

USDA-ARS-MWA-MADISON, WI

**ENVIRONMENTAL
MANAGEMENT SYSTEM
TRAINING**



Updated: March, 2010

Welcome to the US Department of Agriculture, Agricultural Research Service, Madison Location Environmental Management System (or EMS) Training. This training is mandated as part of the government wide adoption of an EMS program. At the completion of the course, you will need to complete the training certificate and return it to the Madison Location Administrative Office. The approximate time to complete this presentation is 1 hr.

This training program was specifically developed by Julie Grogan for the Madison, Wisconsin ARS Location. Questions or comments regarding this presentation can be forwarded to: grogan@wisc.edu.

Material Compiled From:

USDA-ARS EMS Implementation Guide

USDA-ARS-MWA, SHEM EMS Training Material

USDA Policy & Procedures 230.0M

Federal Register, Presidential Documents

University of Wisconsin - Madison

Wisconsin Department of Natural Resources

Wisconsin Department of Agriculture, Trade and Consumer Protection

The information contained in this training program was developed specifically for the Madison, Wisconsin Location. Questions or comments can be forwarded to Julie Grogan at grogan@wisc.edu. Information was compiled from a variety of sources including USDA's Implementation Guide, materials provided by the Midwest Area's SHEM committee, USDA's policies & procedures; the federal register, the University of Wisconsin Madison and Wisconsin Departments of Natural Resources and Agriculture, Trade and Consumer Protection.

ENVIRONMENTAL MANAGEMENT SYSTEM

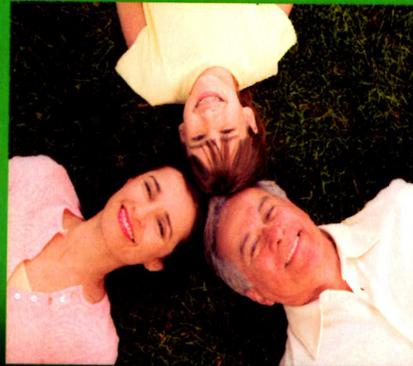
Course Objectives:

Introduce USDA-ARS-Madison employees to what an Environmental Management System (EMS) is;

To provide a basic awareness of the importance of an EMS; and,

To provide information on employee responsibility with regard to the Madison location EMS program.

EMS IMPACTS EVERYONE!



An EMS impacts everyone and everything. During this course, there are 3 objectives that will be covered. The first objective is to introduce Madison employees to what an Environmental Management System or EMS is. The second objective will provide a basic awareness of the importance of an EMS while the third objectives is to provide information on the roles and responsibilities of YOU the employee in implementing the EMS for the Madison location. Now, let's get started.....

OBJECTIVE ONE

Introduction to Environmental Management Systems (EMS)

Objective One - Introduction to Environmental Management Systems or otherwise known as EMS.

WHAT IS AN EMS?

EMS is an acronym for Environmental Management System.

EMS is a recognized, sound, business practice, designed to increase the effectiveness and efficiency of an organization through better management of environmental issues.

It is a “*continual*” cycle of planning, implementing, reviewing and improving operations that may have an impact on the environment.

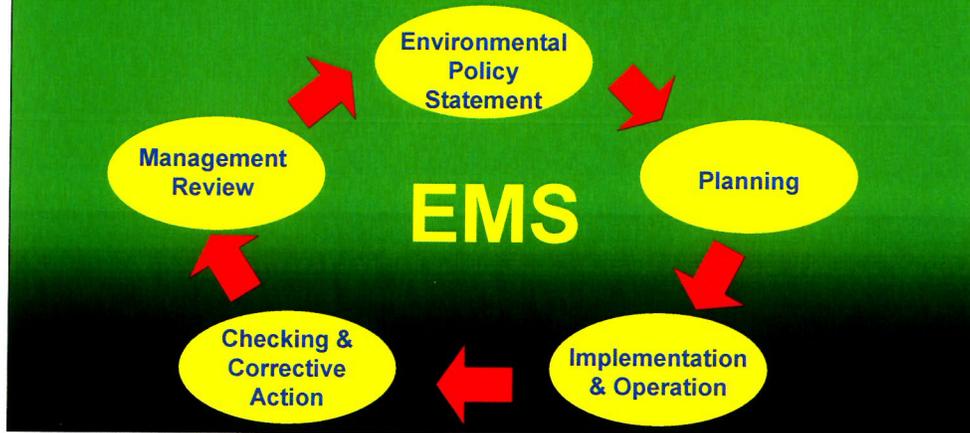
What is an EMS? EMS is an acronym for Environmental Management Systems. It is recognized as a sound business practice, designed to increase the effectiveness and efficiency of an organization through better management of environmental issues. An EMS is a continual cycle of noting activities that may impact the environment, planning and implementing a plan to reduce the impact of those activities, reviewing their status and refining systems to minimize or eliminate environmental impacts. An EMS helps to protect our future and allows us to be proper stewards of our natural resources.

In a nutshell, an EMS program incorporates and promotes:

- Environmental awareness
- Regulatory Compliance
- Pollution Prevention
- Conservation of Natural Resources
- Conservation of Energy
- Continual Environmental Stewardship

EMS IS A CONTINUAL CYCLE

An EMS is a set of procedures based on a Plan-Do-Check-Act cycle and has five Major Components: Policy, Planning, Implementation, Checking & Review.



An EMS is a cycle based upon a Plan-Do-Check-Act philosophy. It has 5 major components: an Environmental Policy Statement, Planning, Implementation & Operation, Checking & Corrective Action AND Management Review.

EMS - A CYCLICAL PROCESS

- **Policy** – Process begins with a policy statement from upper management.
- **Planning** – Involves completing an assessment that identifies aspects, impacts, legal requirements goals & management actions.
- **Implementation & Operation** – Working to achieve identified goals and documenting management actions.
- **Checking & Corrective Action** – Involves conducting ongoing audits of the Location EMS.
- **Management Review** – Evaluates the audit and determines goals and program changes.

The EMS process begins with an “Environmental Policy Statement” and adoption of the policy from upper management.

“Planning” is the second part of the cycle. This involves completing an environmental assessment that identifies various aspects, impacts, applicable legal requirements on all levels (federal, state and local), developing goals and management actions to minimize or eliminate the identified impacts.

The “third” and critical element is “Implementation and Operation”. You have already identified an impact , now is the actual DOING stage of the cycle. It involves working to achieve the identified goals and documenting management actions.

The fourth part of the cycle involves “Checking and Corrective Action”. This involves ongoing audits on the performance of stage 3 (or implementation stage) and allows for refinement of the goals and objectives.

The fifth element is “Management Review”. This affords management an opportunity to review the EMS on a global scale and determine whether any programmatic changes need to occur.

Let’s explore these 5 elements a little more closely..

EMS CYCLE

“POLICY”

“Policy” begins with a statement from upper management.

An EMS Policy has been developed for all three levels governing the Madison location: National ARS policy, Midwest Area policy and the Madison Location policy.

Area/Location policy statements must, at a minimum, contain a commitment to:

- Environmental compliance;
- Pollution prevention and conservation practices; and,
- Continual improvement.

Policy statements are communicated to all personnel as well as the general public.

Policy statements are reviewed annually and updated as necessary.

As stated earlier, “Policy” begins with a statement from upper management. An EMS policy statement has been developed at all 3 levels of USDA....at the national level, the Midwest Area level and specifically at the Madison Location level. These policy statements contain a commitment to: environmental compliance; pollution prevention and conservation practices and involve a continual improvement process. These policy statements are communicated to all personnel at all levels. In addition, these policy statements are made available to the general public as well.

Remember, an EMS is a cyclical process and therefore policy statements are reviewed annually and updated as necessary.

EMS CYCLE "NATIONAL POLICY"

The USDA, Agricultural Research Service (ARS) has adopted the following EMS Policy at the National level as it appears in the 2005 EMS Implementation Guide.

Agricultural Research Service Environmental Management System Policy Statement

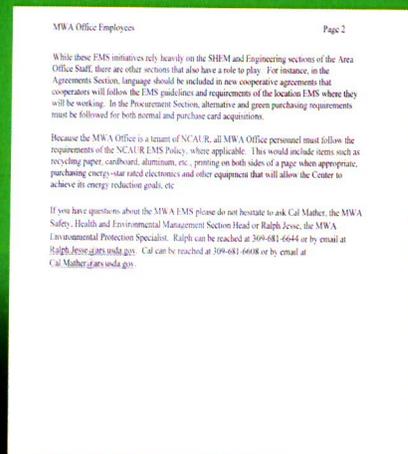
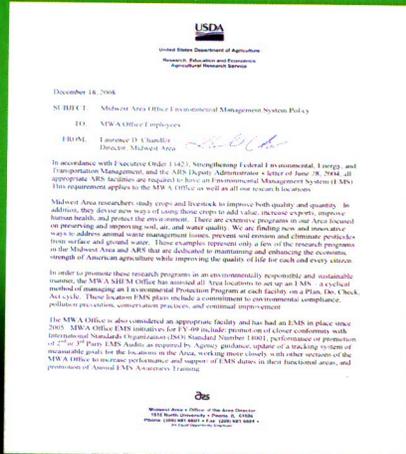
The Agricultural Research Service (ARS) conducts research to develop solutions to agricultural problems of high national priority. In conjunction with this mission, ARS is committed to protecting human health and the environment; meeting or exceeding Federal, State, and local laws, regulations, codes, and guidelines; and employing sustainable pollution prevention practices. Whenever feasible, ARS will utilize pollution prevention initiatives as the means for achieving compliance. We will strive to minimize impacts and continually improve our environmental performance by:

- Maintaining a policy of commitment to environmental excellence.
- Developing annual goals, objectives, and targets to advance our program performance in terms of both regulated and unregulated impacts.
- Considering environmental impacts when making policy, planning, purchasing, and operating decisions.
- Identifying and complying with pertinent requirements in Federal, State, and local laws and regulations; permits; Department of Agriculture and ARS policies and procedures; and industry codes that we must adhere to.
- Requesting the necessary resources to successfully carry out our goals, objectives, and targets.
- Making personnel aware of their environmental roles and responsibilities, providing appropriate training, and holding employees accountable for their performance and actions, including recognizing them for outstanding performance.
- Effectively communicating with employees, partners, stakeholders, customers, and the general public, our commitment to the environment and soliciting their input in developing and achieving our goals and objectives.
- Routinely monitoring our environmental operations and conducting periodic inspections, audits, and reviews to ascertain that we meet applicable standards and to evaluate our program effectiveness.
- Correcting identified deficiencies in a timely manner and taking appropriate steps to prevent their recurrence.
- Clearly documenting and reporting the progress and achievements related to this policy.

The Agriculture Research Service EMS National Policy statement as adopted for 2005 reads as follows: (Read statement).

EMS CYCLE "MWA POLICY"

The USDA-ARS, Midwest Area (MWA) has refined and adopted the following EMS Policy at the Area level.

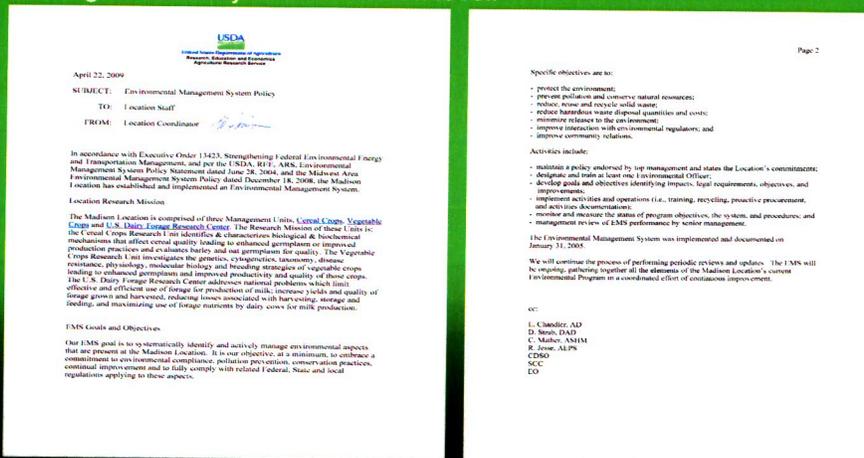


Dr. Laurence D. Chandler, Director of the Midwest Area has issued the following EMS statement for the area: (read statement).

EMS CYCLE

"LOCATION POLICY"

The USDA-ARS-MWA, Madison Location has further refined and adopted the following EMS Policy at the Location level.



Dr. Philipp Simon, Location Coordinator for the Madison Location has issued the following EMS statement specific to the Madison Location: (read statement).

EMS CYCLE “PLANNING”

“*Planning*” involves completing an assessment identifying environmental aspects, environmental impacts, legal requirements goals & management actions.

In order to continually improve the EMS program, each Location is responsible for developing annual goals, objectives and targets each year.

Goals, objectives, and targets should be clear, specific statements of measurable results that are to be accomplished within a specific time period and should be based in part on:

- Significant impacts associated with facility and research-related operations;
- Deficiencies noted by employees discovered during day-to-day operations;
- Regulatory issues and trends discovered during internal/external reviews/audits;
- Pollution prevention and conservation initiatives; and,
- Agency-wide emphasis programs.

The second element of the EMS cycle is “Planning”. This involves completing an environmental assessment, identifying aspects and impacts that might effect the environment, identifying applicable legal requirements whether federal, state or local and developing goals and management actions. As part of Presidential Executive Orders 13423 & 13514, each location is responsible for developing annual goals, objectives and targets each year. These goals/objectives/targets should be clear and specific statements. The results must be measurable. Definitive timelines should be assigned and results (either positive or negative) should be documented. These goals/objectives/targets should be developed based upon whether there are significant impacts associated with facility and research-related operations; whether there have been deficiencies noted by employees that are of concern; whether there have been regulatory or trend changes discovered during auditing processes; whether there are pollution prevention and conservation initiatives that need to be considered and whether the goal/objective/target is specific to the Location or has area-wide emphasis.

EMS CYCLE

“PLANNING” (continued)

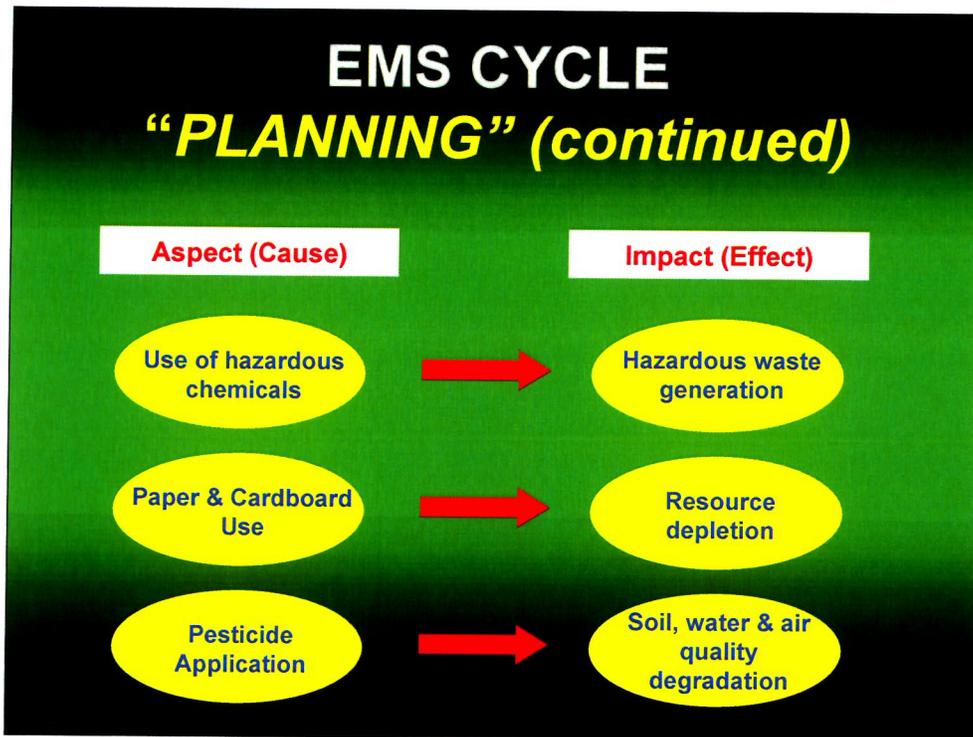
Environmental Aspects are elements of the Location’s activities that can potentially interact with the environment and may include, but not limited to:

- ❖ Air Emissions
- ❖ Discharges, spills, leaks, releases to land, water or air
- ❖ Energy consumption or conservation
- ❖ Generation of waste streams, noise, odor, dust, heat, light, radiation, etc.

Environmental Impacts are changes to the environment resulting from an environmental aspect.

Environmental Aspects and Environmental Impacts exist in a “*Cause and Effect*” relationship with each other.

When an environmental management assessment is performed, the aspects and impacts are considered in developing the EMS plan. What is an environmental aspect? An environmental aspect are elements of the Location’s activities that can potentially interact with the environment. Environmental Aspects are “causes” to the environment. They might include air emissions that might CAUSE damage to air quality. Discharges, spills, leaks or releases that might CAUSE damage to land, air or water. Energy consumption or conservation that might CAUSE overuse of natural resources. Generation of a specific waste stream such as noise, odor, heat, etc. that might CAUSE a health hazard. Remember....environmental aspects are viewed as “causes”. Well, what is considered an environmental impact then? An environmental impact is a direct change or “effect” to the environment resulting from an aspect. Environmental aspects and environmental impacts exist in a “cause and effect relationship”. If I “cause” A then the resulting effect is “B”. Let’s take a closer look.



Here are three examples of the “cause and effect” relationship. The first one is the “use of hazardous chemicals”. This is an environmental aspect or “cause”. If I use hazardous chemicals, I will generate hazardous waste. The environmental impact or “effect” is “hazardous waste generation”. Let’s take a look at another common aspect....the use of paper and cardboard. Remember this is the “cause” or environmental aspect. If I excessively use paper or cardboard, then I may end up with an environmental impact or “effect” of depleting a natural resource....trees used for production. A final example would be the application of pesticides. This is the environmental aspect or “cause”. If I use pesticides, the environmental impact or “effect” would be potential degradation of land, water and air. Environmental Aspects and Environmental Impacts equals “cause and effects”.

EMS CYCLE

“PLANNING” (continued)

ARS is committed to complying with all applicable environmental regulations (Federal, State and/or Local).

ARS Manual 230.0 require that each location maintain a complete and current list of applicable statutes, laws, regulations, standards, policies, etc.

These regulations may include, but are not limited to:

- Air Pollution/Prevention
- Waste Management
- Pollution Prevention
- Water Contamination
- Reduce, Reuse, Recycling Efforts
- Hazardous Material Handling/Prevention

These regulations are made part of the EMS developed for the Location and are available from the Management Unit administrative staff.

Once the environmental aspects and impacts have been identified, planning involves researching the environmental regulations that will be applicable. These could be federal, state or local regulations. ARS Policy and Procedure 230.0 requires that each location maintain a complete and current list of applicable statutes, laws, regulations, standard, policies, etc. The most stringent laws take precedence whether the law is at the federal level or at the local level. These regulations may govern such things as air quality or pollution/prevention; waste management (whether universal or hazardous or radioactive); water contamination; recycling; etc. A copy of the applicable rules and regulations is available at your Management Unit Administrative Office.

EMS CYCLE

“**PLANNING**” (continued)

Sample Regulatory Agencies:

- ❖ Executive Orders, Office of the President
- ❖ USDA – Agricultural Research Service
- ❖ U.S. Environmental Protection Agency
- ❖ Wisconsin Department of Agriculture
- ❖ Wisconsin Department of Natural Resources
- ❖ U.S. Code of Federal Regulations (CFR)
- ❖ United States Codes (USC)

Sample Regulations:

- ❖ National Environmental Policy Act (NEPA)
- ❖ Clean Air Act (CAA)
- ❖ Emergency Planning & Comm. Right to Know (EPCRA)
- ❖ Freedom of Information Act (FOIA)
- ❖ Federal Insecticide, Fungicide & Rodenticide Act
- ❖ Pollution Prevention Act (PPA)
- ❖ Resource Conservation & Recovery Act (RCRA)

Governing regulatory bodies or agencies might include: Executive Orders issued by the Presidential Office; the US Department of Agriculture; US Environmental Protection Agency; the Wisconsin Department of Agriculture, the Wisconsin Department of Natural Resources, the U.S. Code of Federal Regulations or the United States Codes. These entities provide the rules and regulations that are followed when developing an EMS program. Sample regulations might include: National Environmental Policy Act (known as NEPA); the Clean Air Act, the Emergency Planning and Community Right to Know Act (otherwise known as EPCRA); the Freedom of Information Act (known as FOIA); the Federal Insecticide, Fungicide and Rodenticide Act; the Pollution Prevention Act; or the Resource Conservation & Recovery Act (otherwise known as RCRA)...just to name a few. The Management Assessment and EMS developed for the Madison Location has a list of applicable rules and regulations and is available from your Management Unit office.

EMS CYCLE

“IMPLEMENTATION & OPERATION”

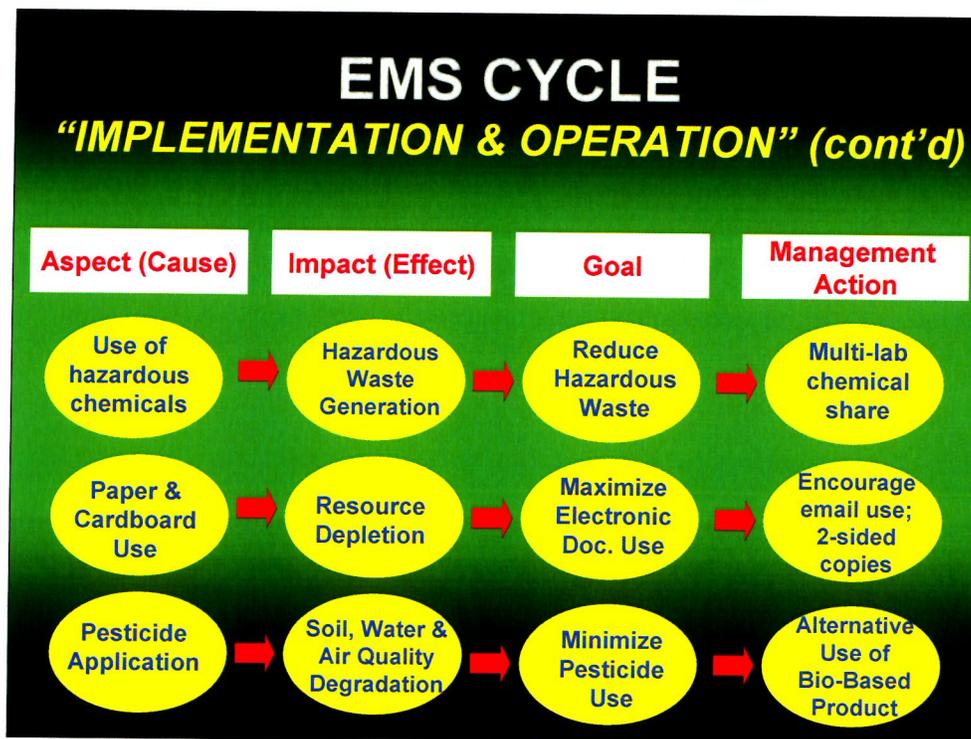
“Implementation & Operation” involves working to achieve identified goals and documenting management actions.

Goals are established based upon the results from the Location EMS Assessment. While an environmental assessment may identify numerous aspects from which to establish goals, it is more important to set a few realistic goals and document their successes. As these goals are achieved, additional goals can then be established.

Management actions are defined as actions approved by the Location management staff as a means to achieve the goal.

Whenever feasible, Locations should utilize pollution prevention initiatives as the means for achieving compliance throughout the EMS Cycle.

The third part of the EMS cycle is probably the most critical. It is the “action” step of the cycle. It is the “implementation and operation” phase of the cycle. It involves “doing” or working to achieve the identified goals and DOCUMENTING management actions towards success. Let’s recap....you have identified the environmental aspects (or cause) and environmental impacts (or effect) during the planning stage. You have researched the governing rules and regulations. NOW, you need to identify how a management action plan that will minimize or eliminate the potential effect of previously identified actions. Goals are established along with accompanying timelines. The initial management assessment may have identified numerous aspects However, it important to remember that the entire EMS process is a cyclical event. It is more important to set a few realistic goals and document their successes rather than take on too many and succeed at none. As the initial goals are achieved, additional ones can then be established. The Madison Location Management team has approved the goals for the current year....check with your management unit administrative office for further details on this year’s goals. Remember that an EMS program is a cyclical affair....whenever possible pollution prevention initiatives are the ultimate goal. Let’s take a closer look



Remember the Environmental Aspects (or Causes) and Environmental Impacts (or effects) earlier referred to? Now we are going to establish goals and ways to achieve these goals or "management actions". Let's take a look at the first example. The Aspect or Cause was the use of hazardous chemicals. The impact or "effect" of this use was the generation of hazardous waste. Our goal is to reduce the hazardous waste, but how. The management action defines how we plan on achieving this....in this example, it might be the sharing of chemicals in multi-labs in order to reduce the amount of potential waste generated. Let's take a look at example #2....the use of paper or cardboard. The effect of this would be a depletion of our natural resources. Our goal might be to maximize electronic document usage or reduce dependency on paper. How would this be achieved? The management action plan might involve the encouragement of increase use of email or perhaps the use of 2-sided copies. The third example involves the use of pesticides. The effect would be degradation of land, water or air. The goal might be the minimization of pesticide use. How would this be achieved? The management action might be the use of an alternative bio-based product that has less impact on land, air or water. REMEMBER: step 3 of the EMS program is the implementation/operation phase or the "DOING" phase....it involves developing goals and management actions based upon the environmental aspects and impacts developed during the planning stage.

EMS CYCLE

“CHECKING & CORRECTIVE ACTION”

“Checking & Corrective Action” involves conducting ongoing audits of the Location EMS and taking corrective action when and where necessary.

Ongoing audits are a mechanism used to routinely monitor compliance with applicable Federal, State and local regulations.

Benefits of utilizing ongoing audits or a “self-policing” practice include:

- Allowing the Location to revise its goals and management action plans based on the effectiveness of these goals and plans; and,
- Reduced risk of an on-site EPA audit (EPA typically sets higher inspection priority for non self-policing facilities).

Locations shall maintain all documentation related to environmental audits including questionnaire(s) used, findings, and corrective actions taken.

The fourth stage of the EMS cycle is one of “refinement”. It is the “Checking & Corrective Action” phase of the cycle. It involves reviewing what the Location has implemented and documented during the first three stages and refining or adjusting in order to achieve compliance with established goals. It helps refine practices and apply new legal requirements if necessary. It is a way of “self-policing”. The benefit of these ongoing audits include: allowing the Location to revise its goals and management action plans based on the effectiveness of these goals AND reduces the risk of an on-site EPA audit. Results of these ongoing audits are available for review through the Location Administrative office.

EMS CYCLE “MANAGEMENT REVIEW”

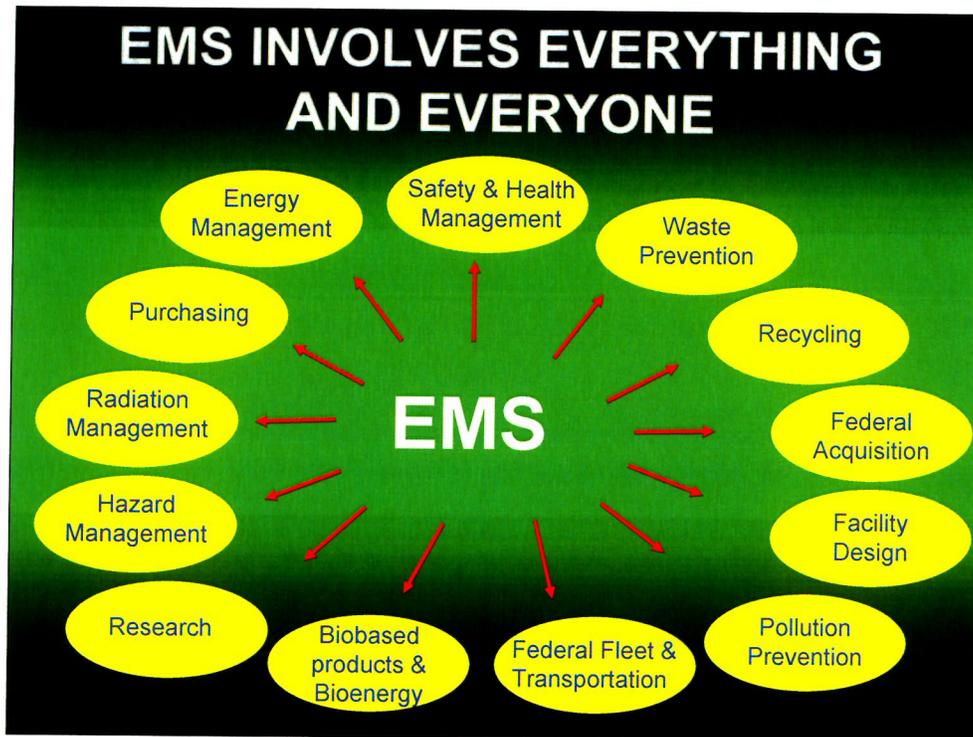
“Management Review” is the evaluation of the EMS from the Area management level and determines/recommends goals and program changes.

The Area office is responsible for determining the type and frequency of audits conducted at the individual locations within their region.

The Area office will develop and maintain a written 10-year plan outlining the years in which each of its locations will be audited (not less than every 3 years).

Annually, the Area office is responsible for reviewing and updating the Area plan including a list of locations where audits were completed, any schedule changes, and discussion of audit findings such as potential trends and efforts to correct such trends.

The fifth stage of the EMS cycle is “Management Review”. This involves an evaluation of the process from Area management as opposed to the local level and determines or recommends program goals or changes. The Area is responsible for determining the cycle of these reviews but national policy dictates not less than every 3 years for each of its locations based upon a 10 year planning cycle. The Area office is responsible for updating the Area plan including what has occurred at the locational level and reporting on any trends or efforts that have been noted.

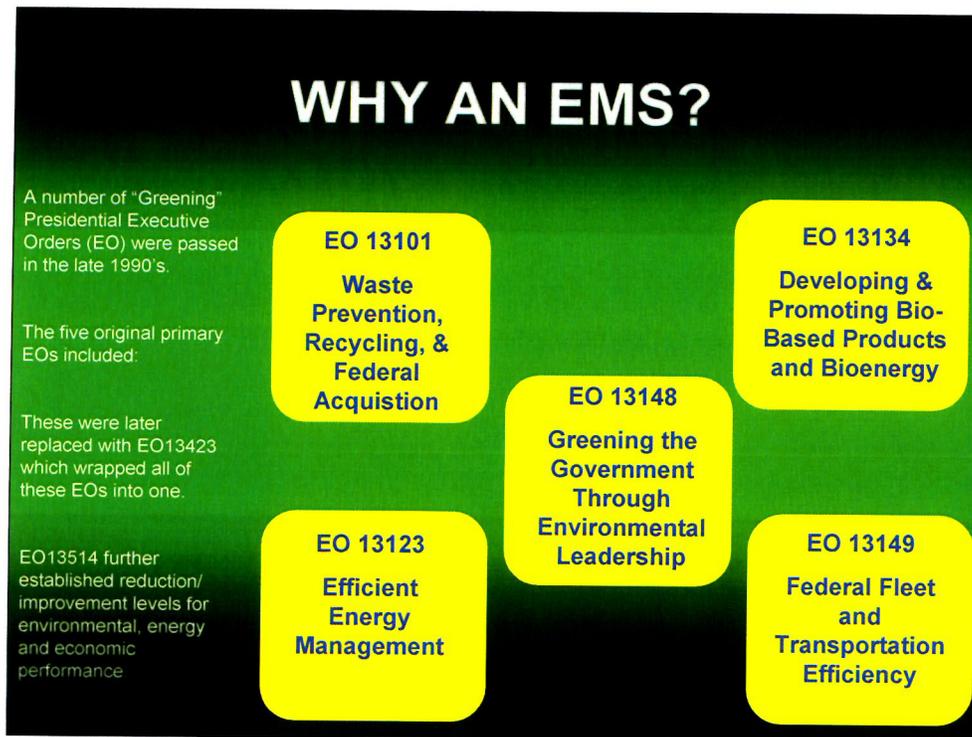


An EMS program involves everyone and everything. Whether you are the person designing the facility or the scientist performing the research or the purchase agent buying the equipment or custodian cleaning the facilities or the farm hand applying the manure in the fields....everyone and everything is important. Good stewardship of our natural resources is everyone's responsibility!

OBJECTIVE TWO

**Provide Basic Awareness
and Importance of an
Environmental
Management Systems**

Objective Two - Provide Basic Awareness and Importance of an Environmental Management System.



Why has the EMS become so important? During the late 1990's, a number of Presidential Orders were issued by former President Clinton that called for a "greening" of government practices. The five primary Executive Orders include: EO 13101 - "Waste Prevention, Recycling & Federal Acquisition"; EO 13134 - "Developing & Promoting Bio-Based Products and Bioenergy"; EO13123 - "Efficient Energy Management"; EO13149 - "Federal Fleet and Transportation Efficiency"; and probably the most prominent EO 13148 - "Greening the Government through Environmental Leadership".

These five executive orders established the foundation for the government-wide EMS initiative under the Clinton administration. These were condensed into one Executive Order (EO 13423) under the Bush administration. Under the Obama administration, Executive Order 13514 took further steps at setting reduction/improvement levels for environmental, energy and economic performance.

EO 13423 “Strengthening Federal Environmental, Energy, and Transportation Management”



The Bush administration folded five Executive Orders from the Clinton Administration into one Executive Order that encompassed all of them.



EO13423's objective is to conduct environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.



EO 13148 - Greening the Government Through Environmental Leadership was the first and probably the most prominent of the Executive Orders issued because it addressed the overall philosophy of environmental leadership within the government. It held each of the respective federal agencies accountable for their environmental actions and sets some standards and goals.

While the Clinton administration ushered in Executive Orders that focused on environmental stewardship, subsequent Administrations (Bush and Obama) have outlined additional accountability in proper environmental stewardship.

EO 13423 (Bush) started the ball rolling for establishing definite timelines for reduction/improvements in environmental management.

EO 13423

“Strengthening Federal Environmental, Energy, and Transportation Management”



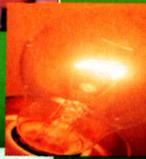
EO13123 set the following goals:

- Improve energy efficiency and reduce greenhouse gas emissions;
- Ensure that renewable energy consumed comes from new renewable sources;
- Reduce water consumption;
- Require use of sustainable environmental practices;
- Ensure new construction/major renovation of agency buildings incorporate sustainable practices;
- Reduce fleet fuel consumption and ensure replacement with hybrid/alternative fuel sources; and
- Operating energy-efficient facilities.

Executive Order 13423 took EO 13148 a step further by establishing definitive timelines for accomplishing reduction/improvement standards within the federal government agencies.

EO 13514

“Federal Leadership in Environmental, Energy, and Economic Performance”



EO13514 set the following goals:

- Reduction in greenhouse gas emissions;
- Improve water use efficiency and management;
- Promote pollution prevention and elimination waste;
- Advance regional and local integrated transportation planning;
- Implement high performance sustainable Federal building design, construction, operation and management, maintenance and deconstruction;
- Promote electronic stewardship; and,
- Sustain proper environmental stewardship.

Executive Order 13514 enhanced further EO13423 by outlining results of the previously defined timetables, establishing additional timelines, protecting the interests of the taxpayers by sound economic improvements and making the information readily available for public access through federal websites.

HOW AN EMS WORKS?

An EMS involves everyone and everything and whose primary objective is to minimize, reduce and/or eliminate environmental impacts. By working to achieve these objectives, an EMS helps:

- Protect human health;
- Promote a good relationship with surrounding community and emergency services;
- Reduce generation of waste streams and promotes recycling efforts;
- Promote pollution prevention to preserve air quality;
- Save money through resource conservation;
- Promote proper balance within the ecosystem;
- Promote the efficient use of our water resources; and
- Promote productive agriculture.



Just exactly how does an EMS work? We have already determined that a successful EMS plan requires involvement by everyone and everything. The primary goal is the minimization, reduction or elimination of environmental impacts. An EMS helps protect human health through proper stewardship of land, air and water resources. It involves your community and neighbors through positive relationships because of good stewardship. It reduces the waste stream and promotes recycling in all facets of operations. It promotes pollution prevention practices to ensure air quality. Energy conservation helps save money by prevention of the destruction of our natural resources. It keeps a proper balance within the ecosystems and our water systems. Ultimately, these environmental basics or “common sense” practices help promote a productive agriculture base.

HOW AN EMS WORKS? (continued)

An EMS involves looking at all facets of a location from initial design/construction/renovation of a location to planning proposed projects to lab research to purchasing to overall operations and ongoing maintenance.

When considering all of the above, an EMS requires locations to develop a list of activities associated with facility and research-related operations and identify the significant aspects of those activities that have an impact on the environment.

Questions to consider include:

- Do they produce waste?
- Do they impact the land, water and air?
- Are hazardous materials involved?
- Are operations conducted in ecologically sensitive areas?
- How much water and energy are used?

Whenever a location has a new project, whether it is research based or a renovation or construction of new facilities, an environment assessment or review should occur. This practice allows the individuals involved to develop a list of activities that may impact the environment. Questions to consider might include: How much and what type of waste is generated? What is the impact on land, air and water? Are hazardous materials involved and how may they be disposed of? Are ecologically sensitive areas involved such as wetlands, marsh areas, protected species environments, etc? How much and what type of energy is used? How about water?

HOW AN EMS WORKS? (continued)

When conducting operations/research, locations need to consider reviewing the following pollution prevention techniques:

- Good housekeeping and maintenance practices
- Spill prevention and preparedness
- Reduce or eliminate pollutants at their source
- Employ proper inventory management practices that minimize or eliminate use of hazardous materials OR that substitute less hazardous materials
- Utilize chemical exchange programs
- Recycle whenever possible and when feasible
- Maximize efficient use of natural resources
- Ensure that reducing waste from one source does not increase or transfer pollution to another source
- Utilize environmentally preferable purchasing

Once the location has determined impacts to the environment, a review of pollution prevention techniques should be considered. These include, but are not limited to: housekeeping and maintenance techniques; spill prevention; source pollutants; inventory management; chemical exchange programs; recycling efforts; natural resource efficiency; waste stream transfer and environmentally preferable purchasing. Let's take a few minutes to review how one might incorporate these pollution prevention techniques.

HOUSEKEEPING & MAINTENANCE PRACTICES



Use secondary containment where appropriate.
Inspect, repair and maintain equipment routinely.
Replace seals and gaskets on a regular basis.
Replace pollution producing equipment, if feasible.
Use tight-fitting lids to prevent evaporation.



Reduce spills, overflows, leaks, contaminated samples and accidents, thereby reducing costs, stress and enhance pollution prevention.
Minimize lab clutter to avoid accidents and improve efficiency and morale.

Pollution prevention begins common sense and good housekeeping and maintenance practices. Use secondary containment and inspect, repair and maintain equipment routinely. This allows for early discovery or detection of situation that could result in an accident that may have an impact on the environment. Replace seals and gaskets and pollution producing equipment with newer, efficient models. Use tight-fitting lids to prevent evaporation. Reduce costs and stress by reducing the number of spills, leaks, contaminated samples, etc. Minimizing lab clutter not only reduces accident potentials but improves efficiency and employee morale. Pollution prevention is a simple equation: Common sense plus good housekeeping practices equals success.

SPILL PREVENTION & PREPAREDNESS

Spills generate waste. By preventing spills, laboratories can prevent hazardous releases and avoid associated disposal costs.

To avoid accidental spills:

- Train employees in proper use of chemicals, apparatus, instruments, and tools.
- Use pipetting aids, dispensers and pumps instead of pouring liquids.
- Use secondary containment.
- Store materials securely and away from traffic.



While all laboratories strive for an accident free zone, spills do occasionally occur. When they do, they may pose a risk to health and safety and generate some form of waste. By reducing the number of spills, one can save not only money (from the resulting cost cleanup) but also our natural resources. To avoid spills it is the responsibility of staff to make sure employees are trained in the proper use of chemicals, personal protective devices, use of instruments and tools and in emergency procedures. Employees should use pipetting aids, dispensers and pumps instead of pouring liquids to avoid any spills. The use of secondary containment allows for capture of a spill. Storing materials securely, in their proper containers or containment units, and out of the line of traffic is an effective way to avoid spills or releases. By employees knowing their job, following proper protocols and procedures and being held accountable for their actions, ensures a safer environment for everyone.

SOURCE REDUCTION



Recycling may involve reusing a material in the same process or in a different process thereby reducing or eliminating pollutants at their source.

Examples include:

- Laboratories that recycle organic solvents by distillation.
- Crushing concrete from an existing road and using crushed material as base for new roadway.

Remember to be aware of safety hazards when reducing pollutants at their source.

Source reduction is a form of prevention pollution and recycling built into one. It involves reusing a material (whether a new product or a waste generated product) in the same process or in a different process thereby reducing or eliminating pollutants at their source. An example might be the practice of recycling organic solvents generated as laboratory waste into a less hazardous waste by distillation. Another example on a larger scale would be crushing concrete from an existing road being renovated and using the crushed material as base for the new roadway thereby eliminating landfill waste. It is important to remember though that one should be aware of the potential safety hazards when reducing pollutants at their source.

INVENTORY MANAGEMENT PRACTICES

Proper management ensures that your inventory is an asset and not a pollution prevention liability.

Establish an inventory tracking system.

Label all containers with contents and date to avoid costly and hazardous "unknowns".

Buy "right size" and not "economy size" to avoid hazardous waste production.

Rotate inventory so older material is used first....FIFO (first in, first out).

Store material carefully and in proper containers/ cabinetry to prevent spills and leaks.

Substitute highly toxic material with harmless or less toxic material. BE AWARE however, in some cases, labs are unable to make substitutions due to required protocols.



Have you considered your inventory management practices as a pollution prevention technique? Most locations view their inventory as an asset and not as a potential liability. Establish an inventory tracking system so that you know what exactly is in your inventory, the quantity and age of the inventory items. Label all containers with contents and date to avoid costs associated with trying to determine "unknowns". Bigger doesn't always mean better. Purchase the "right size" and not the "economy size". This eliminates the generation of unwanted waste. Rotate inventory using the FIFO method (first in, first out). Store materials in their proper containers and proper storage facilities to prevent spills or leaks and potential environmental accidents. Substitute highly toxic materials with less harmful ones whenever feasible and without jeopardizing research protocols. Proper inventory management insures that your inventory remains an asset and not a liability.

CHEMICAL EXCHANGE PROGRAMS



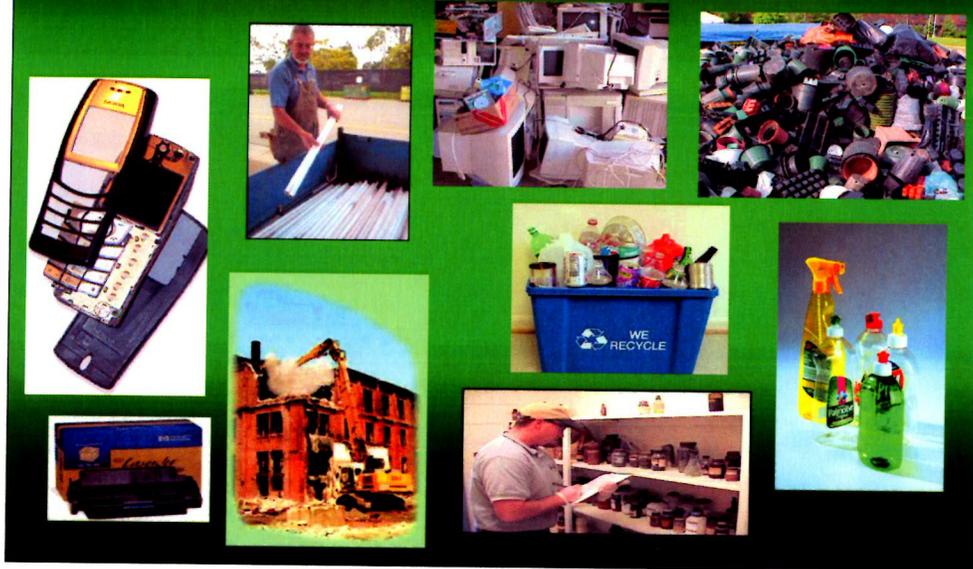
Chemical exchange programs are a “matchmaking” process based on the premise that one party’s unwanted chemicals may be a usable material for another party.

By maintaining chemical inventories within buildings, individual laboratories may be able to utilize chemicals between labs and thereby reducing costs and pollution potential.

The UW-Madison Safety Department (262-8769) can arrange for on-site removal or for finding another laboratory that can use chemicals when they are in their original containers.

So, you have a bunch of chemicals that you no longer use or that you inherited from your predecessors.....what do you do? Chemical exchange programs are a “matchmaking” process based on the premise that one party’s unwanted chemicals may be usable by another party. Chemical exchange programs can be with external or internal sources. For example, multiple labs within a building that maintain a primary inventory for building chemicals can reduce costs by exchanging chemicals between labs. External chemical exchange programs are usually operated through a university system or a paid service. The Madison Location is fortunate because of its association with the University of Wisconsin-Madison. The University does have a chemical exchange program operated through the UW-Safety Department. This department can arrange for on-site removal or for finding another lab that can utilize chemicals as long as they are in their original containers. For more information on this valuable service, contact them at 262-8769.

RECYCLING PROGRAMS



Recycling programs have been an excellent source of pollution prevention. The refinement of the recycling processes now includes most items, both conventional and nonconventional. Recycling efforts previously were limited to the pop cans and #1-5 plastics. The recycling efforts of today have greatly expanded. They include the fluorescent tubing light fixtures; print cartridges; various metals, tins and plastic containers, construction materials; cleaning supplies; cell phones; laboratory chemicals; and electronic devices such as computer monitors, CPUs, wiring, etc.

RECYCLING PROGRAMS



Recycling is much more than the “blue, green or brown” recycle containers in the past. Today, almost all things are recyclable.

Cans, glasses, cell phones, toners cartridges, lab supplies, plastics, steel, brick, concrete, tin roofing, grease, lighting, oil, styrofoam, metal, chemicals, equipment, etc.

The Madison location, because of its affiliation with the UW-Madison campus, has a wide array of recycling avenues available depending upon the item to be recycled. More information is available at the UW-Madison, Facilities Planning and Management website at: <http://www2.fpm.wisc.edu/fpm/>

Recycling has greatly been refined. It is much more than the “blue, green or brown” recycling receptacles of the past. Items that previously would have filled our landfills are now the “bread and butter” for new entrepreneurial companies that focus on recycling. Cans, glasses, phones, concrete, tin roofing, glass, grease, lighting, styrofoam, etc. all are recyclable. A prime example of recycling on a grand scale at the Madison Location is the location where the new Cereal Crops Research Unit was constructed. Prior to destruction, the previous building was excavated for recyclable material. This included tubing that ran throughout the building, metal in the HVAC system, steel girders in the support system, concrete crushed for new road and foundation base; the brick for reuse in other structures. The University of Wisconsin Madison, Facilities Planning and Management division provide a wide array of recycling avenues for use. So, before you throw something away, ask yourself.....can it be RECYCLED?

MAXIMIZE NATURAL RESOURCE USE



Being a good natural resource steward involves maximizing the use of the natural resources while minimizing the effects on the land, air or water.

Examples include:

- Harnessing wind energy through use of solar powered wind mills, thereby reducing need for petroleum based energy use.
- Use of natural lighting in areas to reduce use of man-made energy.
- Use of corn products for use as a fuel source in vehicles.
- Use of biobased industrial products that are produced from renewable plant and animal sources, and can be returned to the earth at the end of their useful life or recycled and used again.



Good stewardship involves maximizing natural resource use while minimizing its impact on land, air and water. How is this achieved? Windmills of the past helped farmers pump water from wells. Today, windmills harness the energy of the sun for operation and generate electric energy for use by area communities. Modern day architectural designs incorporate the use of natural lighting by more glass and features both externally and internally thereby reducing the amount of man-made energy needed to light buildings. The renewal corn and soybean crops provide fuel and other various products and have become the new source of biobased industrial products available. Biobased products are important because they are produced from a renewable plant or animal source and can be returned to the earth at the end of their useful life or recycled and used again. Maximizing and minimizing...two concepts that go hand in hand with proper environmental stewardship.

MAINTAINING AN “EVEN” WASTE STREAM



It is important to ensure that by reducing waste from one source, it does not increase or transfer pollution to another source.

An example of this might include during a “retrofit” project, all the lighting fixtures in the building are converted to fluorescent from incandescent fixtures. If the building does not have the opportunity to participate in a recycle program that can accommodate the new light fixtures, then there has been a “*transfer*” of pollution of the lighting fixtures.

By following the Waste Reduction Hierarchy chart to the left, the potential of increasing or transferring of a waste stream becomes negligible.

What does an “upside down triangle” and an EMS program have in common? It’s the way to describe the waste reduction hierarchy or how to maintain an “even” waste stream. It is important to ensure that by reducing waste from one source, it does not increase or transfer pollution to another source. The waste reduction hierarchy emphasizes the goal of pollution prevention. The smallest part of the triangle represents landfill disposal, the least favorable of all methods of waste disposal. The next level of waste reduction is to recycle products. The third level is the reuse of products and finally the final element or goal of pollution prevention is source reduction. Let’s use lighting as an example. Your facility has decided to switch from incandescent bulbs to fluorescent fixtures. Because there is considerable energy savings when using the fluorescent fixtures, costs associated with replacement bulbs and electrical usage will be decreased. However, at the current time the local waste disposal company accepts incandescent bulbs as regular trash but does not accept the fluorescent fixtures. There are no recycling companies in your immediate area that accept these items. You now have to pay an outside source for disposal of these fixtures. In essence, you’ve not reduced waste but have transferred the waste stream. Remember, the ultimate goal of pollution prevention is reducing waste not transferring waste.

“GREEN” PURCHASING

“Green purchasing” is the generic term used to apply to the purchasing of environmentally-friendly products and/or services.

The White House Task Force on Waste Prevention and Recycling, in conjunction with USDA and EPA, assists Federal agencies to promote the acquisition of recycled content, environmentally preferable, and biobased products.

Another federal term referring to environmental purchasing is “affirmative procurement”. This refers specifically to the purchase of products or services that have a lesser or reduced affect on human health and the environment when compared with competing products or services that serve the same purpose.

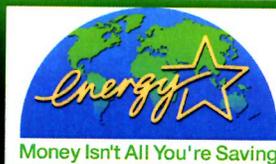
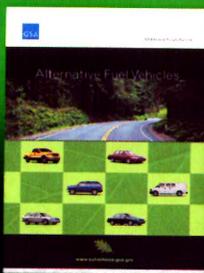
Green purchasing is another method of pollution prevention. Green purchasing is the generic term used to apply to the purchasing of environmentally-friendly products and/or services. The White House Task Force on Waste Prevention and Recycling in conjunction with the USDA and EPA agencies, assists other federal agencies by promoting the acquisition of recycled content, environmentally preferred and biobased products.

Another form of environmental purchasing used in the federal government is “affirmative procurement”. This term refers specifically to the purchase of products or services that have a lessor or reduced affect on human health and the environment when compared with competing products or services that serve the same purpose.

Let’s take a closer look at green purchasing.

“GREEN” PURCHASING

The **six** basic categories of green products established by USDA are: *recycled content, energy efficient, alternative fuel & vehicles, biobased products, environmentally preferred products and non-ozone depleters.*



USDA has taken the lead when it comes to identifying what constitutes a “green purchase”. They have established six main categories: recycled content, energy efficient products, alternative fuel and vehicles, biobased products, environmentally preferred products and non-ozone depleting products.

"GREEN" PURCHASING



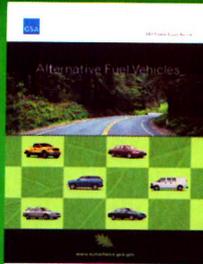
"Recycled Content" refers to the use of recycled materials in products. The EPA has developed the Comprehensive Procurement Guideline on its website that designates a multitude of products that meet the Federal procurement rules for green purchasing ranging from construction products to office products.

"Energy Efficient" refers to products that include the Energy Star label and are low-wattage stand-by power devices, other energy-efficient products, water-efficient products and renewable energy.



Recycled content pertains to the use of recycled materials in products. The website for the U.S. EPA has a comprehensive procurement guideline that covers green purchasing from construction products to office products. It's not just newspaper and magazines anymore. The second category refers to energy efficiency. Many of us today purchase products with the "energy star" label. What does this label really mean or is it a marketing gimmick? The energy star label was developed for the US EPA to refer to products that are low-wattage, standby power products or products designed as energy or water efficient. Think about your own home or your lab or business office.....how many energy star products do you utilize?

"GREEN" PURCHASING



"Alternative Fuels and Vehicles (AFV)" refers to vehicles that are fuel-flexible and/or dual design in order that they operate on at least one alternative fuel. Fuel types may include: methanol, denatured ethanol, natural gas, biodiesel, coal-derived liquid fuels, solar power and electricity.

"Biobased products" are defined as commercial or industrial products (other than food or feed) that utilize biological products or renewable domestic agricultural (plant, animal, and marine) or forestry materials. Examples of biobased products include: soy-based inks/paints, certain lawn fertilizers, and biodiesel fuel.



AFV is the acronym for Alternative Fuels and Vehicles and refer to fuels that are nonpetroleum based and vehicles that are fuel-flexible or dual-designed and operate on at least one other alternative fuel. Fuels can vary from methanol or denatured ethanol sources to natural gas or biodiesel or solar or electrical power. The US Department of Energy's website outlines various AFVs available in all types of vehicle categories.....whether you are looking for a sedan or a pickup truck or other commercial vehicles. Biobased products have been steadily increasing over the years and have provided a new market for many entrepreneurs. These products are defined as commercial or industrial products that utilize biological products or renewable domestic agricultural or forestry materials. The next time you are fertilizing your lawn or painting the inside of your house or replacing that ink cartridge in your printer, check to see if it is a biobased product. You may be surprised.

“GREEN” PURCHASING



“Environmentally Preferred” products/services are those that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. An example would be a product that uses less packaging (cardboard or styrofoam) thereby reducing waste and conserving natural resources (such as petroleum to run packaging equipment or save on trees).

“Non-ozone Depleters” are considered to be any product that does not include materials or use substances that may deplete ozone in the atmosphere. Products in this category include air conditioning systems, copiers, power units, aerosol cleaning supplies to name a few.



The fifth category of green purchasing reflects “environmentally preferred” products or services. How is this different from biobased products? Environmental products or services have a reduced effect on human health and the environment when compared with competing products or services. Products might include those that use less packaging thereby reducing the waste stream or conserving natural resources by not needing as many trees to produce the excess packaging. What other environmental products or services can you think of? The final category of green purchasing is the “non-ozone depleters” category. This category focuses on preserving the ozone. Products in this category do not use materials in their product that deplete the ozone. Examples in this category include the new air conditioning systems available, refined refrigeration units; and new model copiers, just to name a few.

EMS IS IMPORTANT TO EVERYONE

Stewardship of resources and the environment are important goals for all levels of government. The impact is great considering the Federal government spends billions of dollars each year on goods and services.

By incorporating an EMS as part of Federal agency initiatives, environmental impacts are minimized thereby:

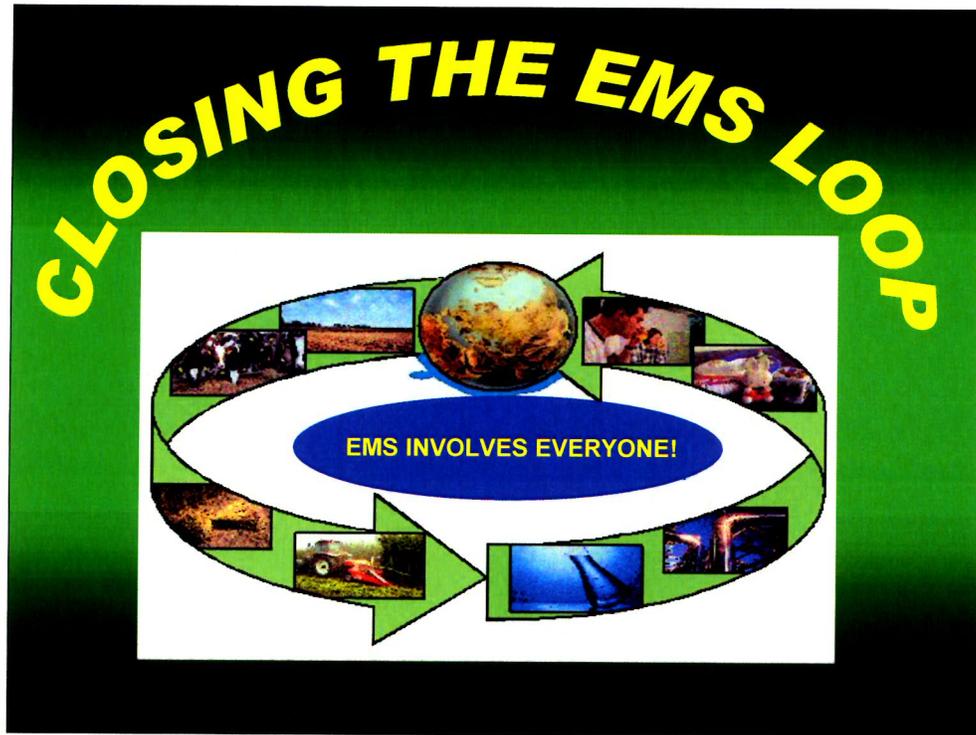
- Protecting human health and the surrounding ecosystem;
- Promoting good relationships with the surrounding communities;
- Saving money through resource conservation;
- Reducing and/or eliminating waste streams; and,
- Providing for future development of agriculture initiatives.

Let's recap. Remember, EMS is important to everyone and everything. The Federal government is responsible for purchasing billions of dollars each year on products and services. The federal government has taken the initiative to promote good stewardship of the environment through development of government-wide EMS programs. Through these combined federal efforts and initiatives, environmental impacts will be minimized and will protect human health and surrounding ecosystems; promote good community relationships; ultimately save money by resource conservation; reduce or eliminate waste streams and provide for future development of agricultural initiatives.

OBJECTIVE THREE

**Provide Information on
Employee Responsibility
with Regard to the
Madison Location**

Objective Three - Provide Information on Employee Responsibility with Regard to the Madison Location.



In this objective we will be “closing the EMS loop” and discussing your responsibilities in achieving this important task. Remember....EMS involves everyone.

EMPLOYEE RESPONSIBILITIES

Good Stewardship is everyone's responsibility. Performing one's job in an environmentally safe and sound manner benefits everyone by:

- Protecting the health of the surrounding ecosystem;
- Preserving resources for future generations;
- Being good community neighbors;
- Minimizing adverse reactions due to non-compliance issues; and,
- Saving money by decreasing wasted resources.

ARS/REE Policy Manual 230.0M (Safety, Health & Environmental Management Program), Chapter 11 outlines the "Responsibilities" of all personnel. While all personnel have a vital role in carrying out the EMS Plan, supervisors play a critical role in ensuring that personnel carry out their assigned duties and are held accountable for their actions.

You may be asking yourself, what is my role in the EMS program. We've talked about good stewardship. By performing one's job in an environmentally safe and sound manner benefits everyone. You are helping to protect the health of not only your fellow workers but of your families, friends and neighbors. Your actions help protect the ecosystems around you and preserve them for future generations. You minimize potential adverse reactions because of non-compliance. There are financial benefits to this as well. By decreasing the waste to our natural resources, YOU help preserve our future. The Safety, Health & Environmental Program Policy and Procedures for ARS, otherwise known as P&P 230.0 is our primary governing document. Specifically, Chapter 11 of this Policy & Procedure outlines YOUR responsibilities as an employee. While everyone is accountable for their actions, supervisors in particular have the vital role in ensuring that the personnel that they are responsible for carry out their job duties in a safe, efficient and environmentally friendly manner.

EMPLOYEE RESPONSIBILITIES (continued)

A successful EMS program involves **everyone.....there are no unimportant jobs!**



**EVERY ACTION, DECISION, PROTOCOL, ETC. MAY HAVE AN IMPACT ON
THE ENVIRONMENT.**

A successful EMS program involves everyone. Whether you are in the office support staff, or the custodian or working in the fields or perhaps you are the mechanics or engineers repairing equipment or conducting lab research or testing....or whether you are responsible for drafting policy....there are no "unimportant jobs". Every action, decision, protocol or procedure ultimately may have an impact on the environment....it is your responsibility to minimize these impacts.

EMPLOYEE RESPONSIBILITIES (continued)

Responsibilities outlined in the 230.0M Manual increase as they go up the "chain-of-command" (i.e.: Location to Area to Headquarters). For the purposes of this training, the responsibilities addressed herein will be at the Location level only.



HQ has overall responsibility for the environmental program at the national level.

Area has responsibility for carrying out HQ mandates and overseeing Area EMS.

Location has responsibility for the Location specific EMS and following mandates provided by the Area and HQ.

We've talked about the ARS P&P 230.0 and that is the primary governing USDA document regarding Safety, Health & Environmental program. Chapter 11 of this document discusses in detail employee responsibilities and identifies the proper "chain of command". The pyramid to the left describe the three main levels: Headquarters makes and distributes policies and procedures and has primary responsibility for the environmental program at the national level. They in turn, disseminate this information down to the Areas. The Area has the responsibility for carrying out the national mandates and ensures that the specific locations adhere to the policies and procedures. At the locational level or here in Madison, we develop site specific plans in accordance with the mandates from headquarters and the Area and implement the plan. You as the employee participate at this level.

EMPLOYEE RESPONSIBILITIES (continued)

As an ARS employee, **YOU** are responsible for performing **YOUR JOB** in an environmentally safe and sound manner. Remember:

- Understand the commitments of ARS Environmental Policy;
- Know how your job impacts the environment;
- Know and adhere to the procedures/protocols of your job;
- Know the potential environmental impacts of departing from the procedures/protocols of your job;
- Know the environmental requirements of your job;
- Document your EMS achievements, no matter how small or large; and,
- Don't be afraid to ask questions if you are uncertain (there are no "dumb" questions).

As an ARS employee, YOU are ultimately responsible for performing YOUR JOB in a safe and environmentally friendly manner. What YOU do impacts those around you. You need to be aware of and understand ARS's commitment to environmental policy. You need to know how your job impacts the environment. Make sure that YOU adhere to the procedures and protocols of your job, don't use "short cuts". By departing from established and defined procedures and protocols, you may be jeopardizing not only yourself but others and the environment as well. Be aware of the environmental requirements of your job. For example, disposing of something down the sink could significantly impact the surrounding water systems. When working towards an EMS goals or objective, make sure to DOCUMENT your achievements no matter how small or large or whether it is negative or positive. Our EMS program is based on the Madison Location....small achievements quickly add up when you combine all the labs! Finally, don't be afraid to ask questions or raise issues. There is no such thing as a "dumb question". Remember the old saying.....it is better to be safe than sorry!

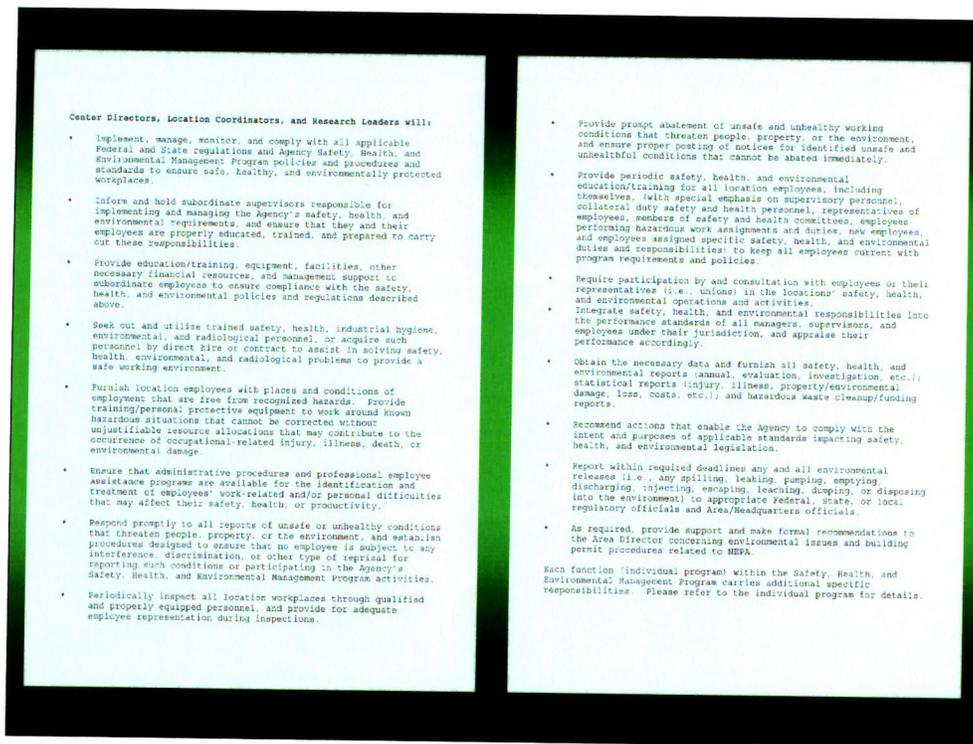
EMPLOYEE RESPONSIBILITIES (continued)

ARS Policy & Procedure 230.0M outlines specific job responsibilities based upon the job position. The following pages represent actual excerpts from 230.0M in five specific job positions:

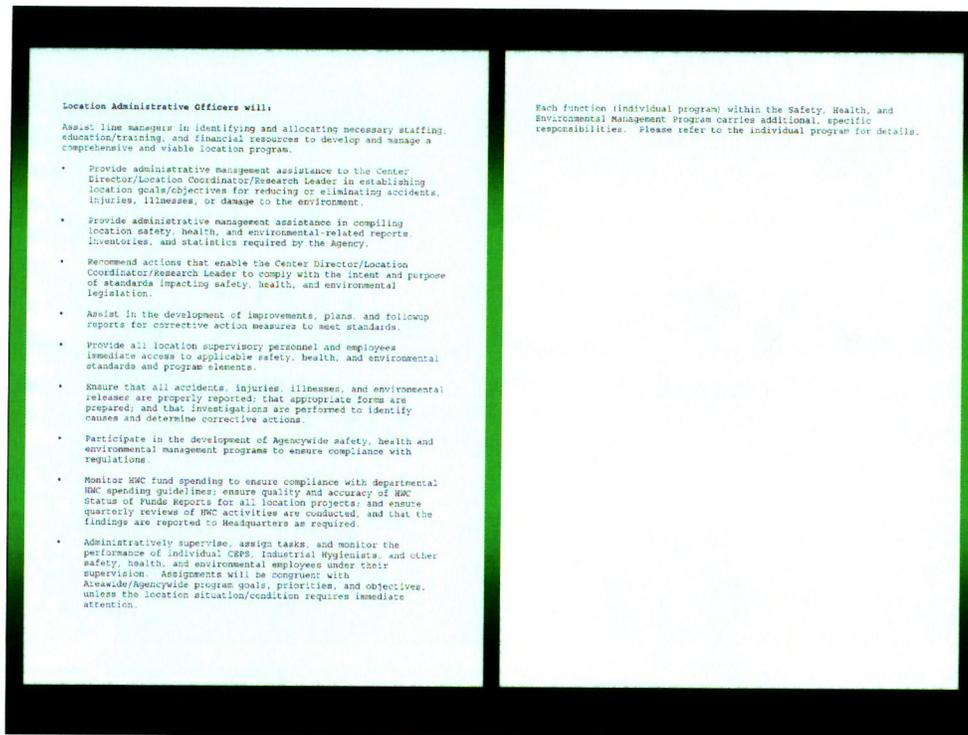
- Center Directors, Location Coordinators, and Research Leaders
- Location Administrative Officers
- Location Safety Officers, Location Environmental Officers, etc.
- Supervisors
- All Employees

It is important to read and understand your responsibility when it comes to the Location's EMS program. If you have questions, please contact your supervisor or the Location Safety and/or Environmental Officer.

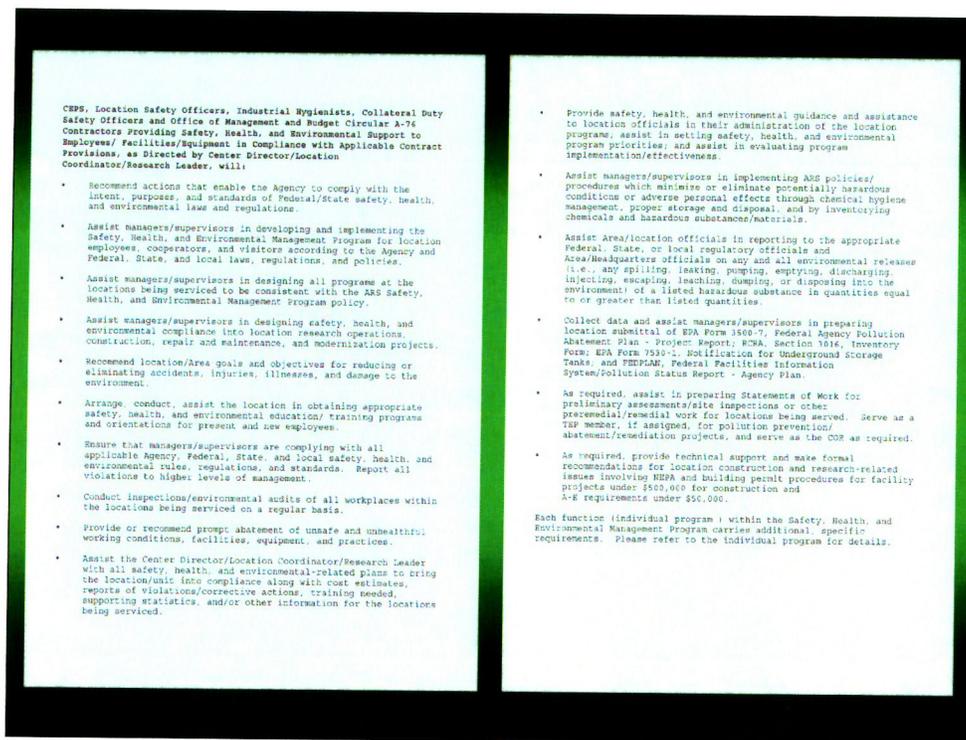
Our governing document ARS 230.0, chapter 10 specifically, details job responsibilities based on job positions. While there are numerous positions listed in the document, there are specifically 5 categories that apply to the Madison location. One of the categories details responsibilities for Center Director, Location Coordinator and Research Leaders. Another category outlines responsibilities for Location Administrative Officers. The third category defines responsibilities for the Location Safety and Environmental Officers. The fourth category details specific responsibilities for supervisors. The final category covers ALL employees. It is important that you carefully review your specific category as well as the "ALL EMPLOYEE" category in order to fully understand your EMS responsibilities. If you have questions, contact your Supervisor, Research Leader or the Location Safety or Environmental officer.



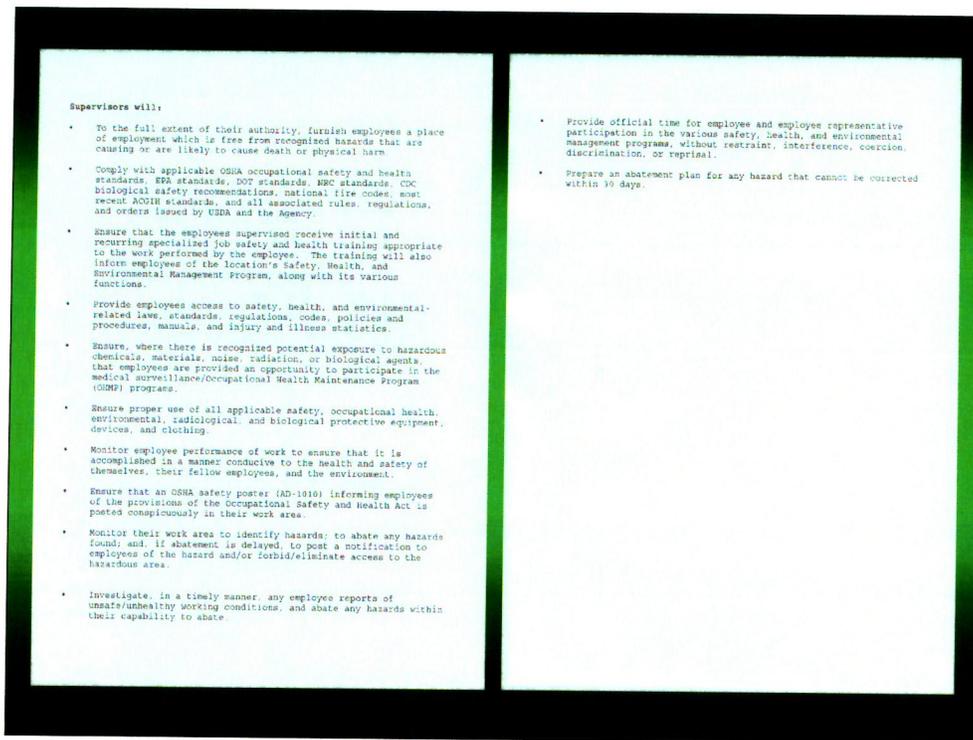
This slide depicts the specific job duties that define EMS responsibilities for the Center Directors, Location Coordinators and Research Leaders as outlined in ARS 230.0, Chapter 11. At the end of this training, you can print out this specific slide by printing page 52 of the slide presentation.



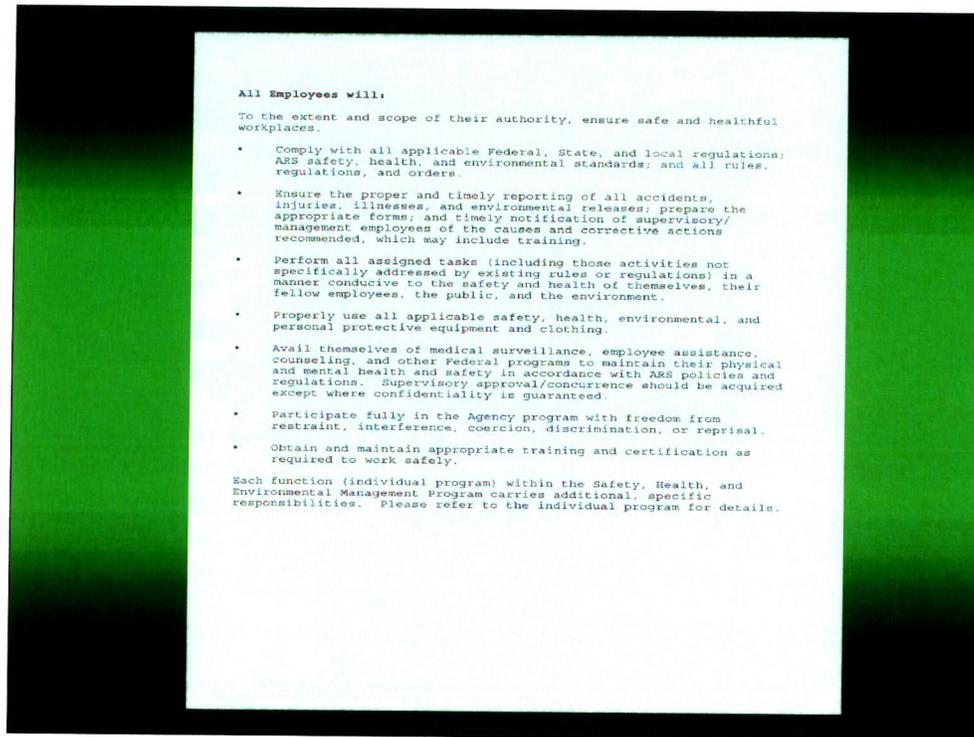
This slide depicts the specific job duties that define the EMS responsibilities for the Location Administrative Officers as outlined in ARS 230.0, Chapter 11. At the end of this training, you can printout this specific slide by printing page 53 of the slide presentation.



This slide depicts the specific job duties that define the EMS responsibilities for the Location Safety and Environmental Officers as outlined in ARS 230.0, Chapter 11. At the end of this training, you can printout this specific slide by printing page 54 of the slide presentation.



This slide depicts the specific job duties that define the EMS responsibilities for the Supervisors as outlined in ARS 230.0, Chapter 11. At the end of this training, you can printout this specific slide by printing page 55 of the slide presentation.



This slide depicts the specific job duties that define the EMS responsibilities for ALL employees as outlined in ARS 230.0, Chapter 11. They are as follows: (read slide) You can printout a copy of this page at the end of the training by printing page 56 of the slide presentation.

DOCUMENTING ACHIEVEMENTS

While the key to a successful EMS program is its employees, it is equally important to **document achievements** towards this success. Just as in research, *"if it isn't documented, then it isn't done"*. Without documentation, an achievement is many times overlooked or disregarded.

The Madison Location is fortunate because of its' affiliation with the University of Wisconsin college system but also due to the fact that the State of Wisconsin has been an environmentally conscientious and progressive state for many years when it comes to Environmental Management.

The Wisconsin State Agencies of **Department of Natural Resources** and of the **Department of Agriculture, Trade and Consumer Protection** oversee the State rules and regulations that are specific to environmental protection, including EMS plans and "best practices".

The UW-Madison provides environmental services and "best practices" on all levels, including but not limited to: training, safety protocols, chemical exchanges, recycling, pollution prevention, hazardous waste, radioactive waste, etc.

So far you have learned what an EMS program is, the rules and regulations governing this directive and your roles and responsibilities of achieving success. What's next? Documenting your achievements. While the key to a successful EMS program is its employees, it is equally important for you as the employee, to document your achievements. In the research that you perform, you document your findings....so should you document your achievements in the EMS program. Remember, "if it isn't documented, then it hasn't been done". Everyone needs to take responsibility and ultimately credit for the successful implementation and ongoing performance of the Location's EMS program. Our Madison location is already one step ahead of the game when it comes to environmental management. While other states may have been slow to move towards protecting our environment, the State of Wisconsin has been a forerunner in environmental issues for many years. Our affiliation with the University of Wisconsin Madison has also been beneficial because of its environmental practices. The Wisconsin Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection and the University of Wisconsin all provide a wealth of information, training and "best practices" when it comes to environmental issues.

DOCUMENTING ACHIEVEMENTS (continued)

While ARS facilities in other states will face the challenge of developing EMS programs, the Madison Location will face a different problem....one of refining "second-nature" actions and documenting them.

Documentation varies in forms and complexity. Certain practices/protocols require formal documentation. For example, reporting for the Toxic Release Inventory requires strict reporting to EPA regarding chemical releases over the past year. Other achievements can be documented by sending a simple note or email to the Location Environmental/Safety Officer(s) describing the achievement.

If no detailed, formal documentation is required, use the "KISS" method whenever possible in sending communications to the Location's Environmental/Safety Officer(s).

**KEEP
IT
SHORT &
SIMPLE!**



As stated in our previous slide, Wisconsin has been a forerunner when it comes to environmental issues. While other locations may be faced with the challenge of developing an EMS program, the Madison location will face a different challenge....one of documenting. Many of the pollution prevention and recycling efforts mentioned previously have become "second nature" to us....which can be attributed to Wisconsin's notoriety of being a "green" state. Our problem now is documenting these "second nature" activities. This does not mean though that the Madison location does not have areas of improvement to focus on. Rather, we will need to refine some of our environmental issues and document things that we do in our everyday job duties. Documentation can be simple or complex. Some environmental activities require formal documentation such as the Toxic Release Inventory or the University's Chemical Exchange program. However, recycling efforts such as using the University's SWAP system for recycling equipment or their program for recycling of plastics, paper and styrofoam are much more informal. We need to document their use as well. Each time you send something to SWAP send an email to the Location's Environmental officer so that we can credit this towards our achievement. These communications do not have to be complex....they may only include a list of items sent for "recycling". Consider using the "KISS" method.....keep it short and simple! No matter how small or large your recycling effort is, we need to document our success.

EMS INVOLVES EVERYONE

Remember, as an ARS employee, **YOU** are responsible for performing **YOUR JOB** in an environmentally safe and sound manner.

Understand
the ARS
EMS Policy

Document
Your EMS
Achievements

Know/Adhere
to Protocols of
YOUR job

Know How
Your Job
Impacts the
Environment

Know impacts
of departing
from protocol

Know the
Environmental
Requirements
of Your Job

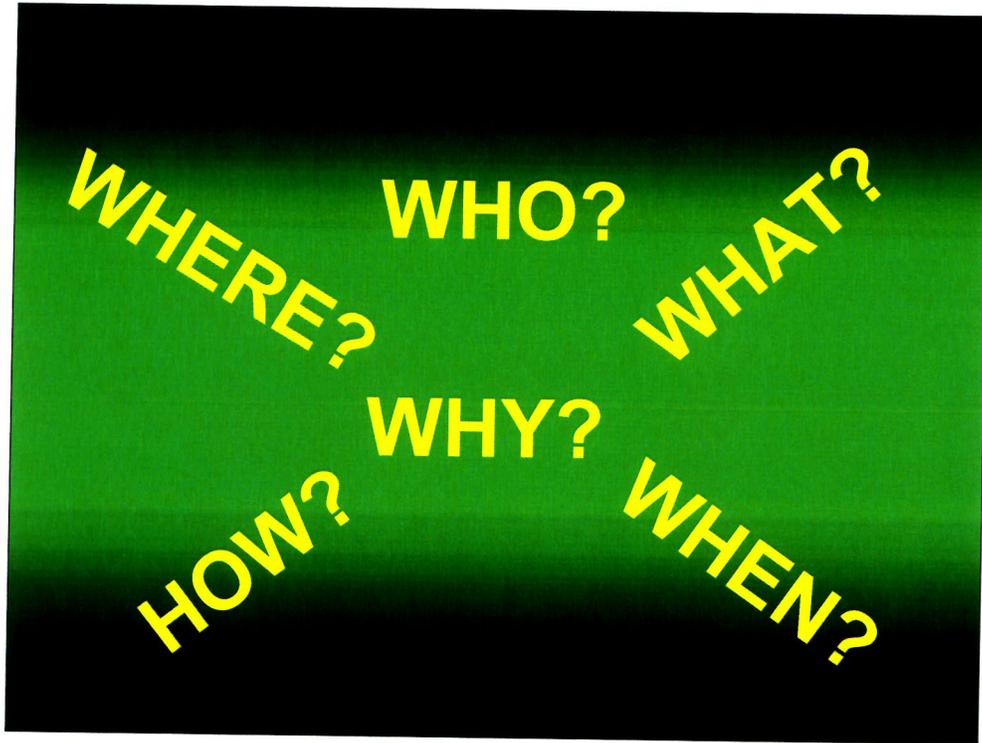


Ask
Questions if
Uncertain

Remember, EMS involves everyone. As an ARS employee, YOU are responsible for performing YOUR JOB in an environmentally safe and sound manner. YOU need to understand and know the ARS commitment to environment and its associated policy. YOU need to know how your job impacts the impact. You need to know what the environmental requirements are in YOUR job. YOU need to know and adhere to the protocols and practices of your position. YOU need to know the impacts that may result from deviating from established practices and protocols. YOU need to ask questions....there are no dumb questions. Finally, YOU need to document your EMS achievements, no matter how big or small. Remember YOU are important and by YOUR actions in YOUR position they help to achieve the Madison location's EMS program success.

SUMMARY

Let's recap what you've learned in this training program.

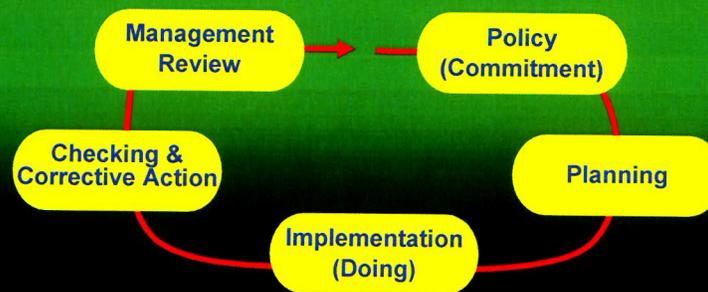


WHAT is an EMS? WHO does the EMS involve? HOW does an EMS work? WHERE does the EMS take place? WHEN does the EMS begin? AND WHY an EMS?

WHAT IS AN EMS?

EMS is an acronym for Environmental Management System and is a recognized, sound, business practice, designed to increase the effectiveness and efficiency of an organization through better management of environmental issues.

An EMS is a "**continual**" cycle of planning, implementing, reviewing and improving operations that may have an impact on the environment.



WHAT is an EMS? EMS is an acronym for Environmental Management System. The philosophy of an EMS is to provide a sound business practice that is designed to increase the effectiveness and efficiency of an organization through better management of environmental issues. It is a continual process. It begins with a commitment by ARS to environmental policy. The locations plan what activities need to be addressed based upon environmental aspects and impacts discovered during the environmental assessment. The locations are also responsible for implementing their respective EMS plans and conducting routine audits to determine whether refinement is necessary in achieving their respective plans. Finally, there is management review by the Area and Headquarters as to the overall success of the EMS program on an Area and national level.

WHO DOES THE EMS INVOLVE?

A successful EMS program involves **everyone**.... **there are no unimportant jobs!**

Good Stewardship is everyone's responsibility. Performing one's job in an environmentally safe and sound manner benefits everyone by:

- Protecting the health of the surrounding ecosystem;
- Preserving resources for future generations;
- Being good community neighbors;
- Minimizing adverse reactions due to non-compliance issues; and,
- Saving money by decreasing wasted resources.

Remember every action, decision, protocol or procedure, etc. may have an impact on the environment...it is YOUR job to know how to minimize the impact in your day-to-day job performance.

WHO does the EMS Involve? EVERYONE! There are no unimportant jobs. Everyone is responsible for being a good steward and following environmentally friendly practices. Everyone benefits. The ecosystems are protected and preserved for future generations. It promotes good community relationships. Adverse impacts are minimized. Ultimately, good stewardship also saves money....for everyone! Remember every action, decision, protocol or procedure may have impact on the environment. It is YOUR responsibility to minimize or eliminate these impacts in the ways that you carry out your job duties.

HOW DOES AN EMS WORK?

An EMS involves looking at all facets of a Location from initial design/construction/renovation to planning proposed projects to lab research to purchasing to overall operations and ongoing maintenance and developing a list of activities associated with these functions that may have an impact on the environment. Questions to consider when developing the list of activities include:

Do they impact land, air or water?

Is waste produced?

Is hazardous waste generated?

Are operations done in ecologically sensitive area?

Based upon those findings, an EMS plan is developed to address how to minimize or eliminate the impact on the environment. The Location then documents how the EMS plan was implemented.

HOW does an EMS work? An EMS begins with taking a close look at all facets of operations. It reviews new projects, new construction, renovation, purchasing and overall general operations and maintenance to see what environmental impacts may be present. Questions that are asked include: what is the impact on land air and water? What types of waste may be produced? Is hazardous waste a potential? Are any of the proposed operations done in ecologically sensitive areas such as marsh, grass or wetland areas? Based upon those findings, and EMS plan is developed to address how to minimize or eliminate the environmental impacts. The Location is responsible for implementing its' own EMS program. You as an employee, share this responsibility in your day-to-day job performance. The Location then documents how the plan was implemented and whether the management actions established were met. It is a cyclical process and is updated on an annual basis.

WHERE DOES THE EMS TAKE PLACE?

While the EMS initiative is taking place government-wide, the focus of this training is covering the Madison Location only. This includes the Cereal Crops Research Unit; the Dairy Forage Research Center and it's associated units and research farms; and, the Vegetable Crops Research Unit.



WHERE does the EMS take place? The Madison location covers all the management units: the Cereal Crops Research Unit, the Vegetable Crops Research Unit, the Cell Wall & Biology Utilization Research Unit, and the Dairy Forage & Aquaculture Research Unit and its associated farms.

WHEN DOES THE EMS BEGIN?

President Clinton signed EO 13148 on April 21, 2000 requiring Federal facilities to have an EMS in place no later than December 31, 2005. This EO required that the Federal Government:

- Demonstrate environmental leadership;
- Ensure that agencies adopt lowest life-cycle cost environmental practices; and,
- Ensure Federal facilities are responsible members of their communities.

Following its inception, EMS continues to be an ongoing, "living" document.

Supplemental Executive Orders (13423 & 13514) provide future timelines for guidance in meeting proper environmental stewardship.

WHEN does the EMS begin? The initial presidential order signed by President Clinton mandated that all federal agencies have an EMS in place no later than December 31st, 2005 and that the EMS demonstrate environmental leadership, ensure that agencies adopt lowest life-cycle cost environmental practices and finally that they ensure federal facilities are responsible to their respective communities.

While Wisconsin has set the standard and maintained proper environmental stewardship for many years, the EMS documented program has been in place since 2005. It is a "living" document and changes as the need arises but is updated at a minimum, annually.

WHEN DOES THE EMS BEGIN? *(continued)*

Goals and objectives are developed, refined and maintained. While these may be achieved, it is important to remember that an EMS is a **“continual and ongoing”** process. Successful completion or achievement of an objective or a goal would be the incorporation into everyday operations in such a manner that environmental impacts are minimized or eliminated.

The initial Management Assessment for the Madison Location was completed in February, 2005. Annual reviews are conducted and available through the Madison Location Administrative Office.

Based upon the Assessment, a plan was developed that identifies 3-5 primary goals to work on for the upcoming year. Each year the plan will be revised and new goals/objectives added. The current year's Plan is available through the Madison Location Safety website: <http://ars.usda.gov/Services/docs.htm?docid=4811>.

It is important to remember that an EMS is a continual and ongoing process. Achievements need to be documented. New goals and management action plans are developed each year. The initial Management Assessment for the Madison location was conducted in February, 2005 and an initial set of goals and management action plans are currently being adopted. The results of annual assessments and the current years goals and management action plans are available for review through the Madison Location Administrative office or through the Madison safety website at:

<http://ars.usda.gov/Services/docs.htm?docid=4811>

WHY AN EMS?

A number of "Greening" Presidential Executive Orders (EO) were passed in the late 1990s with the most significant being EO 13148: "Greening the Government Through Environmental Leadership" which provided the foundation for a government-wide initiative at preserving the environment by reviewing all facets of government operations and adopting practices that minimize or eliminate impacts to the environment.

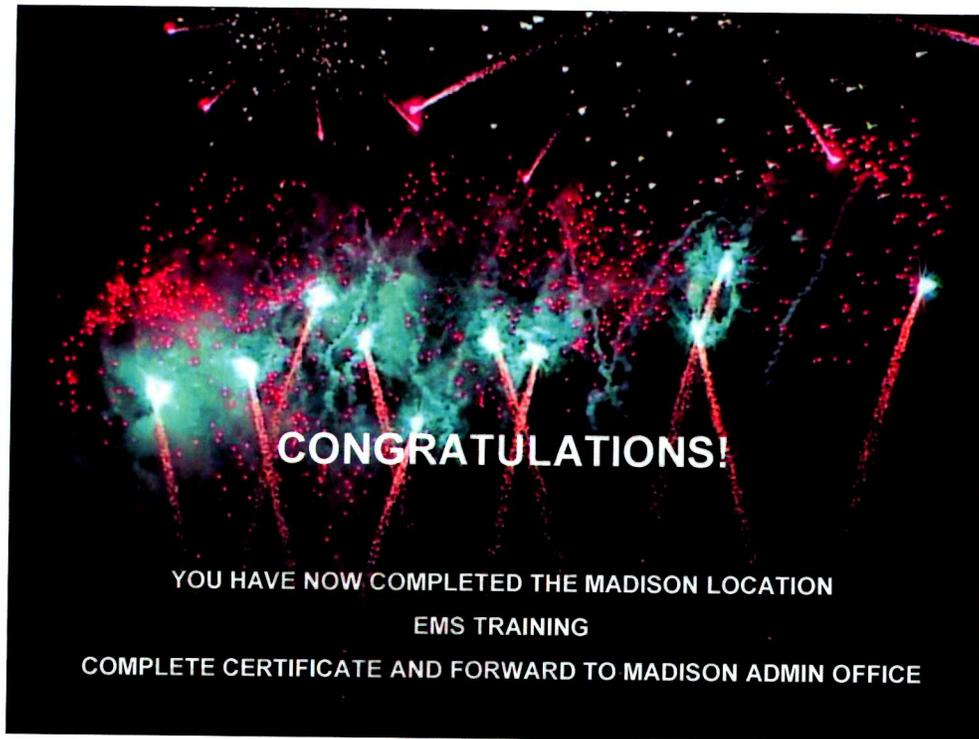
Administrations that followed issued further EOs 13423 and 13514 to provide and expand upon timelines for meeting these early initiatives.

Why is an EMS important? In summary, the things that we do today in the environment, can have lasting effects for years to come.

Good stewardship now helps minimize these effects and protects for future generations. Who are these future generations?

WHY an EMS? Greening initiatives passed in the late 1990's mandated that the federal government develop a system that protects and preserves the environment. Executive Order 13148 focused on government leadership in minimizing or eliminating adverse impacts to the environment that may have been the result of government agencies. Executive Orders 13423 & 13514 established further timelines to achieve reduction and/or improvement of environmental practices.

An EMS is important because the things that we do today in the environment can have lasting effects. Good stewardship minimizes these effects and protects future generations. Who are these future generations?



Congratulations! You have now completed the EMS awareness training for the Madison Location. Make sure to complete the Affirmation Certificate on the following page. If you have any questions, please contact your supervisor or the Madison Location's Environmental or Safety Officers.



MADISON LOCATION EMS TRAINING AFFIRMATION CERTIFICATE

I certify that on _____ (date), I have reviewed the EMS Training Material and understand that I am personally expected to follow USDA policy concerning the Environmental Management System programs, including specifically the Madison Location.

YES, I affirm my completion and understanding of the course. (Credit will not be recorded if you do not affirm that you have completed this course.)

Signature

Printed Name

Supervisor's Name

ADMN CCRU DFRC FARM VCRU

Return completed form to the Madison Location Administrative Office.

Print out certificate, making sure to check the "Affirmation" box and return to Laura Jones in the Administrative Office.