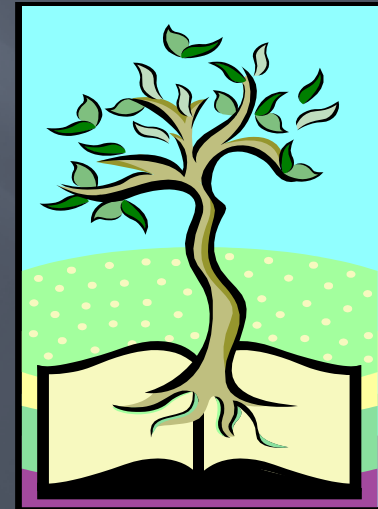# SUSTAINABILITY: ENVIRONMENTAL MANAGEMENT SYSTEMS

Capacity Building for Small Businesses

Region 5, U.S. EPA

November 8, 2011
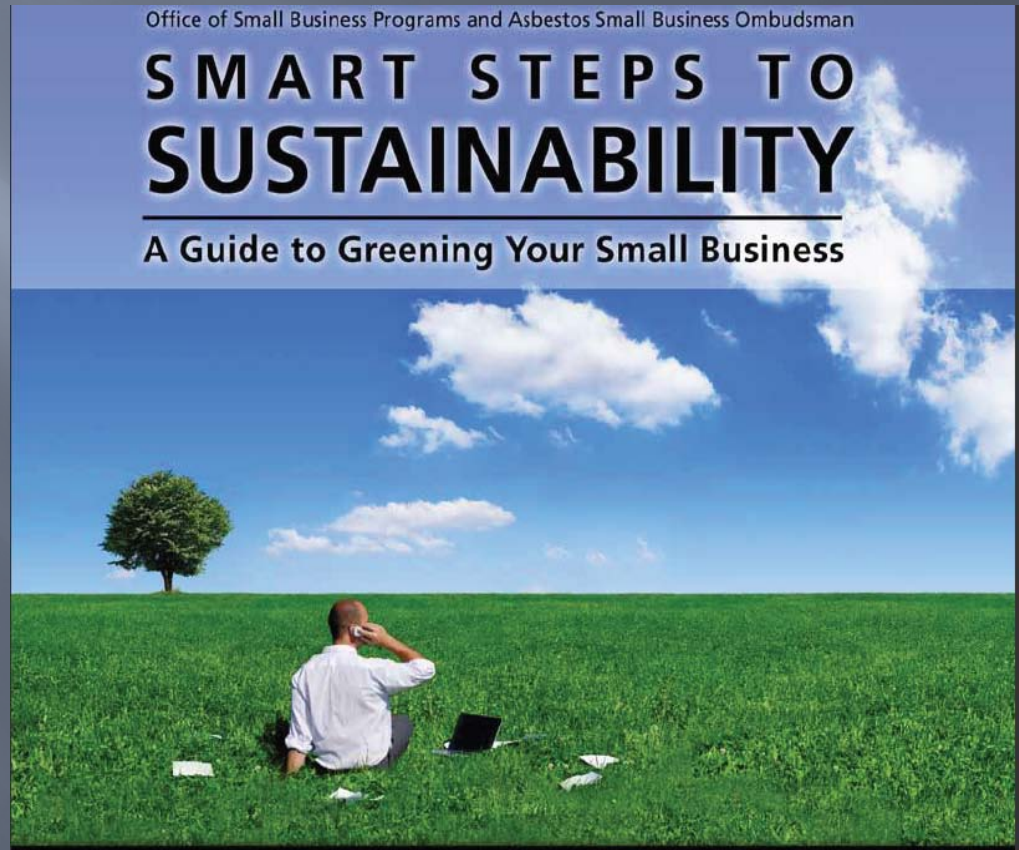
General House Considerations

- Please turn off all cell phones

- Restrooms are down the hall on the right

- Reserve questions until the end

- Be sure to recycle or dispose of waste

- Have an open mind and be ready to learn
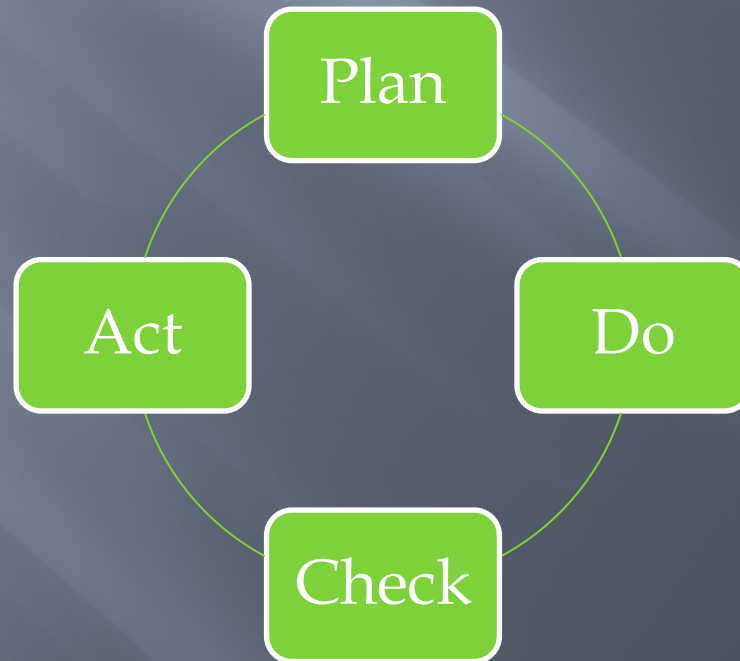
Steps to Sustainability

1. Get Ready
2. Get Started
3. Set Goals
4. Go Green
5. Ensure Continual Improvement

What is EMS?

A tool to assist in establishing a set of processes and practices that enable an organization to IMPROVE the QUALITY and health of OUR **environment**, by identifying and managing the impacts of it's activities.

Plan

Do
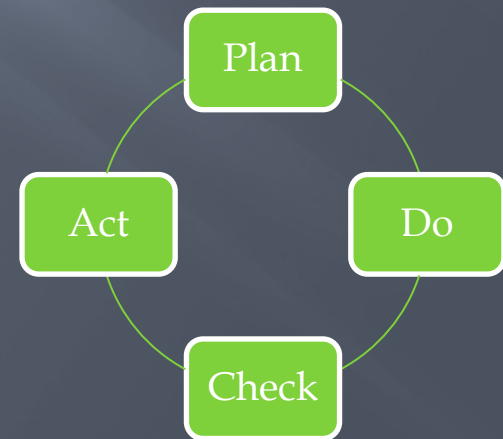
Check

Act

Why EMS?

- Current Trend
  - Correct Market Externalities
  - FAR <u>Requirement</u>
  - Gain a Competitive Advantage
- Goal
  - Go "Beyond Compliance" -become "Responsible"
  - Create a **SUSTAINABLE** world
- Benefits
  - Efficient resource use
    - Saves money
    - Produces less waste and pollution
    - Reduces dependency on scarce resources

EMS Elements

- **Plan:**
  - **Environmental** Policy
  - **Environmental** Aspects
  - Legal & Other Requirements
  - Objectives & Targets
- **Environmental** Management Programs
- Structure and Responsibility

EMS Elements

- **DO:**
  - Communication
  - Document Control
  - Operational Control
  - Emergency Response
- **Check :**
  - Monitoring & Measurement
  - Corrective and Preventative Action
  - Records
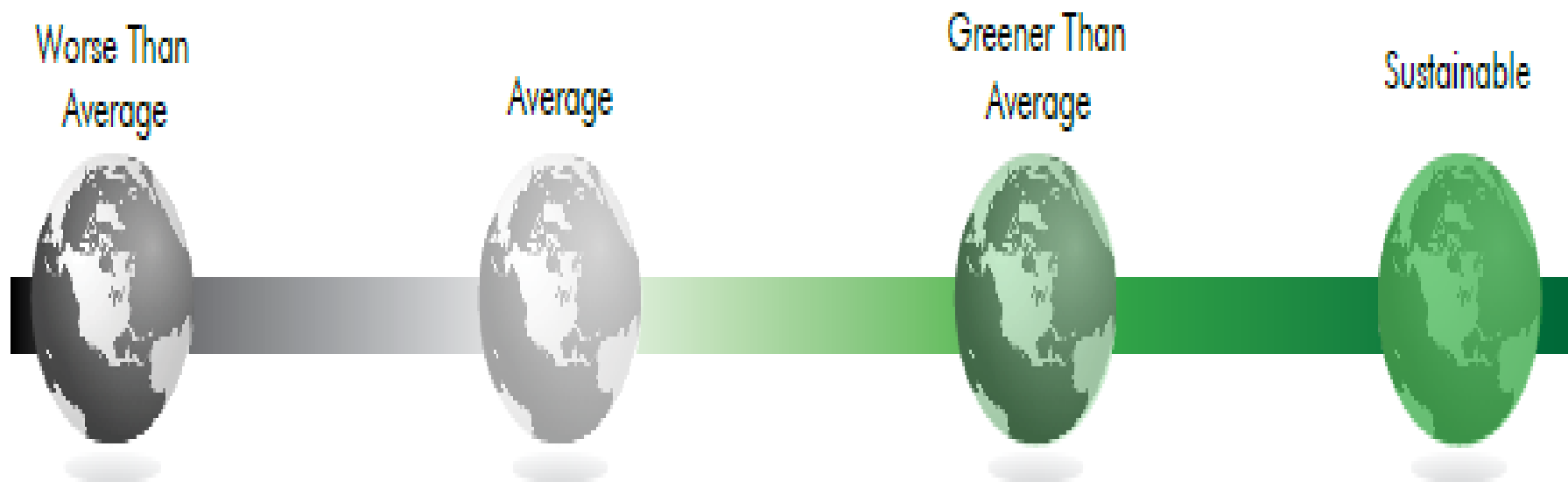- **Act:**
  - EMS Audit
  - Management Review

Environmental Policy Statement

- Communicates to Stakeholders
  - Employees
  - Suppliers
  - Customers
  - Communities
- Declares Commitment and Responsibility
  - Improving the **Environment**
  - **Environmental** Stewardship
- Considers:
  - Goals
  - Objectives
  - Targets

Environmental Ruler

- High energy costs to renewable energy
- High liability to low liability
- Large carbon footprint to carbon neutral
- High waste to zero waste

Worse Than Average   Average   Greener Than Average   Sustainable

Environmental Aspects

- Establish and Maintain Procedures to Identify Significant **Environmental** Impacts

- Life-cycle or Holistic View
  - Inputs:
    - Raw, man-made, renewable or recyclable
  - Processes: Effective and efficient use of resources
    - Effects on air, land, and or water
  - Outputs: Waste Management
    - Pollution prevention

- **Environmental** aspects can be direct or indirect

Environmental Impact Assessment Chart			
Activity Area	**Environmental Impacts**	**Impacts of Agency**	**Impact Contribution**
Processes			
Printing	Resource use, GHG emissions, air pollution, water pollution, habitat loss, and waste		
Emailing	Energy use, GHG emissions, and air pollution		
Mailing	Resource use, GHG emissions, air pollution, energy use, and waste		
Meetings	Energy use, GHG emissions, air pollution, and waste		
Traveling	Energy use, GHG emissions, air pollution, habitat loss, water pollution, and waste		

Legal Requirements

- Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance.*
  - Energy and Water Efficiency (WasteWise and WaterSense)
  - Recovered Materials (CPG) and Bio-Based Products (BP)
  - **Environmentally** Preferred Purchasing (EPP)
  - Non-Ozone Depleting (SNAP)
  - Contains Recycled Content
  - Non or less Toxic Alternatives
- Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*

Legal Requirements

- FAR Part 2, **Sustainable** Acquisitions mean acquiring **goods and services** in order to create and maintain conditions

  (1) under which humans and nature can exist in productive harmony; and

  (2) that permit fulfilling the social, economic, and other requirements of present and future generations.

Legal Cont. FAR Part 23

- FAR 13.201 (f) "The procurement requirements in subparts 23.1, 23.2, 23.4, and 23.7 <u>apply to purchases at or below the micro-purchase threshold.</u>"

  - 23.2: Energy and water efficient products and services;

  - 23.4: Products containing recovered/bio-based materials;

  - 23.7: **Environmentally** preferred products & services;

  - 23.8: Non-ozone depleting product; and

- FAR 52.223-19, **Environmental Management Systems** required for contractors who perform services at a federal facility.

Objectives and Targets

- Determine Objectives for <u>Significant</u> Aspect's
  - Breakdown Activities and Operations
    - Inputs
    - Processes
    - Outputs

- Identify <u>Significant</u> Negative Impacts
  - Prioritize Order of Feasibility to Implement
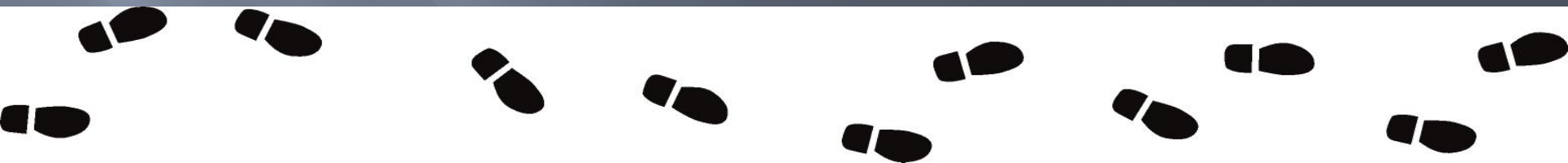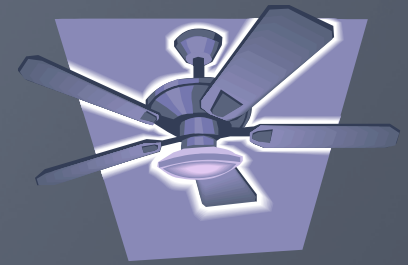   - Legal and other Requirements
    - Economic
    - Technical

Considerations for Goal Setting

- Emissions to Air
- Releases to Water
- Waste Management
- Contamination of Land
- Use of Resources
- Local & Community Issues

- SMART
  - Specific
  - Measurable
  - Attainable
  - Relevant
  - Timely

Fact Flash

- Did you know, by **recycling** the two aluminum cans of soda pop you drink each day for an entire week, you can **save energy** to power a ceiling fan for over 21 hours?

- Or 12 glass bottles can **save enough energy** to power a 60W CFL light bulb for over 96 hours, but only if you **recycle**!

- Check out iWARM (Waste Reduction Model)

http://www.epa.gov/osw/conserve/tools/iwarm/

Environmental Management Programs

- Assist in Achieving Objectives & Targets

- Develop Programs
  - Assign Responsibilities for each Function
  - Set Standards (Define Means and Time)
  - Identify Human and Financial Resources

- Examples
  - Establish a **Green** Procurement Program
  - Use of Electronic Record Keeping ("to the cloud")
  - Create a Waste Team (Recycle, Reuse, etc.)

Structure and Responsibility

- Appointment of Management Representative
- Define Roles, Responsibilities & Authorities
  - Include All Functional Areas
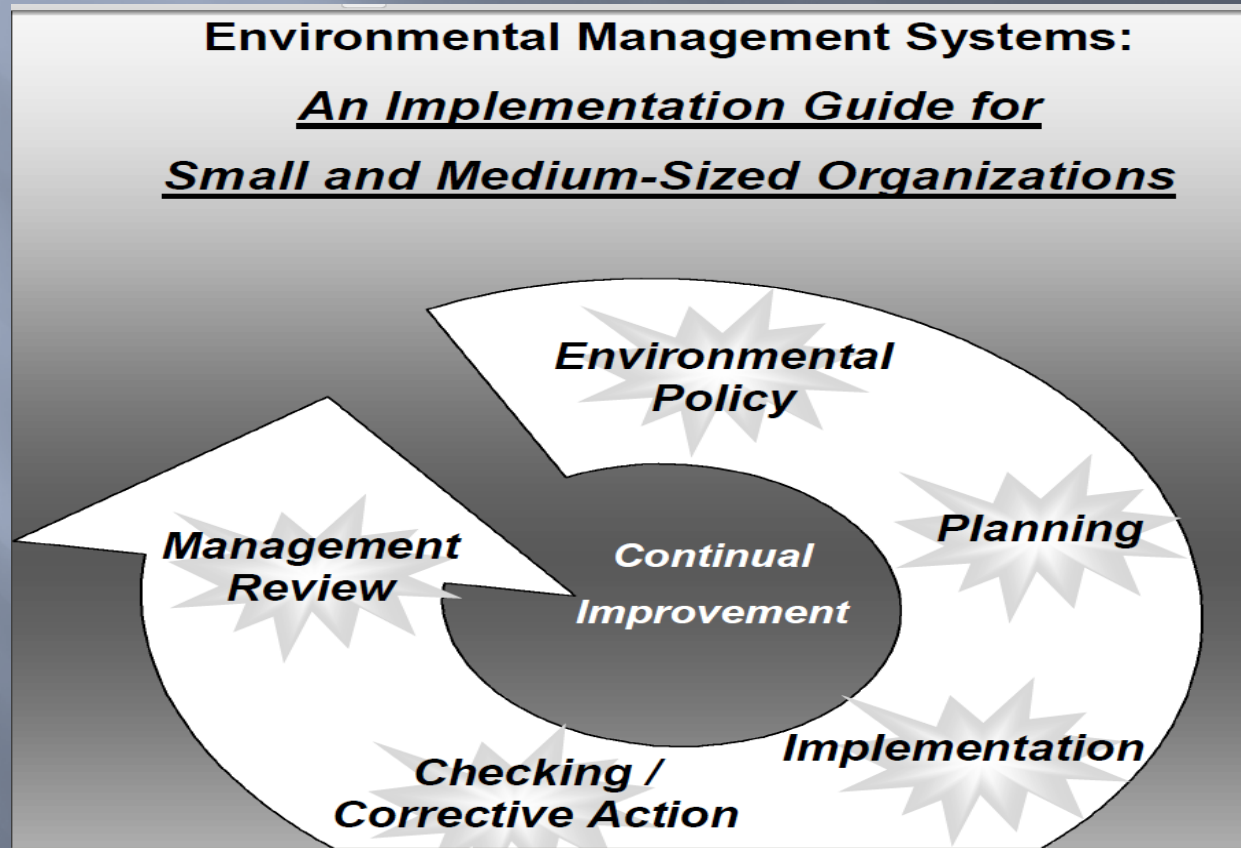- Document & Communicate
- Establish, Implement & Maintain Requirements

Training, Awareness and Competence

- Created for Areas of <u>Significant</u> Impact
- Varied for each Relevant Function
- Establish, Maintain, and Monitor Procedures
- Competencies
  - Education
  - Training
  - Experience
  - Awareness

Guidance is Available

Environmental Management Systems:

An Implementation Guide for

Small and Medium-Sized Organizations

Environmental Policy

Planning

Continual Improvement

Management Review

Implementation

Checking / Corrective Action

http://www.epa.gov/owm/iso14001/ems2001final.pdf

Communicate

- Internal Communication
  - Establish & Maintain Procedures **Across** Functions
  - Define Frequency & Responsibility
- External Communications
  - Receive, Document & Respond to Inquiries
  - Involve Stakeholders
    - Suppliers
    - Customers
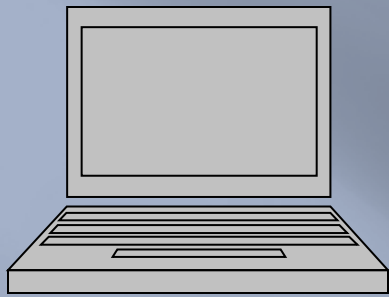   - Interested Parties
    - Community

Document Control

- Establish & Maintain
  - Removal & Retention of Obsolete Documents
  - Frequency of Reviews & Revisions
  - Protect from Unintended Use
  - Availability to Operations
    - Location
    - Accessibility
    - Ease of Use
  - Approval

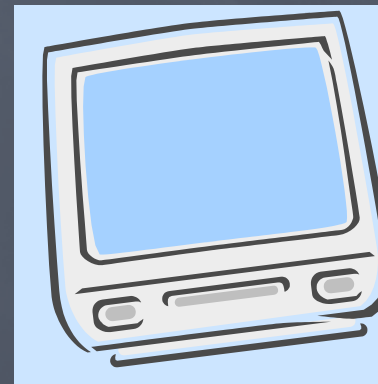# Operational Control

- Activities with Significant Aspects Identified
- Align with Policy, Objectives & Targets
- Establish Operating Criteria
- Develop & Implement Control Procedures
  - Prevent Deviation
- Communicate Requirements to Operators and Suppliers
- Modify as Necessary

Fact Flash

- Did you know by **recycling** 1 ream of paper (500 sheets), you can **save energy** to power your laptop computer for over 43 hours?

- Or **recycling** one 12" stack of newspapers can **save energy** to power your 36" tube television for over 190 hours?

- iWarm

Emergency Response

- Identify Potential Accidents/Emergencies
- Establish Response Procedures
- Prevent & Mitigate Risks/Impacts
- Review & Revise
- Test Responses
- Account for Normal & Abnormal Operating Conditions
- Example: *Oil absorbent material derived from bio-based products for cleaning an oil spill*

Monitoring and Measurement

- Establish, Document, & Maintain Procedures

- Routinely Monitor & Measure Key Characteristics from Operational Activities

- Record & Track Performance & Controls with Objectives and Targets

- Document Periodic Evaluations

Federal Reporting Requirements

- Use of EPA-Designated Recovered Materials
- Solid Waste Prevention
- **Environmentally** Preferred Purchasing
- Use of Biobased Materials
- Affirmative Procurement Program Progress
- Training Efforts
- Compliance Efforts
- Goals
- Use of Alternative Fuels

report

Example of Metric Reporting

- Energy use related to CO_2 emissions *
  - 1 gallon of gas = 19.5 lbs CO_2
  - 1 gallon of diesel = 22.3 lbs CO_2
  - 1 hp engine = 0.756 kw= 1.3 lbs CO_2
- Energy Consumption compared annually
  - Measure reduction in use and cost
- Water Consumption compared annually
  - Gallons used, reused, and reduced
- Waste Consumption compared annually
  - Pounds reused, recycled, and diverted
  - Pounds sent to landfill

Tools for Reporting

- Database of Environmental Information for Products and Services

   http://www.epa.gov/epp/tools/index.htm

- EnergyStar.gov, EPEAT.net, FEMP.gov
- Green Remediation Toolkit (clu-in.org)
- Green Cleaning http://www.fedcenter.gov/janitor/
- Paper Calculator http://www.papercalculator.org/
- Transportation http://www.epa.gov/SmartwayLogistics/transport/calculators/loancalcfreight.htm
- Greenhouse Gas Emissions http://www.epa.gov/cleanenergy/energy-resources/calculator.html

Corrective and Preventative Action

- Responsibility & Authority
- Investigate Noncompliance / Nonconformance
- Identify Root Cause
- Mitigate Impact of Nonconformance
  - Whether Actual or Perceived
- Develop Preventative Measures
- Implement and Record Changes

Environmental Records

- Establish and Maintain Procedures
  - Identification of Environmental Records
  - Maintenance of Environmental Records
    - Traceability
    - Protection from Damage or Loss
  - Disposition of Environmental Records
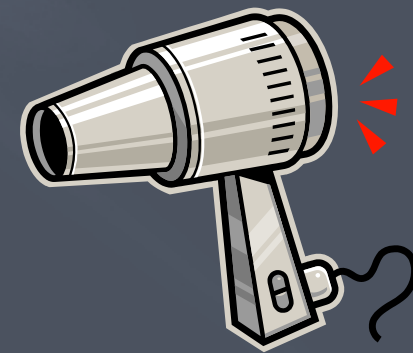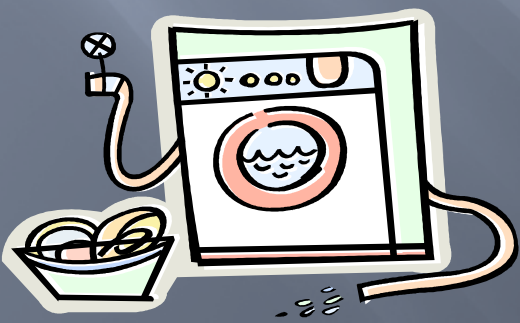- Examples
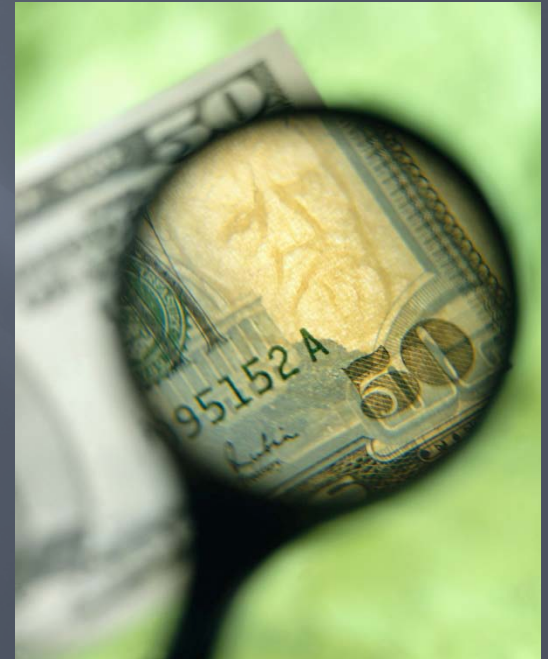 - Training Records
  - Audits
  - Reviews

Fact Flash

- Christmas is coming soon. Did you know **recycling** <u>ten</u> 2′ x 2′ x 2.5 corrugated cardboard boxes, 3mm thick, can **save energy** to power your washing machine for almost 35 hours?

- Or the 10 cereal boxes your kids went through in one week, if **recycled**, can **save energy** for you to blow dry your hair for an hour!

EMS Audit

- Establish & Maintain Program(s) and Procedures for Audits
  - Conformance to Plan
    - Documented
    - Properly Implemented
    - Maintained
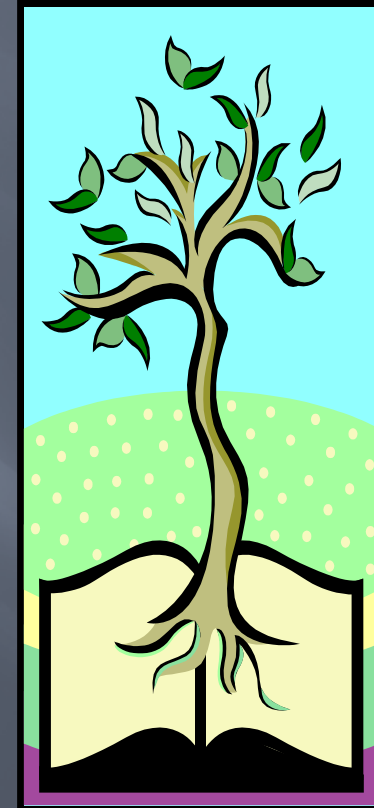- Reflects all EMS Elements
- Internal & External Audits

Management Review

- Top Management Review
  - Sustainability
  - Adequacy
  - Effectiveness
- Provide Necessary Information for Evaluation
- Document Management Review
  - Considerations
- Address Need for Continual Improvement
  - Policy
  - Objectives

Examples of Green Outcomes

- Greener Fleets
- Greener Landscapes
- Greener Meetings
- Green Power
- Green Buildings
- Green Office Supplies
- Green Electronics
- Waste Prevention
- Progress towards Sustainability

- CHRIS: SUMMARIZE WASTEWISE and WATER SENSE