

Management Systems Overview for the Hazardous Materials Professional

CHMM Overview Workshop

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Loren Larson, CHMM, CPEA

Caltha LLP



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Topics

- **Management System – What is it?**
- **The Five Components of an EMS/SMS**
- **Potential Costs/Benefits of Implementing an EMS/SMS**
- **Sustainability/Sustainable Development**
- **So What Should Environmental Managers Really Do?**

Environmental Management System (EMS)

Part of an organization's management system used to develop and implement its *environmental policy* and manage its *environmental aspects*.

Old-Era EMS

- U.S.A. Laws & Regulations
- Any facility striving to meet environmental/H&S regulations undoubtedly has some form of Management System
- In most cases, management system is designed to respond to legal requirements, such as permits, federal or state regulations, etc. (i.e., very “compliance driven”)

“Compliance Management System”

Quality Models

- ✓ Say what you do
- ✓ Do what you say
- ✓ Prove it
- ✓ Prove that its effective!
- ✓ Continually improve

“Plan - Do - Check - Act”



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Five Key Elements of an EMS/SMS

1. Environmental / Safety policy
2. Planning
3. Implementation & operation
4. Checking & corrective action
5. Management review

ISO 14001

- Written standard published by International Standards Organization (ISO)
- Periodically reviewed and revised
 - Revised in 2015; prior revision was in 2004
- Organizations can be registered as meeting a current version of the standard
 - Now ISO 14001:2015
- When the standard is revised, organizations may need to revise their EMS to incorporate changes
 - For those registered to 2004 version, deadline is **September 23, 2018**

ISO 45001

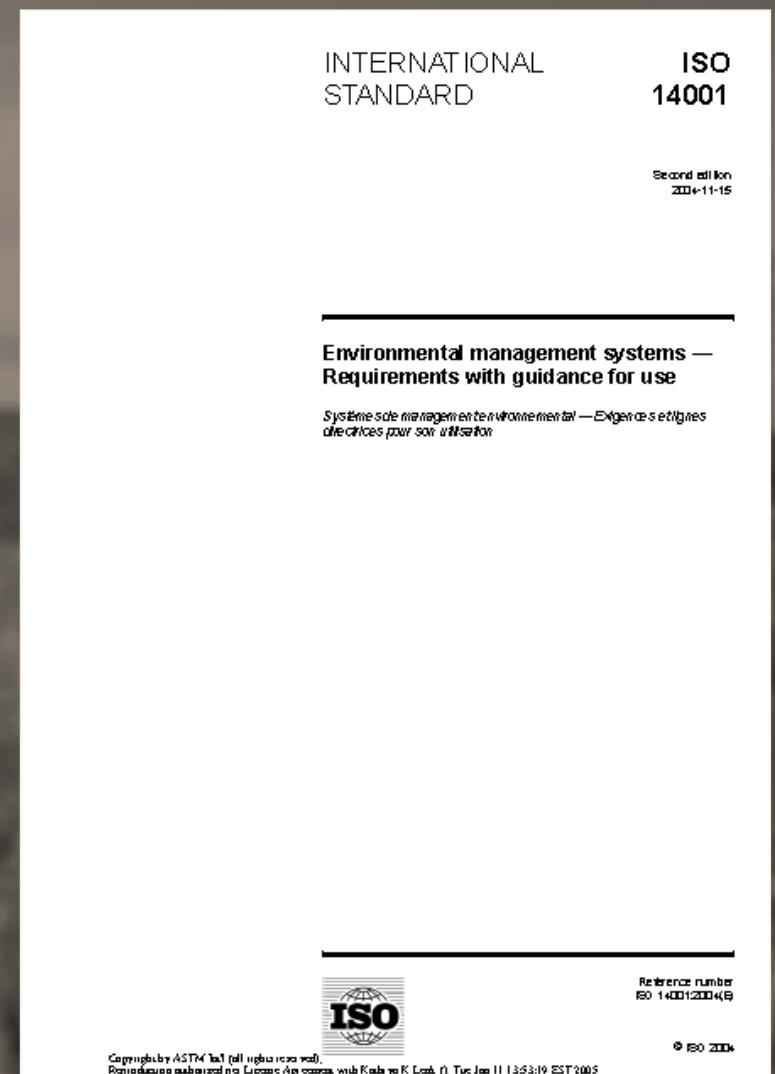
- Released in 2017
- Replaces BS OHSAS 18001, Occupational Health and Safety Assessment Series, internationally applied British Standard for occupational health and safety management systems
- OHSAS 18001 will be withdrawn and organizations currently certified to OHSAS 18001 have a **three year period** to migrate to ISO 45001.

Registration/Certification Under ISO 14001

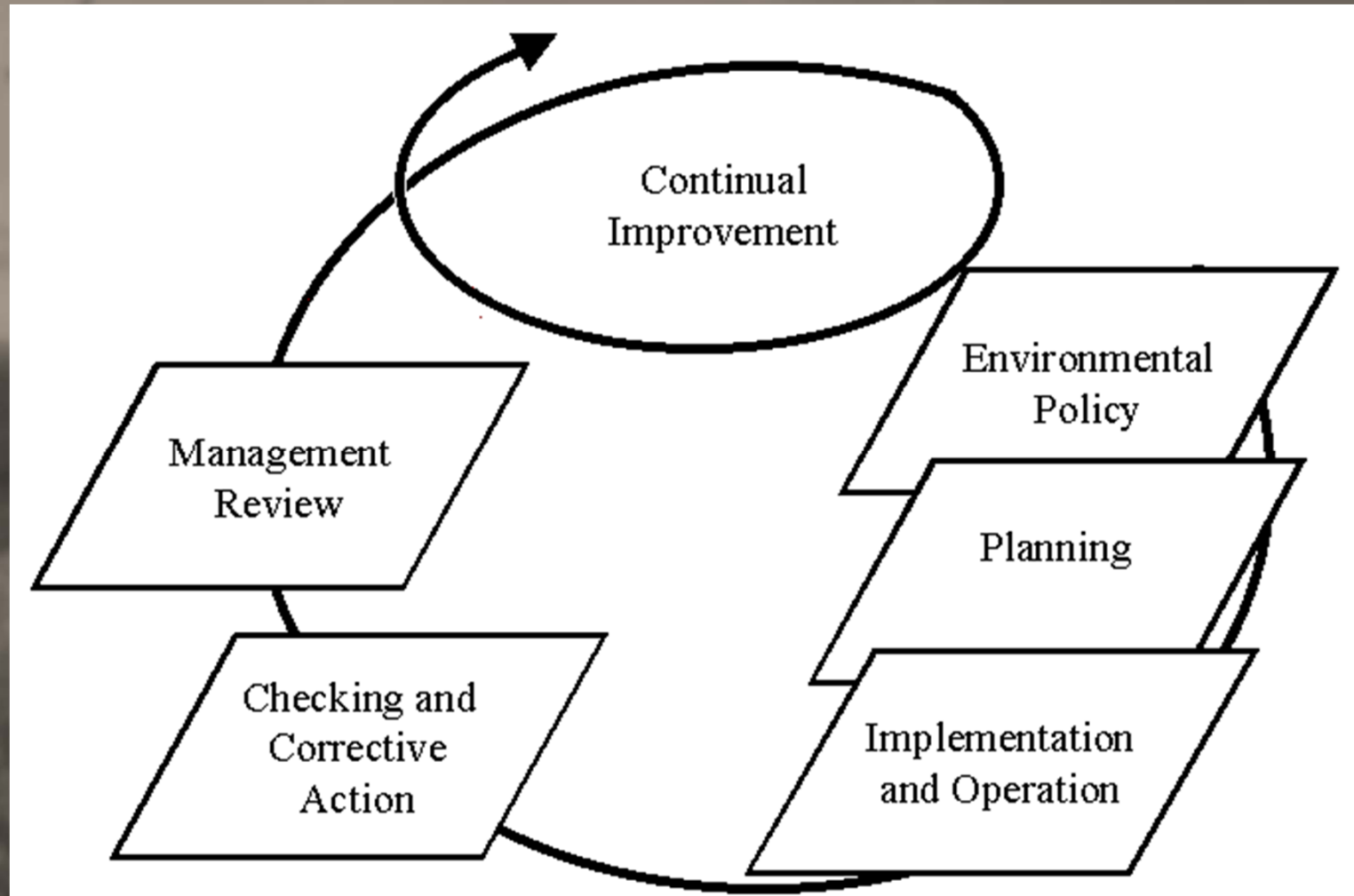
- ISO does not register organizations
- Organizations have four options:
 - Making a self-determination and self-declaration, or
 - Seeking confirmation of its conformance by parties having an interest in the organization, such as customers, or
 - Seeking confirmation of its self-declaration by a party external to the organization, or
 - Seeking certification/registration of its environmental management system by an external organization

Why use ISO-14001 as Benchmark?

- Most recognized
- Most flexible
- Based on international consensus
- Based on well known predecessors
- Can be verified (registered) by third party



ISO-14001 EMS Model



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ISO-14001 Specification Structure and Core Elements

§1. EMS Scope

§3. Definitions

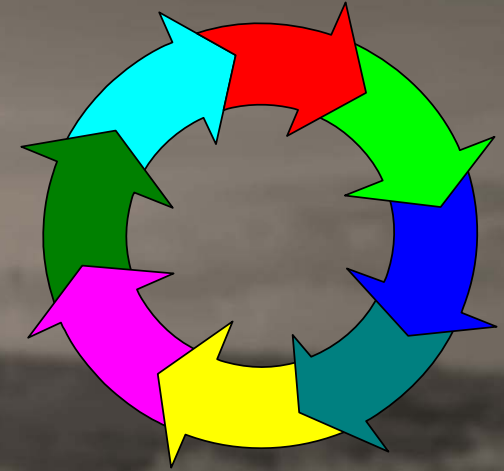
§4.2 Environmental policy

§4.3 Planning

§4.4 Implementation & operation

§4.5 Checking & corrective action

§4.6 Management review



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§ 4.2 Policy

- “The Management System Driver”
- Management’s declaration of commitment to the environment
- Relevant to environmental impacts of organization’s activities, products and services
- Framework for environmental objectives and targets
- Available to interested parties (Internal & External)
- Commitment to:
 - *Legal Compliance*
 - *Prevention of Pollution, and*
 - *Continual Improvement*

§ 4.3 Planning

- Aspects/impacts
- Legal requirements
- Goals, objectives, targets
- Programs

Environmental Aspects

- Consider for operations, products, services:
- Air emissions
- Water effluents
- Solid/hazardous waste generation
- Contamination of land
- Noise, vibration and odor
- Land use, energy use, water use
- Raw material and resource use
- Positive environmental impacts



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Significant Aspects

- Establish and maintain procedures to **identify your environmental aspects** in order to determine those which can have a significant impact on the environment.
- **Rank** aspects and impacts in order to assess their significance
- **Significant Environmental Aspects require management within EMS:**
 - Written procedures
 - Contractor Requirements
 - Other



Legal Environmental Requirements

- Setting legal framework for the EMS
- Identify and access legal requirements and “other requirements”
- Keep up-to-date
- Communicate to the right people



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Objectives & Targets

- Establish and maintain environmental objectives and targets.
- Could include commitment to:
 - reduce waste
 - reduce or eliminate release/spill of a pollutant
 - design product/operations to minimize environmental impact in production, use, and disposal.



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§ 4.4 Implementation & Operation

- Structure and responsibility
- Training, awareness & competence
- Communications
- Documentation
- Operational controls
- Emergency preparedness & response

Training, Awareness & Competence

- Must to identify training needs
- All employees and contractors must be aware of basic EMS structure
 - Environmental policy
 - Objectives
 - Significant environmental aspects
- Need to evaluate and document employees and contractors are trained and are **competent** to perform tasks which involve **Significant Environmental Aspects**

Operational Controls

- Activities involving Significant Environmental Aspects
- Activities must be planned and have documented procedures
 - Standard Operating Procedures (SOP)
 - Written work instructions

§ 4.5 Checking and Corrective Action

Similar to ISO-9001

- Monitoring and measuring
- Nonconformance/Corrective actions
- Records
- Compliance audits
- EMS audits

Monitoring and Measuring – How are you doing?

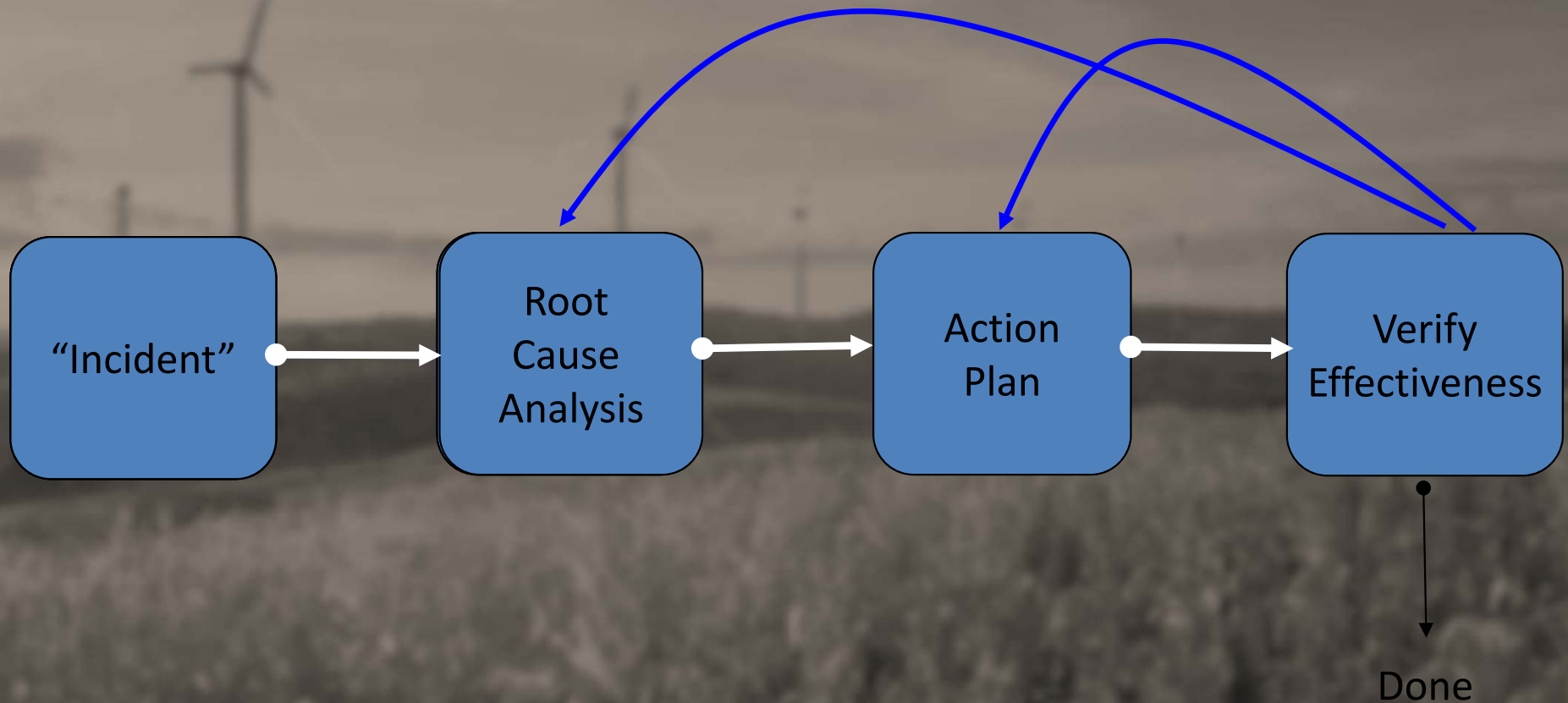
- Establish procedures to monitor and measure key Environmental Performance Metric
- Track how well the system is working
- Analyze and correct root causes of problems



EMS Internal Auditing

System auditing
vs.
Compliance auditing

Corrective And Preventive Action (CAPA)



Root Cause Analysis – “5 Why”

Example of a “5 Why” Root Cause Analysis:

Theoretical Issue: Ruptured hydraulic line resulting in oil spill on the ground

Why #1: Because hydraulic line was worn and brittle

Why #2: Because current maintenance management system does not include this equipment for scheduled preventive maintenance

Why #3: Because maintenance management system was not updated when new machine was installed

Why #4: Because person assigned to update system has been backlogged with other projects

Why #5: Because only one person has been trained to update system



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§ 4.6 Management Review

- Review information to evaluate EMS
 - Results of audits
 - Performance relative to key metrics
 - Other
- Top level review to ensure EMS is:
 - Suitable
 - Adequate
 - Effective
- Consider changes needed – return to Planning phase

Costs & Benefits of Implementing an EMS

Benefits According To ISO:

- protecting the environment by preventing or mitigating adverse environmental impacts;
- mitigating the potential adverse effect of environmental conditions on the organization;
- assisting the organization in the fulfilment of compliance obligations;
- enhancing environmental performance;
- controlling or influencing the way the organization's products and services are designed, manufactured, distributed, consumed and disposed by using a life cycle perspective that can prevent environmental impacts from being unintentionally shifted elsewhere within the life cycle;
- achieving financial and operational benefits that can result from implementing environmentally sound alternatives that strengthen the organization's market position;
- communicating environmental information to relevant interested parties.

Costs & Benefits of Implementing an EMS

Costs:

- Depends on approach and if external resources are needed
- Depends on approach to “certification”
 - External registration is most costly and requires reoccurring costs to maintain registration
- Starting from typical compliance-based EMS, constructing an ISO 14001-compliant EMS will take a minimum of 6-months, and more likely 1-2 years to become registered.

Sustainability/Sustainable Development

Sustainability: *“The possibility that human and other forms of life on earth will flourish forever”*

John Ehrenfeld, Professor Emeritus, MIT

Sustainable Development: *“Meeting the needs of the present generation without compromising the ability of future generations to meet their own needs”*

Bruntland Commission, 1987

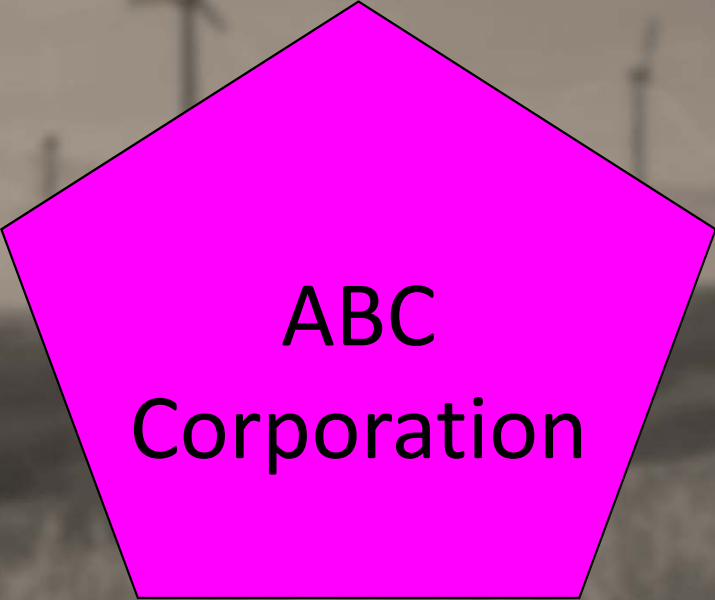
Sustainable Development: *“Enough - For All – Forever”*

African Delegate to Johannesburg (RIO+10)

Basic Elements of Sustainability

- Reduce energy consumption
- Reduce water consumption
- Reduce waste/increase legitimate recycling
- Includes internal processes, products & services
- Many companies and government agencies will have:
 - sustainability policy (or similar)
 - sustainability program
 - sustainability objectives and targets

Sustainable or Not?



ABC
Corporation

- Mining company
- 96% utilization of raw materials
- 100% of waste landfilled
- Provide all employees with health insurance



XYZ
Corporation

- Paper company
- 47% utilization of raw materials
- 88% of waste burned for energy
- 10% of profits go to community projects



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What Should Manager/Consultant/Agency Staff Do?

Business EHS professional

- Identify the elements of an EMS you currently have
- Consider improvements to existing programs
- Consider addressing gaps
- How can existing EMS support sustainability initiatives?

EHS Consultant

- Be aware of client's EMS and objectives
- Consider how your work can integrate into existing systems

Environmental agency staff

- Identify the elements of an EMS you currently have
- Recognize different EMS/Compliance management systems

Loren Larson, CHMM, CPEA
llarson@calthacompany.com

