facility waste generation, storage and disposal. The ESC Waste Committee normally meets once every two weeks (usually on the first and third Thursday of the month) and is composed of at least one representative from each of the major organizations within the ESC. The Waste Committee is chaired by the ESC SHEM Manager, who also is the Project Officer for the facility's hazardous waste removal contract. Most non-hazardous wastes, and all standard solid wastes, are removed from the facility by the Fort Meade Directorate of Public Works, under the supervision of the ESC Facility Manager.

Although the ESC has only one EPA RCRA generator ID number (MDR000000984), the facility has two separate 90-day hazardous waste storage areas. One of the 90-day hazardous waste storage areas (room J-118) is used solely for the storage of hazardous waste generated by the Region III laboratory and field operations, while the other 90-day storage area (room D-123) is used solely for the storage of hazardous wastes generated by the Office of Pesticide Programs laboratories. Both of these 90-day hazardous waste storage areas have access restricted to only the ESC SHEM Manager, selected organizational Waste Coordinators and the ESC Facility Manager. Hazardous waste removal from the ESC is structured in such a way as to require monthly hazardous waste pick-ups from the facility. The monthly hazardous waste pickups are performed on an alternating basis between the two 90-day hazardous waste storage areas in the facility, i.e., one month Region III, the next month OPP, the following month Region III again and so forth. By establishing this monthly alternating schedule, the ESC only allows about 60-70 days for the accumulation of hazardous wastes between actual waste pick-ups from either of the 90-day hazardous waste storage rooms (J118 & D123).

The ESC Facility Manager also manages the facility recycling program. Currently paper, aluminum, glass, cardboard, wooden pallets and some plastics are collected and recycled through the Fort Meade Directorate of Public Works programs. Additional information on the waste generation program or specific waste removal procedures for the ESC can found in the facility's Chemical Hygiene Plan (CHP), Occupant Emergency Plan (OEP), Spill Prevention, Control and Countermeasures Plan (SPCC), the waste removal contract statement of work (SOW), the janitorial services contract SOW, or the Interagency Service Agreement between EPA and Fort Meade.

8. Operation Control: (See Operational Controls Form, separate page)

9. Budget (Resources):

Targets a, b:	SHEM Manager	(25%)	500 hours/year
	Organizational Waste Coordinators	(5.0%)	100 hours/year
	Facility / Asst. Facility Manager	(2.5%)	50 hours/year
	Laboratory Staff	(2.0%)	40 hours/year

Waste Disposal Contract - \$90K/yr

10. Structure, Authorities, Responsibilities

Tasks	Responsible Person/Group
Regulatory Review and Regulatory Updates	SHEM Manager
Hazardous Waste (HW) Management	SHEM Manager, Waste Coordinators, Laboratory Staff, HW Removal Contractors
Non-hazardous / Solid Waste Management	Facility Manager & Asst. Facility Manager
Recycling Program Management	Facility Manager & Asst. Facility Manager
Annual CHP, SPCC, OEP revisions	SHEM Manager
Emergency Preparedness and Response Programs	SHEM Manager
Waste Committee Meetings	SHEM Manager, Waste Coordinators
Record Keeping	SHEM Manager, Facility Manager
Removal of Hazardous Wastes	HW Removal Contractors
Spill Reporting:	
- Identify and report a spill of hazardous material	Occupants/ Employee
- Secure immediate spill area	ESC Security
- Upon notification of a spill or release, determine if evacuation is necessary, notify appropriate emergency services, coordinate spill clean-up, external reporting.	SHEM Manager / Facility Manager
- Increase awareness and involvement of ESC staff regarding their impacts related to waste generation	EMS Coordinator/EMS Team

11. Record(s):

- a. Hazardous waste manifests
- b. DOT Drum Inventory Forms
- c. Certificates of Disposal / Treatment
- d. Contract Invoices / EPA Receiving Reports
- e. Waste Committee Meeting Minutes
- f. Accumulation Area Logbooks
- g. Waste Profiles
- h. Contractor Field Report Forms
- i. Restricted Waste Notification & Certification Forms (Land Ban forms)
- j. Non-Hazardous Waste Manifests
- k. PCB Waste Logbook & Tracking Forms
- l. Biennial Waste Report to the State of Maryland
- m. Internal/external inspection reports
- n. Accumulation area inspection logbooks
- o. Records of awareness activities performed (training course sign-up sheets, brown-bag lunch announcements, e-mails that raise awareness)
- p. Inventory of recycled materials, including aluminum cans, glass bottles (clear and brown), batteries, wood pallets, paper, and

Person Responsible and Record Location:

- a. SHEM Manager A123
- b. SHEM Manager A123
- c. SHEM Manager A123
- d. SHEM Manager A123
- e. SHEM Manager A123
- f. SHEM Manager local area network
A123, D123
J118
- g. SHEM Manager A123
- h. SHEM Manager A123
- i. SHEM Manager A123
- j. SHEM Manager A123
- k. SHEM Manager A123
- l. SHEM Manager A123, A118
- m. SHEM Manager A123
- n. SHEM Manager D123, J118
- o. EMS Coordinator A236

cardboard	p. Asst. Facility Manager A132
q. Training records	q. SHEM Manager A123

12. Document(s):	Person Responsible and Record Location:
a. Chemical Hygiene Plan (CHP)	a. SHEM Manager A123 Local area network
b. Occupant Emergency Plan (OEP)	b. SHEM Manager A123
c. Spill Prevention, Controls and Countermeasures (SPCC) Plan	c. SHEM Manager A123
d. Regulatory Permits (RCRA ID and TSCA / PCB Notification)	d. Facility Manager A136 SHEM Manager A123
e. Janitorial Contract, Statement of Work and Work Orders	e. Facility Manager A125
f. Hazardous Waste Removal Contract, Statement of Work and Work Orders	f. SHEM Manager A123
g. Ft. Meade Interagency Service Agreement	g. Facility Manager A125
h. Waste handling procedures, SOPs, flow charts	h. SHEM Manager A123
13. Competence of persons responsible on basis of training, education or experience:	

Name:	Competence:
a. SHEM Manager	a. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment
b. Facility Manager	b. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment
c. Hazardous Waste Contractor	c. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment
d. Janitorial Contractor	d. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect,

e. Organizational Waste Coordinators	personal contacts, purpose of contacts, physical demands and work environment e. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment
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Operational Controls Form	
Significant Environmental Aspect: Waste Generation	Document Control Code: ESC EMP-11.00
1. Activity Group: Hazardous Waste Disposal	
2. Activity(ies): a) Hazardous Waste Management b) Calibration and Maintenance of Lab Equipment c) Change Oil in Pumps d) Sample/ Sample Container Disposal e) Use of Pesticides Outside f) Use of Solvents g) Facility Operation and Maintenance h) Operation and Maintenance of Heating/Air Conditioning (refrigerants) i) Safety Practices/Program (PPE, spill clean up, safety showers) j) Sample Collection in Field	
3. Operational Controls (technologies, operational, procedural): a) Hazardous waste disposal procedures and contract requirements b) Satellite accumulation areas c) Restricted access 90-day accumulation areas d) Secondary containment required for all hazardous materials e) Waste committee meetings and procedures f) Annual internal inspection by Region III SHEM Managers g) Triennial external inspection by EPA HQ (SHEMD) h) Annual training	
4. Maintenance plan(s) for the operational controls: a) Review procedures and contract deliverables periodically b) Weekly inspections of accumulation areas c) Review of inspection reports and audit findings by ESC personnel and R3 and HQ staff. d) Investigate spill or hazardous material incidents to prevent & institute new procedures e) Review training records periodically	
5. Actions to be taken if controls fail: a) Investigate and install additional controls b) Provide retraining as necessary c) SHEM Manager implements corrective action changes through Waste Committee and organizational management components. d) Appropriate communications to effected ESC Staff	
6. Record(s): Hazardous waste manifests1) DOT Drum Inventory Forms a. Certificates of Disposal / Treatment b. Contract Invoices / EPA Receiving Reports c. Waste Committee Meeting Minutes	Person Responsible and Record Location: SHEM Manager A1232) SHEM Manager A123 a. SHEM ManagerA123 b. SHEM ManagerA123 c. SHEM ManagerA123 1. local area network

d. Accumulation Area Logbooks	d. SHEM ManagerA123, D123	
e. Waste Profiles		a. J118
f. Contractor Field Report Forms	e. SHEM Manager	A123
g. Restricted Waste Notification & Certification Forms (Land Ban forms)	f. SHEM ManagerA123	
h. PCB Waste Logbook & Tracking Forms	g. SHEM ManagerA123	
i. Biennial Waste Report to the State of Maryland	h. SHEM Manager	A123
j. Internal/external inspection reports	i. SHEM Manager	A123, A118
k. Accumulation area inspection logbooks	j. SHEM Manager	A123
l. Records of awareness activities performed (training course sign-up sheets, brown-bag lunch announcements, e-mails that raise awareness)	k. SHEM Manager	D123, J118
m. Training records	l. EMS Coordinator	A236
	m. SHEM Manager	A123

7. Responsibilities: (a. to ensure controls are in place; b. to ensure controls keep working; c. to take action when controls fail; d. to create and keep records relative to operational controls)

Name	Responsibility
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SHEM Manager	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Facility Manager	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Hazardous Waste Removal Contractor	Packages, transports and disposes of hazardous wastes in accordance with the contract specifications and applicable regulations.
Janitorial Contractor	Packages, transports and disposes of solid wastes in accordance with the contract specifications and applicable regulations.
Organizational Waste Coordinators	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Laboratory Staff	Follow all applicable controls, procedures and practices for handling and disposing of hazardous wastes.
	Ensures controls are in place and working. Participates in

Organizational Management	investigations and corrective actions when controls fail. Responsible to ensure that all other responsibilities are being fully met.
8. Competence of operators on the basis of training, education or experience:	
Name	Responsibility
SHEM Manager	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual national EPA SHEM Conferences 3. Networking with other SHEM Managers 4. CFR updates 5. EPA Headquarters updates & correspondences 6. EPA, DOD and private regulatory publications 7. Regulatory E-mail updates
Facility Manager	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual national EPA Facility Manager Conferences 3. Networking with other Facility Managers 4. CFR updates 5. EPA Headquarters updates & correspondences 6. Regulatory E-mail updates
Hazardous Waste Removal Contractor	1. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment.
Janitorial Contractor	1. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment.
Organizational Waste Coordinators / Laboratory Staff	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual training courses

Operational Controls Form	
Significant Environmental Aspect: Waste Generation	Document Control Code: ESC EMP-11.00
1. Activity Group: Non-hazardous Waste Disposal , see also EMP for Paper Consumption	
2. Activity(ies): a) Analysis of Samples/Prep (except instrumental analysis) b) Calibration and Maintenance of Lab Equipment c) Changing Oil in Pumps d) Construction e) Lab Neutralization Usage f) Manage Nonhazardous Waste g) Sample/Sample Container Disposal h) Use of Pesticides Outside g) Use of Solvents h) Charging, Discharging, and Maintaining 25K Gallon Fuel Tank i) Eating in Lunchroom/ Food Preparation j) Facility Cleaning (cleaning products and equipment) k) Facility Maintenance and Operation l) Handling, Storage, and Use of Biological Agents m) Maintenance of GOV and Boats, including mobile lab n) Operation and Maintenance of Heating/Air Conditioning (refrigerants) o) Safety Practices/Program (PPE, spill clean up, safety showers) p) Sample Collection in Field q) Use of Autoclaves, Dishwashers, In-house Lab Analytical and Safety & Health Instrumentation	
3. Operational Controls (technologies, operational, procedural): a) Solid waste disposal procedures and contract requirements b) Recycle bins for paper, aluminum, glass and some plastics placed in strategic areas. c) Inspection of recycled materials d) Waste committee meetings and procedures e) Annual internal inspection by Region III SHEM Managers f) Tri-annual external inspection by EPA HQ (SHEMD) g) Annual training h) Collection of recyclables (paper, aluminum, glass, cardboard, wooden pallets and some plastics)	
4. Maintenance plan(s) for the operational controls: a) Review procedures and contract deliverables periodically b) Review of inspection reports and audit findings by ESC personnel and R3 and HQ staff. c) Investigate incidents to prevent & institute new procedures d) Review training records periodically e) Periodic reminders to staff about recycling and solid waste program	
5. Actions to be taken if controls fail: a) Investigate and install additional controls b) Provide retraining as necessary c) SHEM Manager implements corrective action changes through Waste Committee, Facility Manager and organizational management components. d) Appropriate communications to affected ESC Staff	
6. Record(s): a. Waste Committee Meeting Minutes	Person Responsible and Record Location: a. SHEM Manager A123

Operational Controls Form	
b. Contract invoices / EPA receiving reports c. Non-Hazardous Waste Manifests d. Internal/external inspection reports e. Records of awareness activities performed (training course sign-up sheets, brown-bag lunch announcements, e-mails that raise awareness) f. Inventory of recycled materials, including aluminum cans, glass bottles (clear and brown), batteries, wood pallets, paper, and cardboard	local area network b. SHEM Manager A123 c. SHEM Manager A123 d. SHEM Manager A123 e. EMS Coordinator A236 f. Assistant Facility Manager A132
7. Responsibilities: (a. to ensure controls are in place; b. to ensure controls keep working; c. to take action when controls fail; d. to create and keep records relative to operational controls)	
Name	Responsibility
SHEM Manager	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Facility Manager	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Janitorial Contractor	Packages, transports and disposes of solid wastes in accordance with the contract specifications and applicable regulations.
Organizational Waste Coordinators	Ensures controls are in place and working. Maintains relevant records. Investigates and precipitates corrective actions when controls fail.
Laboratory Staff	Follow all applicable controls, procedures and practices for handling and disposing of solid wastes.
Organizational Management	Ensures controls are in place and working. Participates in investigations and corrective actions when controls fail. Responsible to ensure that all other responsibilities are being fully met.
8. Competence of operators on the basis of training, education or experience:	
Name	Responsibility

SHEM Manager	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual national EPA SHEM Conferences 3. Networking with other SHEM Managers 4. CFR updates 5. EPA Headquarters updates & correspondences 6. EPA, DOD and private regulatory publications 7. Regulatory E-mail updates
Facility Manager	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual national EPA Facility Manager Conferences 3. Networking with other Facility Managers 4. CFR updates 5. EPA Headquarters updates & correspondences 6. Regulatory E-mail updates
Hazardous Waste Removal Contractor	1. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment.
Janitorial Contractor	1. Factors in Contract SOW describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment.
Organizational Waste Coordinators/ Laboratory Staff	1. Factors in Position Description describe knowledge required by the position, supervisory controls, guidelines, complexity, scope and effect, personal contacts, purpose of contacts, physical demands and work environment. 2. Attendance at annual training

Appendix 7
Environmental Management Program Form- blank

ENVIRONMENTAL MANAGEMENT PROGRAM FOR SIGNIFICANT ENVIRONMENTAL ASPECT: _____ (aspect name)	Completed by: _____ Date: _____
1. Objective(s):	
2. Target(s):	
3. Reason for Significance:	
4. Potential Environmental/Business Impacts:	
5. Legal and Other Requirements (Specify):	
6. Performance Indicator(s):	
7. Program Description:	
8. Operational Controls: (See Associated Operational Controls, if any)	
9. Budget (resources):	
10. Structure, Authorities, Responsibilities	
Tasks	Person Responsible

11. Record(s):	
12. Document(s):	
13. Competence of persons responsible on basis of training, education, or experience:	
14. Other Program Elements:	