EMS for TUR Planners

Day 1: Introduction to Environmental Management Systems

Spring 2015

TURI
TOXICS USE REDUCTION INSTITUTE
UMASS LOWELL

Course Objectives

Discuss fundamentals of TURA EMS	Consider modifications to convert EMS to TURA EMS	Prepare TUR planners to certify TURA EMS

EMS under TURA

New planning opportunities

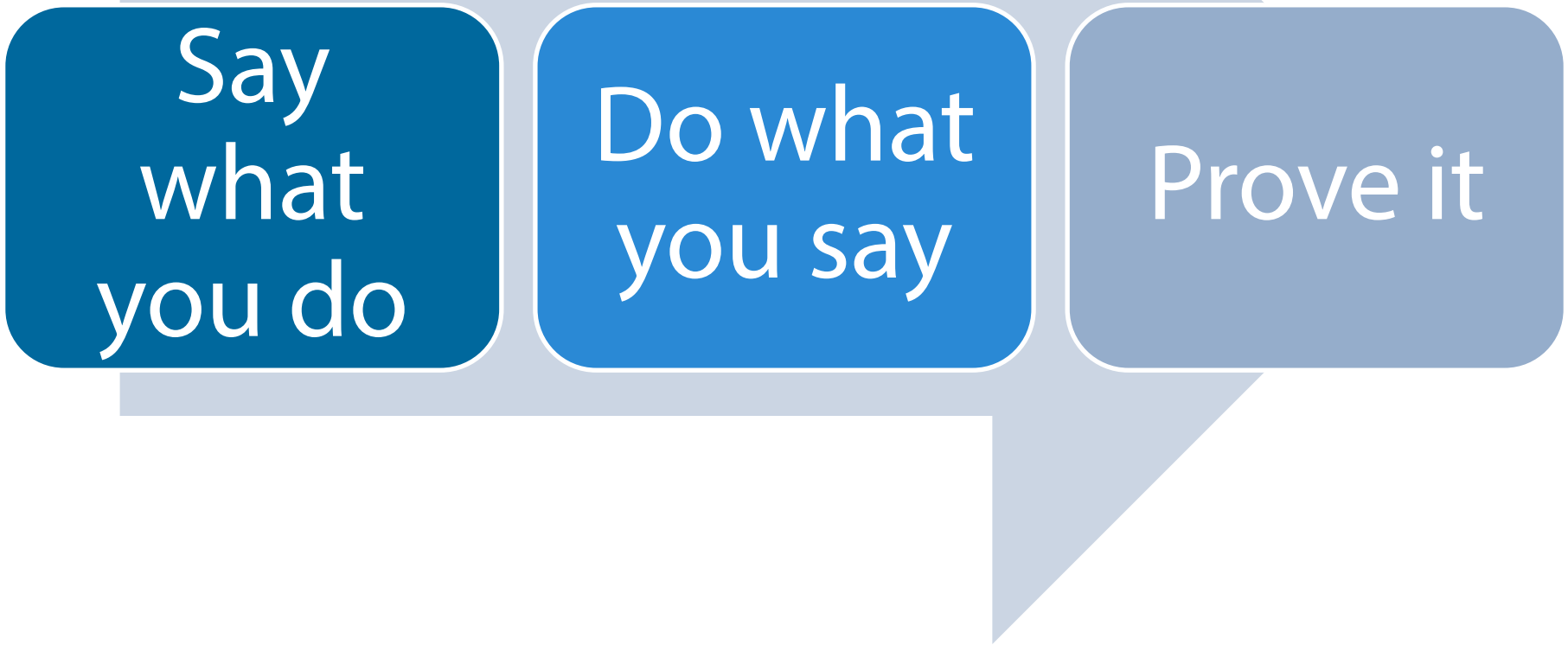
First TURA EMS prepared for 2008 planning year

14 companies in 2012

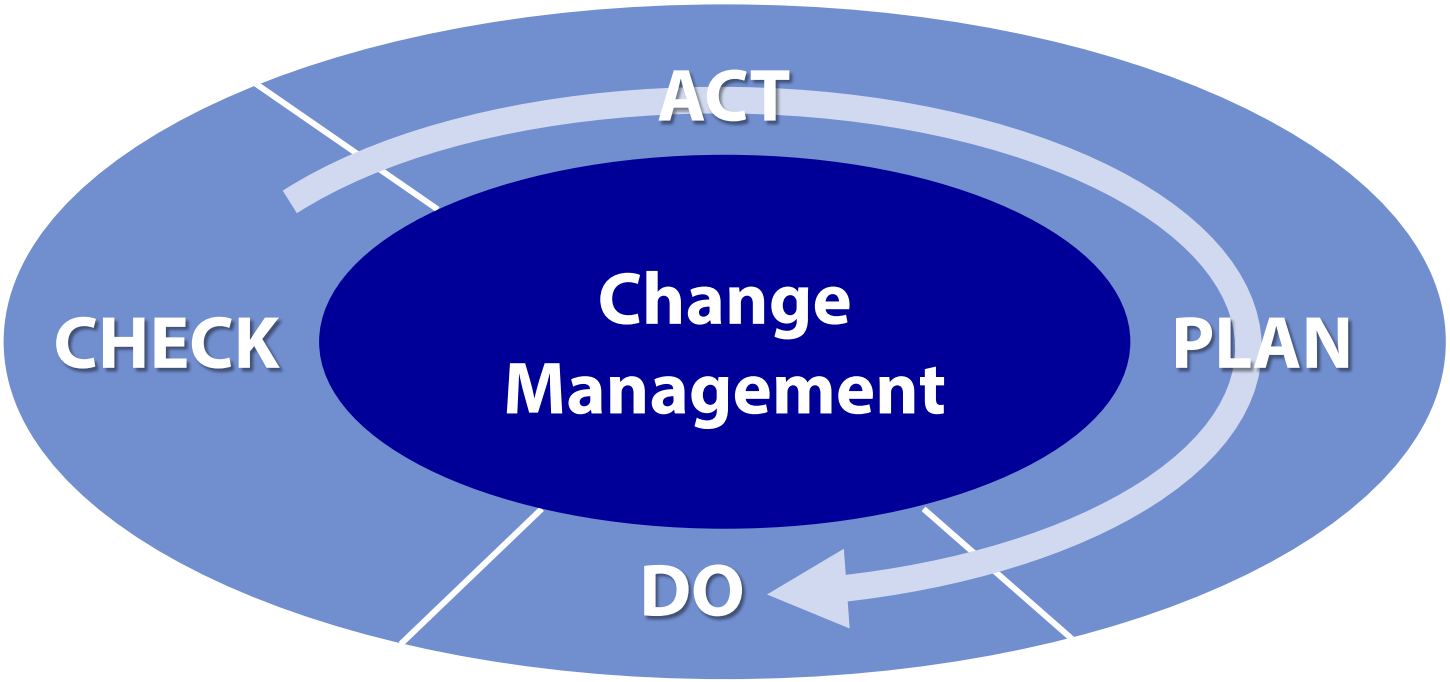
TURA Amendments of 2006

What is an Environmental Management System ?

An overall system of management processes and tools to help an organization address its environmental issues and goals


Say what you do
Do what you say
Prove it

Plan – Do – Check – Act



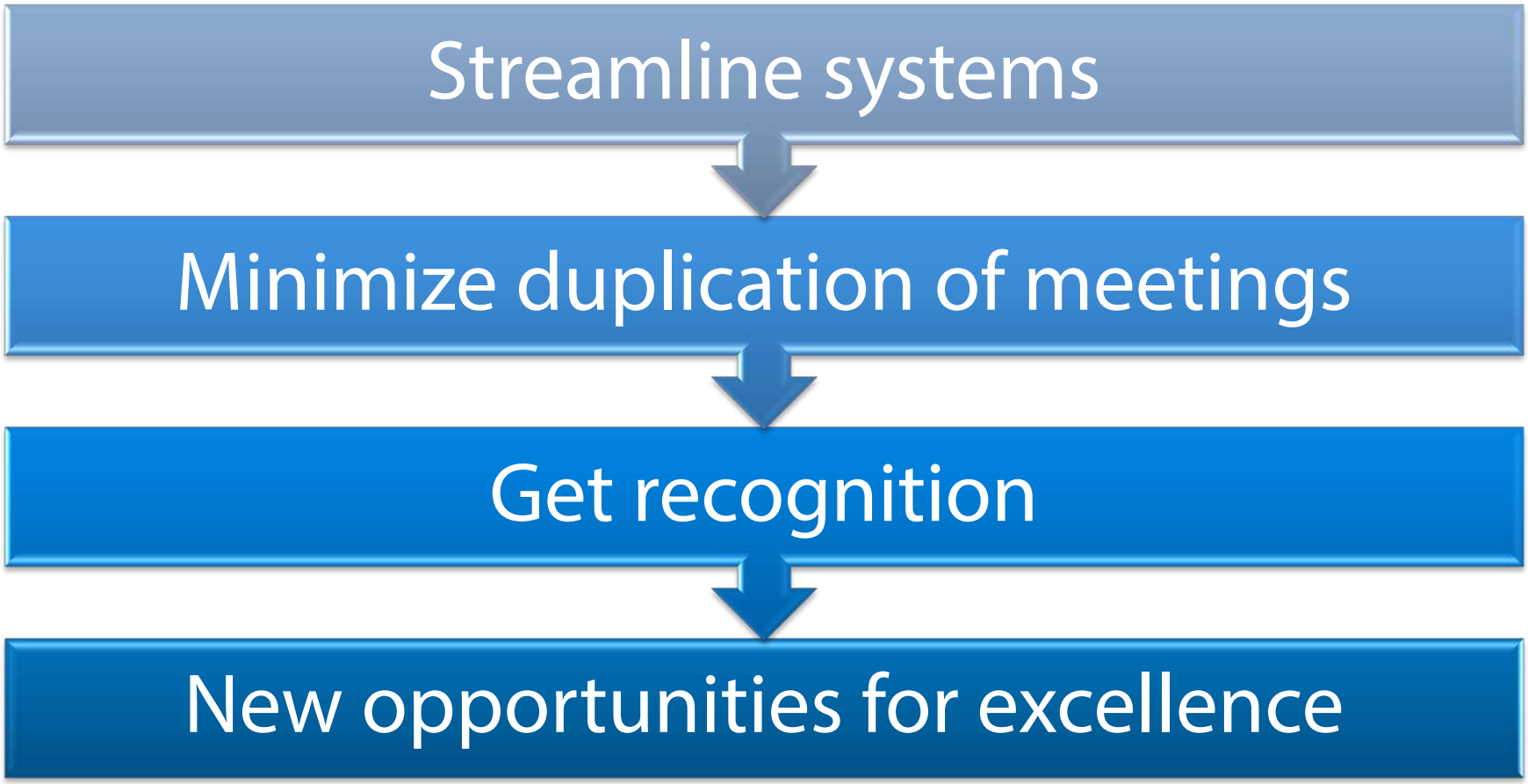
1. Environmental Policy
2. Aspects and Impacts
3. Legal Requirements
4. Objectives and Targets
5. Environmental Management Programs
6. Roles and Responsibilities
7. Training
8. Communication
9. Operational Controls
10. Documentation and Document Control
11. Emergency Preparedness and Response
12. Monitoring and Measuring
13. Audits and Corrective Action
14. Management Review

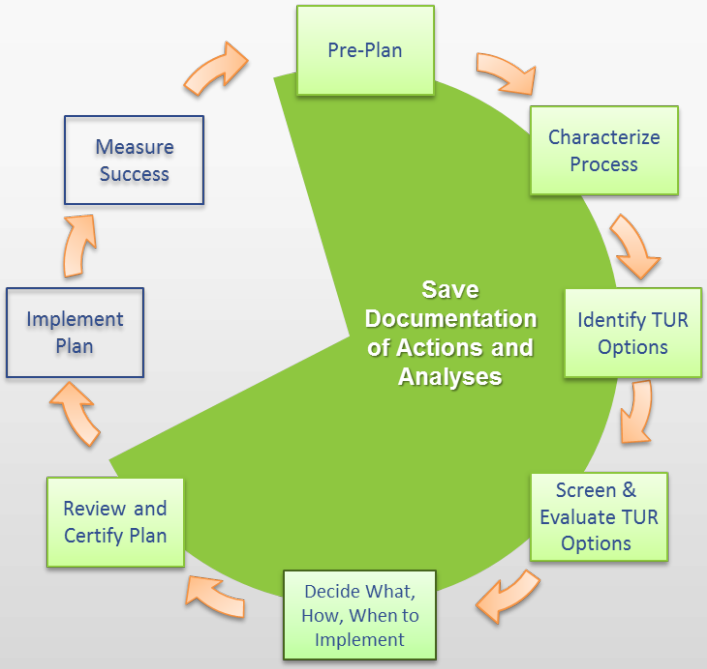
What is Your Motivation?

Group Discussion

Why choose to create a TURA EMS?	What are some of the anticipated benefits?	What are some of the anticipated challenges?

Why do a TURA EMS?





TUR Planning

Plan-Do-Check-Act

How Do These Compare?

TUR Planning Basics

Reporting:

- Applicability
- Form R/S
- Plan Summary *OR* **EMS Progress Report** *OR* RC Progress Report

Planning:

- Process
- Responsibilities throughout organization
- Options identification and assessment

Certification:

- Planner and Senior Management Requirements

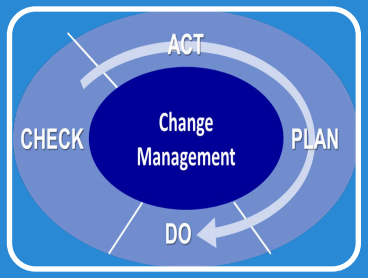
The Six TUR Techniques

- Input Substitution
- Product Reformulation
- Production Unit Redesign/Modification
- Production Unit Modernization
- Improved operation and maintenance
- Recycling integral to the production process

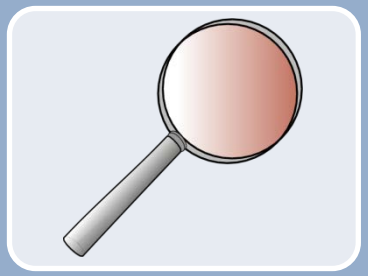
Who's Eligible for a TURA EMS?

1 + 2

Company has completed its initial TUR Planning and two subsequent Plan Updates



In place for at least one full EMS cycle (P-D-C-A)



Has undergone an independent audit within last two years

What You Must Submit

EMS Progress Report

- Section A – Significant Aspects/Covered Toxics
- Section B – Integrating TUR Planning
- Certification Statements

The Progress Report is designed to assure that TURA is an integral component of EMS

Section A

1. List of covered toxics
2. Description of objectives and targets
3. Description of progress made to date

Section B

1. Check for alternatives
2. Solicit ideas from employees
3. Promote TUR in company policy
4. Monitor toxics use
5. Identify regulatory requirements
6. Check (audit) the TURA EMS
7. Solicit information from vendors and other experts

Certification Statements

Senior Management Official

Toxics Use Reduction Planner

- Includes certification that Planner has appropriate qualifications for TURA EMS certification

Eligibility for Certifiers of TURA EMS

General TUR Planner

- 16 CE in EMS (one time)

Limited TUR Planner

- 2 yrs experience OR 16 CE credits in EMS

EMS Professional: General

- 16 hr TUR training AND 16 hr TUR training every 6 yr thereafter

EMS Professional: Limited

- 16 hr TUR training AND 16 hr TUR training every 6 yr thereafter OR
- 2 yr TUR experience AND 16 hr TUR training every 6 yr thereafter

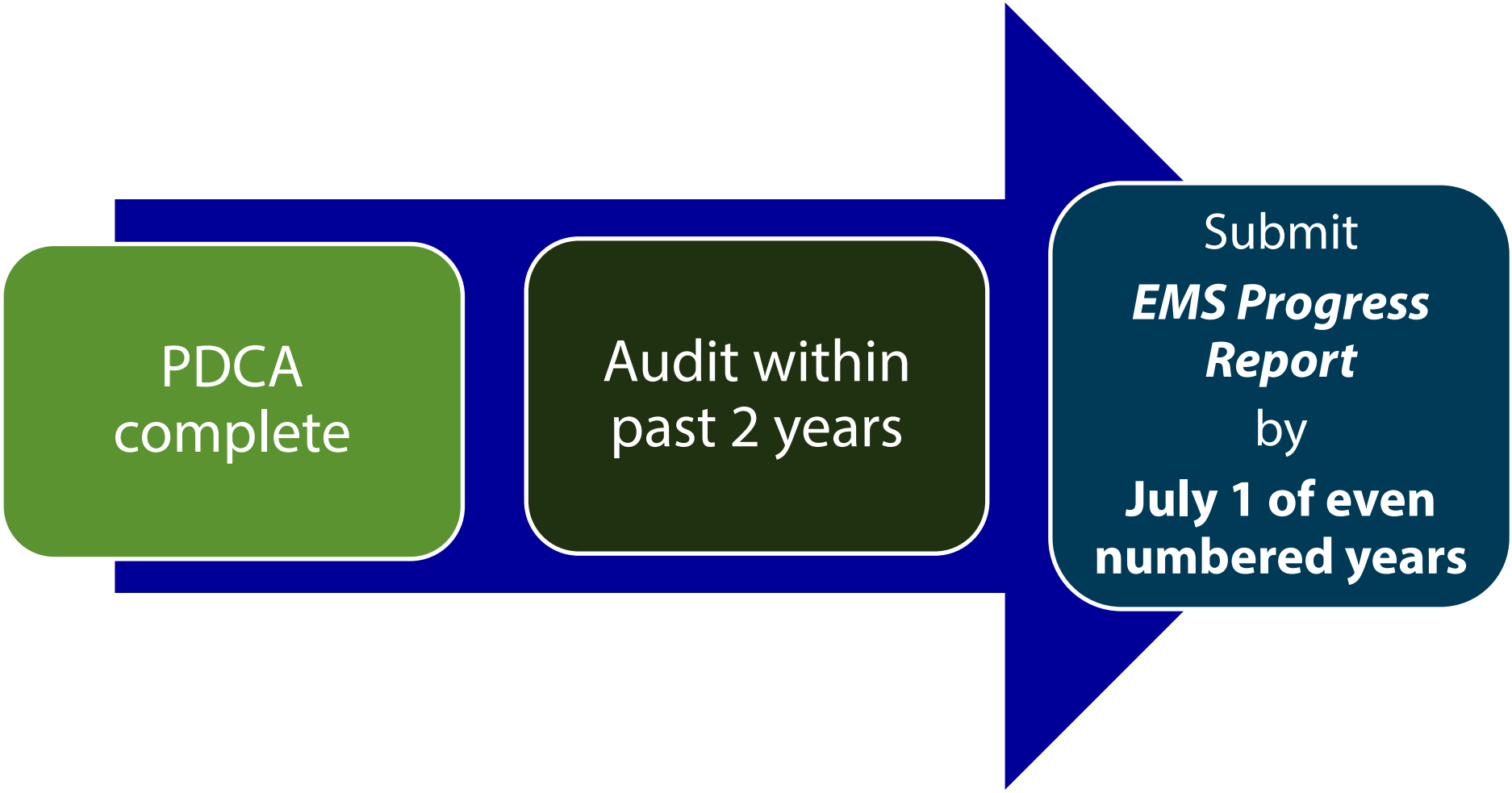
TURA EMS Requirements

Identify all TURA covered toxics as significant aspects

Cover all production units identified in your most recent TUR report

Include all TURA EMS elements

TURA EMS Timeline



Plan – Do – Check – Act

Plan

Develop a policy statement

- Identify activities that could impact the environment
- Identify aspects of those activities that are significant
- Identify legal obligations
- Develop objectives and targets to minimize potential impact

Element 1 Policy Statement

"A written environmental policy that expresses management support for, and makes a commitment to:

- *compliance with legal requirements;*
- *pollution prevention through source reduction; and*
- *continual improvement of the EMS and environmental performance."*

310 CMR 50.82

PLAN

Source Reduction

"Source reduction" is minimizing the risk of environmental impacts by using processes that are:

- Inherently safe or safer than other options; and
- Prevent waste from occurring in the first place.

The EMS policy statement is the first place that TURA EMS auditors and 'certifiers' will be alerted to the importance of source reduction in the EMS

Worksheet #1

Plan

Develop a policy statement

Identify activities that could impact the environment

Identify aspects of those activities that are significant

Identify legal obligations

Develop objectives and targets to minimize potential impact

PLAN

Activity

- Something you do or provide

Aspect

- The result of the activity

Impact

- The effect that aspect has on the environment (includes human health)

PLAN

Activity, Product or Service	**Environmental Aspect** ("Cause")	**Environmental Impact** ("Effect")
We do_____ (Or this is what goes on in our operation_____)	We produce_____ We use____ We dispose of ____ We recycle_____ We create_____	This affects:_____

Element 2 Aspects & Impacts

"A process for identifying significant environmental aspects and impacts from current and future activities at the facility.

- *All covered toxics shall be identified as significant environmental aspects."*

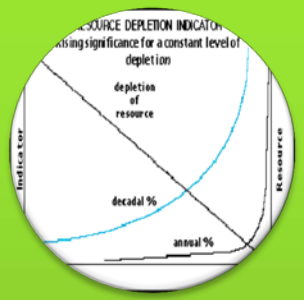
PLAN

Environmental Aspect - *An element of an organization's activities, products or services that can **interact** with the environment*

PLAN

Environmental Impact - Any ***changes*** to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services

Degradation of Air Quality



Reduction in Natural Resources

Conservation of Natural Resources

Reduction in Landfill Space

Examples

PLAN

Mass Electronics

Plating Area Activity	Aspects	Impacts	Additional Info Needed

Worksheet #2

Significance

- Evaluate your activities and operations and identify those that, based on your own rating system, warrant classification as significant.

Covered toxic chemicals must be classified as significant

If a chemical was reported on the most recent toxics use report it must be included as a significant aspect.

PLAN

PLAN

Think about….

Written A&I assessment process

Describe how the EMS will monitor uses of all potentially reportable toxic chemicals

Involve the TUR planning team

PLAN

Progress Report Excerpt

Environmental Management System Progress Report

A. Significant Aspects – Covered Toxics

1. Provide a list of the covered toxics addressed in the TURA EMS for this planning cycle:

PLAN

Plan

Develop a policy statement

Identify activities that could impact the environment

Identify aspects of those activities that are significant

Identify legal obligations

Develop objectives and targets to minimize potential impact

PLAN

Element 3 Legal Requirements

"Identification of environmental legal requirements, including a system for tracking compliance and learning about and integrating changes to legal requirements into the EMS."

- Explicitly cite legal obligations under TURA
- This is an important reminder to EMS auditors and certifiers that this is a Massachusetts-specific requirement that must be met.

PLAN

New Massachusetts regulation

"***527 CMR 33.00*** creates local fire department permit requirements for facilities engaging in the processing of certain hazardous materials. The standards are based on a classification system and requires disclosure and evaluation regarding a facility's hazardous material operations."

Plan

Develop a policy statement

Identify activities that could impact the environment

Identify aspects of those activities that are significant

Identify legal obligations

Develop objectives and targets to minimize potential impact

PLAN

Element 4 Objectives & Targets

"A process for establishing measurable objectives and targets that address significant environmental aspects and other EMS commitments and that emphasize preventing pollution at its source."

PLAN

Objective

- What are we going to do?

Target

- Measurable

Examples

- Reduce chemical use by ___% by ___ (date)
- Eliminate use of TCE facility-wide by 2014
- Conduct at least 3 hours of research into safer alternatives via journal articles each quarter

PLAN

What if there are currently no feasible alternatives?

Develop procedure to identify pertinent changes, such as:

- Advances in technology or practice
- New chemical substitutes
- Change in production or customer requirements

Continuously assess whether process efficiency activities are effective or can be improved

PLAN

Remember …

Consider source reduction as primary mechanism

Emphasize preventing pollution at its source (i.e., toxics use reduction).

Objectives and Targets associated with covered toxics must be summarized on EMS Progress Report

PLAN

Objectives & Targets Small Group Exercise – Discuss the following:

What objectives and targets would be appropriate for three of the significant aspects?

- Quantitative objectives
- Qualitative objectives

Where would you look for objective evidence of the development and achievement of objectives and targets?

Worksheet #3

Progress Report Excerpt

Environmental Management System Progress Report

A. Significant Aspects – Covered Toxics

2. Provide a brief description of the objectives and targets established by your facility for this planning cycle to address the covered toxics listed above:

3. Provide a brief description of progress made toward meeting objectives and targets established for covered toxics during the previous planning cycle, and, if applicable, why anticipated progress was not achieved:

PLAN

Plan – Do – Check – Act

Do

*Develop an **action plan, or environmental management program (EMP)***

Establish roles and responsibilities

Create training (schedules, content) and communication (employee notification) protocols

Develop operational controls

Develop documentation, document control, emergency preparedness and response, monitoring and measurement

DO

Element 5 Environmental Management Program

"Environmental management programs designed to monitor progress toward documented objectives, targets, and commitments in the EMS, including the means and time-frames for their completion"

DO

Environmental Management Programs

Specific work actions and SOPs, including a good faith effort to achieve the identified O&T

Facilities should consider EMPs that incorporate toxics use reduction planning activities

DO

Environmental Improvement Projects

SKYWORKS

FY11 Objectives Targets & Programs
Significant Aspects Site
Greenhouse gas
Solid waste
Chemical use
TUR Chemicals (sodium hydroxide, acetone, hydrochloric acid, sulfuric acid, NMP)
Hazardous waste
Gas use
Significant Aspects Global
Energy
Water
Waste Hazardous & Solid
CO2 (GHG)

Example EMP

Program	Objective & Target	Champion	Milestones	Status
Chemical Use				
Evaluate Ozone stripper process to replace the SEMI 14 Sulfuric Peroxide Strip process	Eliminate the use of 20 gallons of sulfuric acid per month	Bob Delotto/Chris Doucette		On hold need capital
Evaluate NMP reduction by extending PM's	Extend PM cycle above 2000 wafers	Bob Delotto		On hold during ramp installs & quals
Reduce the use of HCl	Increase wafers per batch from 12 to 24 with the use of ETCH01 in place of HCL01	Frank Spooner	EHS Evaluation - Air permitting, Purchase & Install, Qual, TRB, RTP	RTP 12/1010
Reduce the use of BCB	Reduce dispense volume by 43% (reduces chemical use and hazardous waste production)	Matt Stevenson		Complete 3/2011

TUR Reportable Chemicals – Significant Aspects

Element 6 Roles …

Same as with TUR planning

Focus on objectives and targets

- Who is responsible for identifying them
- Who is responsible for meeting them

Ditto for legal requirements

DO

Element 7 Training

"Environmental and compliance training for those whose jobs and responsibilities involve activities directly related to significant aspects, achieving objectives and targets and compliance with legal requirements, and initiation training for new personnel."

DO

Element 8 Communication

"Procedures for communicating environmental and EMS information throughout the facility, including EMS awareness programs for all employees."

DO

Do

Develop an ***action plan, or environmental management program (EMP)***

Establish roles and responsibilities

Create training (schedules, content) and communication (employee notification) protocols

Develop operational controls

Develop documentation, document control, emergency preparedness and response, monitoring and measurement

Element 9 Operational Controls

"Operational controls to ensure that equipment and other operations comply with legal requirements and address significant environmental aspects."

DO

Operational Controls

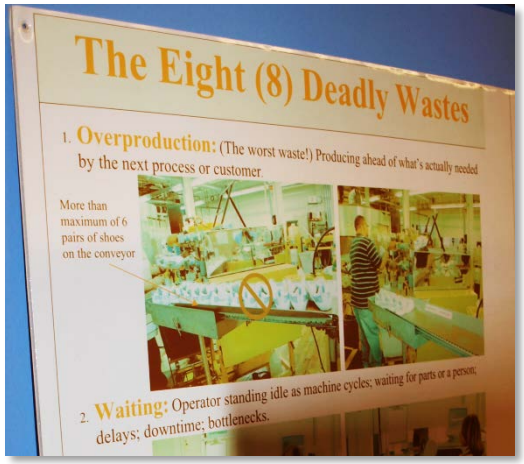
Specific provisions for control of all activities associated with the use of covered toxic chemicals must be addressed

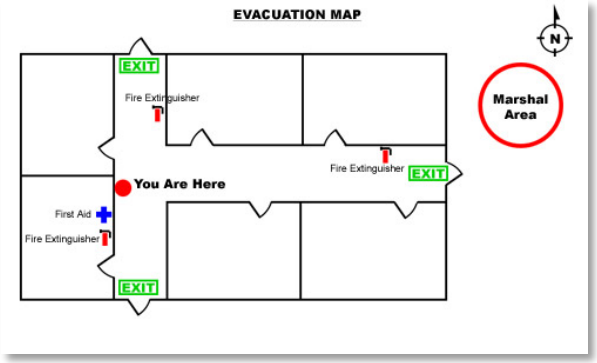
Facilities must consider source reduction opportunities in the evaluation of operational control options.

DO

Example Operational Controls

- Signage
- Training
- Equipment changes
- Procedure changes
- Manuals
- Evacuation map





Discussion

For Mass Electronics:

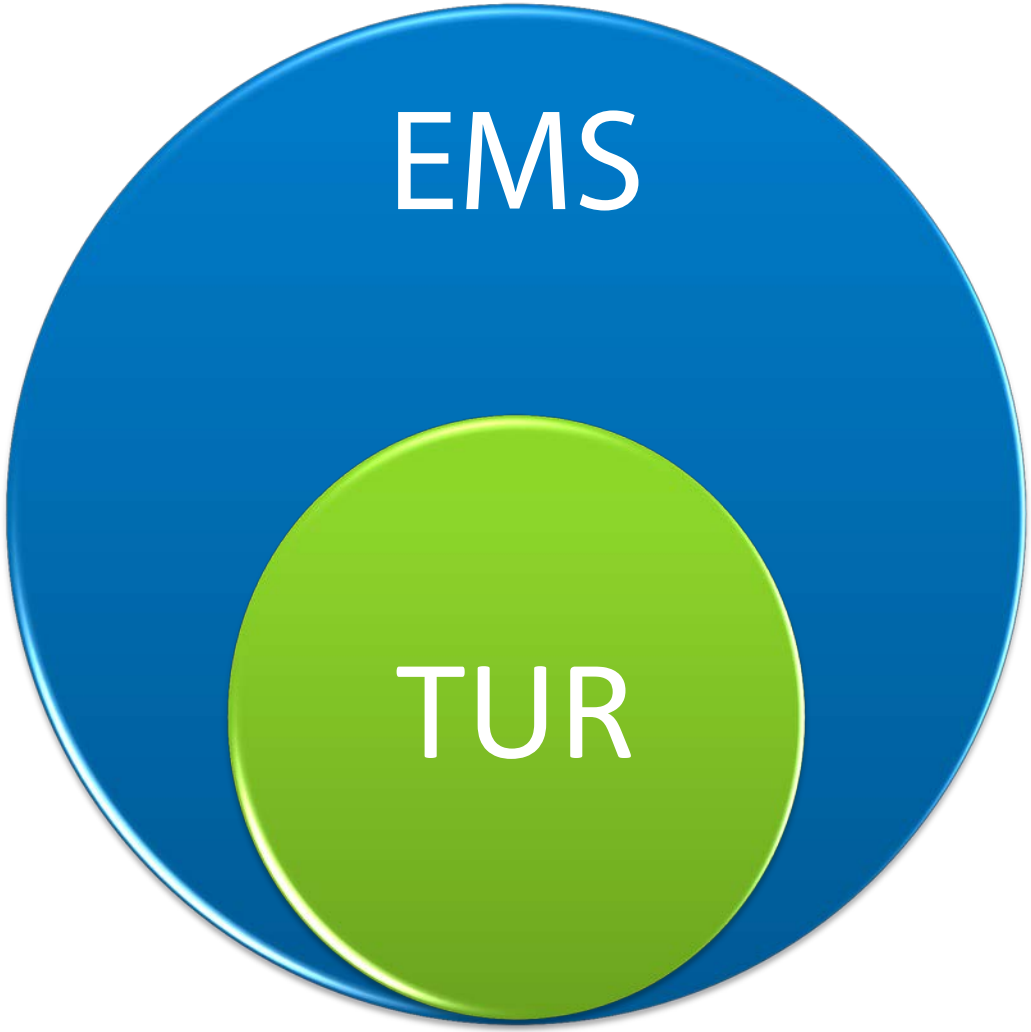
What operational controls might be appropriate to manage significant aspects in the plating area?

What operational controls are already in place?

Key Take Aways …

- Key differences between EMS and TURA EMS
- TURA EMS provides more flexibility than TUR Planning
- How a company chooses to integrate TUR into their EMS is up to them
- Emphasis on action and continuous improvement

And Remember ….



Assignment

Read EMS Guidance for TURA	• Identify questions you have • Identify issues or concerns raised
Find Policy, Aspects and Impacts, and Objectives and Targets from your own EMS and/or TUR Plan	• What modifications would be needed to meet the TURA EMS standard?
Do a first cut EMS Progress Report for your EMS	• Answer 4 questions

The TURA EMS Must:

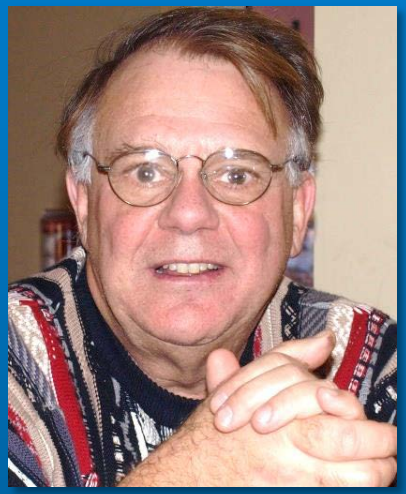
- Consider ***reportable toxics to be significant aspects***
- Contain the ***elements*** specified in 310 CMR 50.82
- Cover all the production units identified in the ***most recent toxics use report***
- Consider ***toxics use reduction*** when establishing objectives and targets associated with significant aspects
- ***Emphasize source reduction*** as the means of achieving objectives and targets

Remember the P-D-C-A Model

What worked well today

What could have worked better?

Checking on the Day



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http://www.mass.gov/dep/toxics/tura/emsplan.htm

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