



## UPR Mayaguez Environmental Management System

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Development Team



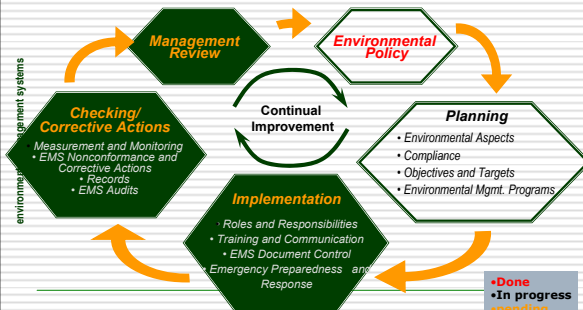
## UPR Mayaguez EMS Project

- ✓ An **environmental management system** brings together the **people, policies, plans, review mechanisms, and procedures** used to manage environmental issues at a facility or in an organization.
- ✓ An EMS is a mechanism/tool that an organization uses to help ensure continual improvement in managing the environmental affairs over which it has some level of control
- *The goal of this project is to have a **functional** Environmental Management System (and **auditable**) in all the UPR Mayaguez facilities by **DEC 2007***

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## ISO 14001 Elements



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## An EMS is Environmental

- Facilitates environmental compliance
- Addresses environmental impacts
- Broadens environmental responsibilities to all whose work can have a significant impact on the environment

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## An EMS is Management

- Must have commitment of top managers
- EMS owned by facility manager
- Must be consistent with other management systems

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## An EMS is a System

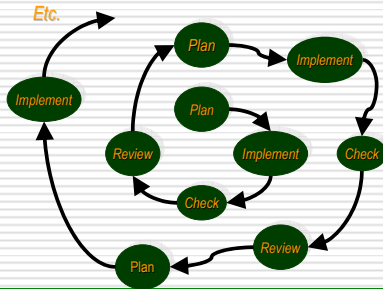
- Requires awareness of formal structure
- Addresses policies, procedures, programs
- Doesn't specifically address compliance components (drums, labels, etc.)

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## Continual Improvement Cycle

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## Why have an EMS at UPR Mayaguez?

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- Last semester, we had an EPA audit
- There were several findings
- These findings indicate that some things are not being managed correctly, **these are things that we should be doing but we are not**
- These findings can cost us \$\$\$\$ (possible fines)
- An EMS can fix this situation and prevent from happening again



## Benefits of an EMS

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- Help maintain compliance, we will be creating a system manage our environmental aspects and be in compliance
- Reduce operating costs
- Integrate environmental programs into mission
- Increase employee involvement
- Reduce environmental impacts



## Benefits of an EMS at UPRM

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- Provides a way for students to contribute to the environment (channel their idealism)
- Gives the UPR community a way to move from talking about making a difference to start making a difference
- Creates a culture that will permeate to other organizations



## Use of the EMS for UPR Mayaguez

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- The Environmental Management System is useful because
  1. It provides a system to manage regulatory aspects so we can correct the EPA audit findings and make sure we are in compliance with all regulatory aspects. We can fix the present problems and put a system in place to prevent further violations
  2. It provides a framework so we can systematically manage and improve our environmental performance in areas that are not regulated but do affect the environment.



## ISO 14001 Components

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1. Environmental Policy
2. Planning
3. Implementation and Operation
4. Checking and Corrective Action
5. Management Review



## Plan - Do - Check - Act

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- Plan** – determine needs, set budget, set objectives
- Do** – assign responsibilities, set schedule, perform work
- Check** – assess compliance, determine if work met needs/expectations
- Act** – revise priorities as needed



## Plan - Planning

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- Identify aspects and impacts from facility activities, products, and services
- Review legal requirements
- Set objectives and targets
- Establish formal EMS program



## Do - Implementation & Operation

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- Define roles and responsibilities
- Provide EMS training
- Establish internal and external communication mechanisms
- Establish document control system
- Establish operational controls
- Integrate with or establish emergency preparedness procedures



## Check - Checking & Corrective Action

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- Conduct periodic monitoring of environmental performance
- Identify root causes of findings and conduct corrective and preventive actions
- Maintain environmental records
- Conduct periodic EMS audit



## Management Review

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- Conduct periodic senior management review of Environmental Management System
- Examine the actual environmental performance vs desired environmental performance
- Define new objectives and targets
- Allocate funds for operating the EMS
- Revise policies as needed



## Functions of the EMS Team

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- Obtain management commitment for policy and implementation
- Educate all organizations at facility
- Conduct **gap analysis**
- Leverage existing resources
- Collect input from employees, management
- Plan and implement EMS
- Interact with local community as needed



## Results of EPA Audit

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Resource Conservation and Recovery Act, RCRA	22 findings
Clean Water Act, CWA	9 findings
Safe Drinking Water Act, CWA	3 findings
Toxic Substance Control Act, TSCA	2 findings
Federal Insecticide, Fungicide, and Rodenticide Act, FIFRA	2 findings
Clean Air Act, CAA	9 findings
Comprehensive Environmental Response, Compensation, and Liability Act, CERCLA	3 findings
Emergency Planning & Community Right to Know Act, EPCRA	1 finding

**Note** – these were found in the inspected areas, this does not mean that everything else was OK in the area not inspected



## Environmental Impacts of UPR Mayaguez

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- The environmental impacts of the activities of UPR Mayaguez can be classified in two categories
  - **Regulatory Aspects** – these are the impacts that are regulated by law, improper management of these impacts can cost us serious \$\$\$ and more
  - **Environmental Performance** – these are the impacts that indicate how well (or bad) we treat the environmental but do not have regulatory issues



## Parts of the UPRM EMS

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- **Regulatory Aspects EMS** – This effort is related to all those environmental aspects of the UPR Mayaguez operations that are regulated by federal and state laws. This effort will address the findings of the recent EPA audit and create a system to prevent these situations happening again (example – chemicals used in laboratories). The RA EMS must be in place by **June 2006** (including have completed an internal audit, correct the internal audit findings and completed a management review)



## Parts of the UPRM EMS

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- **Environmental Performance EMS** – This effort is related to all those environmental aspects of the UPR Mayaguez operations that are not regulated by federal and state laws. Issues such as paper waste, energy usage and water usage will be addressed. We will develop system so that UPR Mayaguez increases its environmental performance The EP EMS must be in place by **June 2007** (including have completed an internal audit, correct the internal audit findings and completed a management review)



## Parts of the UPRM EMS

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- **The Green Culture** – An EMS is the combination of *policies, plans, review mechanisms, procedures* and *people*. The most important part of the EMS is the people. The objective of the Green Culture effort is to increase the environmental awareness of the UPR Mayaguez community; and to teach them what actions they can take to protect and improve the environment (this is environmental stewardship). Once we reach this point, the whole community will make the EMS work.



## Regulated Aspects EMS EPA Response action plan

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task	Due date	owner	Meets order #
1. Form EMS Teams for each department – these consist of an EMS Department Coordinator, an EMS Manager for each Laboratory, an EMS Manager for the area facilities operations	Oct 17, 2005	Each dean	
2. Request an administrative hearing, coordinate response for hearing with EMS Development Team and lawyer	Oct 24, 2005	Dean of Adm	
3. Start Initial Assessment – this is based on an initial simple checklist to identify unlabeled raw materials, unlabeled waste materials, stored waste of any kind. This checklist will be provided by Oct 26.	Oct 28, 2005	Dept Directors	1,3,5,6,7,8,10



## Regulated Aspects EMS EPA Response action plan

task	Due date	owner	Meets order #
4. Train teams for Waste Inventory and Management – The EMS Teams will be trained in how to classify, store, label, keep inventory and dispose of materials/waste. The team will be trained on how to correct the EPA Findings.	Nov 7, 2005	EMS Development Team	1,3,5,6,7,8, 10
5. Establish the satellite areas and the 90 day areas for each Dept, establish waste management procedures and make sure all EMS Teams are trained using the management procedures	Jan 20, 2005	EMS Teams	4



## Regulated Aspects EMS EPA Response action plan

task	Due date	owner	Meets order #
6. Comply with all conditions necessary to be exempt from hazardous waste permitting requirements at the facility. These conditions (which vary according to the type and quantity of hazardous waste generated and accumulated) include, but are not limited to <ul style="list-style-type: none"> <li>■ Complete waste inventory</li> <li>■ Get waste management bids</li> <li>■ Coordinate waste disposal</li> <li>■ Check – satellite areas and 90 day areas</li> <li>■ EPA ID #</li> </ul>	Nov 7, 2005	EMS Development Team	2, 4



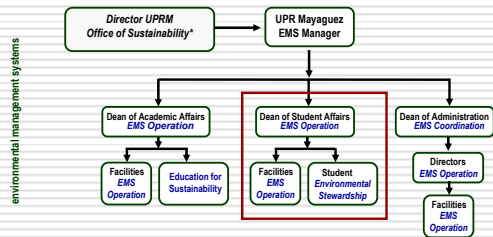
## Regulated Aspects EMS immediate action plan

task	Due date	owner	Meets order #
7. Start the change for chlorine gas to liquid or solid chlorine gas for the chlorination of the pool	Nov 7, 2005	Dean of Administration	2, 4

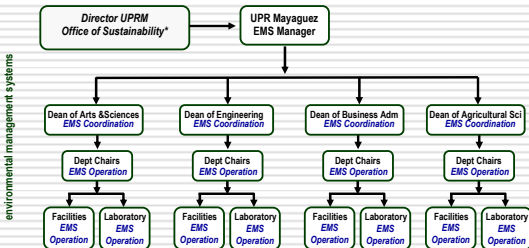
[Sample training](#)



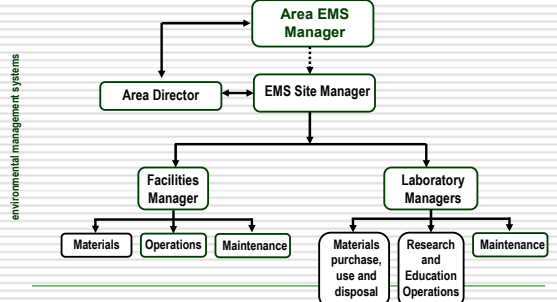
## Proposed EMS UPRM Organizational Chart EMS functions



## Proposed EMS UPRM Organizational Chart EMS functions



## Proposed EMS Area Organizational Chart





## RA EMS Action Items

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milestone	Due date	owner
1. Have completed the planning stage & deployment plan for the implementation stage	Oct 31, 2005	Ivan Baiges
2. <i>Have the RA EMS Team in place (this will be formed by all employees responsible for regulated aspects in the workplace – such as lab directors and lab technicians)</i>	Oct 21, 2005	Deans, Department Chairpersons and Directors
3. Have the environmental policy approved and communicated	Nov 22, 2005	Ivan Baiges
4. <i>Complete the Training of the RA EMS Team</i>	Nov 7, 2005	Roberto Torres, Ivan Baiges



## RA EMS Action Items

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milestone	Due date	owner
5. <i>Complete the area self assessment and report findings.</i>	Nov 11, 2005	Department Chairpersons and Directors
6. Hand in Corrective and Preventive Action Plans (CAPA), including request for funding	Dec 7, 2005	Department Chairpersons and Directors
7. Approve CAPA's, start deployment of CAPA's	Jan 15, 2006	Ivan Baiges, Roberto Torres
8. Complete RA EMS implementation, start internal audit	Mar 10, 2005	EMS Teams



## RA EMS Action Items

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milestone	Due date	owner
9. Complete Internal Audits	Apr 14, 2006	Roberto Torres, Ivan Baiges,
10. Complete Correction of Internal Audit findings	June 14, 2006	Department Chairpersons and Directors
11. Report to Chancellor and Submit EMS to management review	June 28, 2006	Roberto Torres Ivan Baiges



## Supplement Environmental Project

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- Most federal actions against businesses or individuals for failure to comply with the environmental laws are resolved through settlement agreements.
- As **part of a settlement, an alleged violator** may voluntarily agree to undertake an environmentally beneficial project related to the violation in exchange for mitigation of the penalty to be paid.
- A Supplement Environmental Project (SEP) furthers EPA's goal of protecting and enhancing the public health and the environment. *It does not include the activities a violator must take to return to compliance with the law*



## Possible SEPs

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1. Implement the **EMS at UPR Mayaguez**
2. Create the **UPR Mayaguez Office of Sustainability**
3. Have UPR Mayaguez lead the Implementation of EMS at all other UPR Campuses
4. Create the **The Partnership for the Greening of the CAC 2010 Games at Mayaguez**
5. Create a Environmental Education Program leading to a **Green MBA**



## EP EMS Time Table

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- Oct 2005
  - Start the planning of the EP EMS
  - Start working on the No brainers
- Dec 2005
  - Have the EMS Development Team created
  - Start the planning stage for
    - Green Supply Chain in the Chemistry Bldg
    - Green Building at Mechanical Engineering
    - Office Material Management at target areas
  - complete the planning of the Environmental Decision Making
  - Have started the campus wide initiatives



## EP EMS Time Table

### □ June 2006

- Have completed the planning, implementation and the checking portions of the EMS for
  - ✓ Green Supply Chain in the Chemistry Bldg
  - ✓ Green Building at Mechanical Engineering
  - ✓ Office Material Management at target areas
- Have completed the planning for the rest of UPR Mayaguez
- Conduct 1<sup>st</sup> management review of pilot projects
- Start EMS Planning with off campus facilities in Isla Magueyes and Agricultural Experimental Stations

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## EP EMS Time Table

### □ Dic 2006

- Have completed the planning and implementation of the Environmental Management Systems for
  - Engineering, Arts & Sciences, Agriculture and Business Administration facilities
- Have completed the Green Administration Project
- Deploy the Campus Environmental Stewardship Project
- Start the EMS implementation at external facilities such as Marine Sciences at Isla Magueyes and the Agricultural Experimental Facilities

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## EP EMS Time Table

### □ June 2007

- Have completed the EMS for (and ready for Management Review)
  - Engineering, Arts & Sciences, Agriculture and Business Administration facilities
- Evaluate effectiveness of the Campus Environmental Stewardship project
- Have completed the EMS for external facilities such as Marine Sciences in Parguera and the Agricultural Experimental Facilities
- Request an Internal Audit

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## EP EMS Time Table

### □ Sept 2007

- Complete an Internal Audit

### □ Nov 2007

- Complete the corrections of audit findings

### □ DEC 2007

- Announce the Formal Implementation of the Environmental Management System

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## Student EMS Development Projects

- **Green Supply Chain** – this project is a concurrent effort to correct EPA findings at UPR Mayaguez and minimizing their occurrence, this initial effort will be directed on all the steps of hazardous materials in Chemistry
- **Green Building** – this project is focused on evaluating the ecological footprint of a building and developing a system to improve it, the initial effort will with the Mechanical Engineering Building

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## Student EMS Development Projects

- **Office Material Management** – this project is focused on reducing the impact of the use of office material usage, the initial effort will be focused on paper in the Buildings of Mechanical Engineering, Chemistry, Terrats and the Main Administration (De Diego). This project will also be used as one of the initial programs on the Campus Wide Environmental Stewardship Initiative
- **Environmental Decision Making System** – This effort is focused on a creating a decision making process for the EMS that takes into account technical, business and social considerations

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## Campus Wide Initiatives

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- **Creating the Green Administration** – This project is focused on making the UPR Mayaguez administration walk the talk. Simple and highly visible actions will be identified and implemented.



## Campus Environmental Stewardship

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- **EMS** is a system that will work properly when we put together the people, plans, procedures and equipment. *The most critical component is getting the people committed.*
- **Steward** – a person who is a custodian or is responsible for something, environmental stewardship is being responsible for the environment



## Campus Environmental Stewardship

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***“Your beliefs become your thoughts. Your thoughts become your words. Your words become your actions. Your actions become your habits. Your habits become your values. Your values become your destiny.”***

**Mahatma Gandhi (1869 - 1948)**



## Proyecto Cultura Verde

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- El proposito de este proyecto es fomentar en nuestra comunidad el que el vivir en armonia sea uno de nuestros valores
  - Estaremos creando la conciencia ambiental - **SABER**
  - Le provereemos las herramientas para actuar - **HACER**



## What we need from you

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- We need to identify faculty members that can on different projects related to the scientific, social, economic and business aspects of environmental management
- We also need to identify non teaching employees that can work with the EMS functions of each department. These persons would work with evaluating what is already in place, where we need to be and how are we going to get there.



## Summary

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- An EMS is the combination of **people, policies, procedures, review,** and **plans** to help address environmental issues
- Important EMS elements include **continual improvement, management commitment, formalization,** and **awareness of system approach**



## Summary

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environmental management systems

- An EMS is a formal system for managing the environmental footprint of your organization
  - Most organizations already have several EMS elements in place - the system relationship is lacking
  - An EMS must serve the mission of the organization
  - Success comes from being committed to continual improvement for the long term
-