OVERVIEW OF ISO 14001:2015

Day 4 – Emergency Preparedness, Performance Evaluation & Improvement

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WRP Waste Reduction Partners

LAND OF SKY REGIONAL COUNCIL

DEQ NORTH CAROLINA Department of Environmental Quality

Webinar Housekeeping

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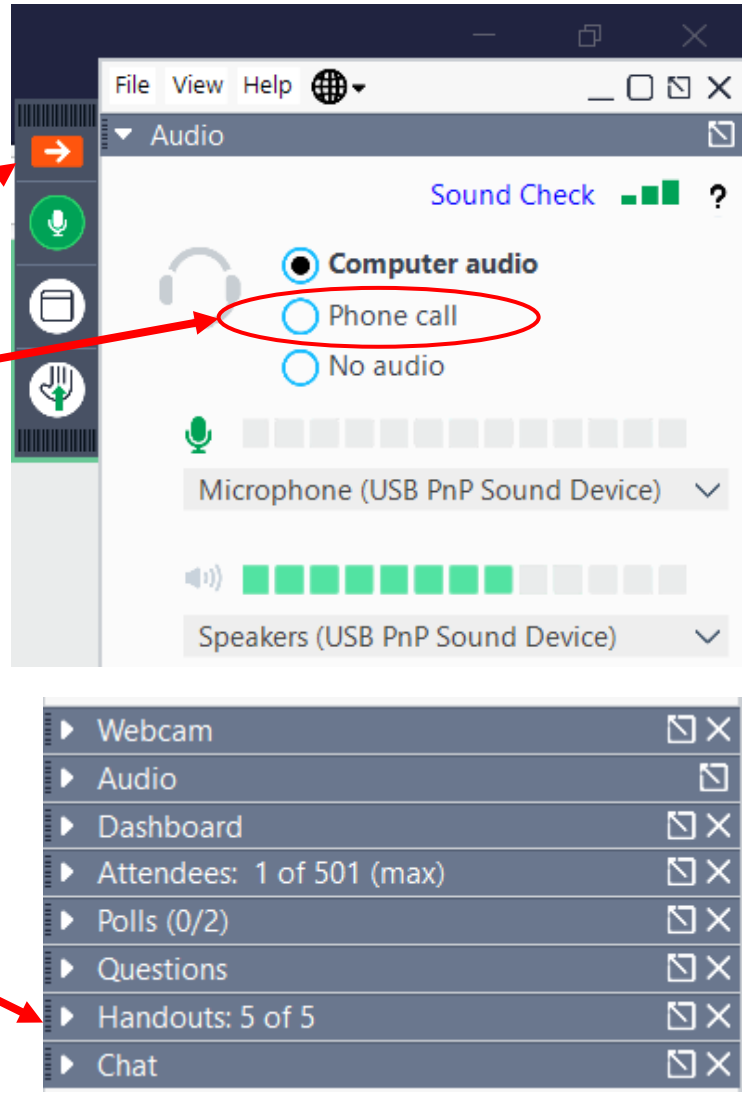
- If you have computer audio issues:
  - Suggest switch to phone (number and webinar code appear once chosen)
- Handouts available for download
  - Slides
  - Life cycle analysis example
  - Environmental Aspects Form
  - Risks and Opportunities Exercise
- Recording will be sent out



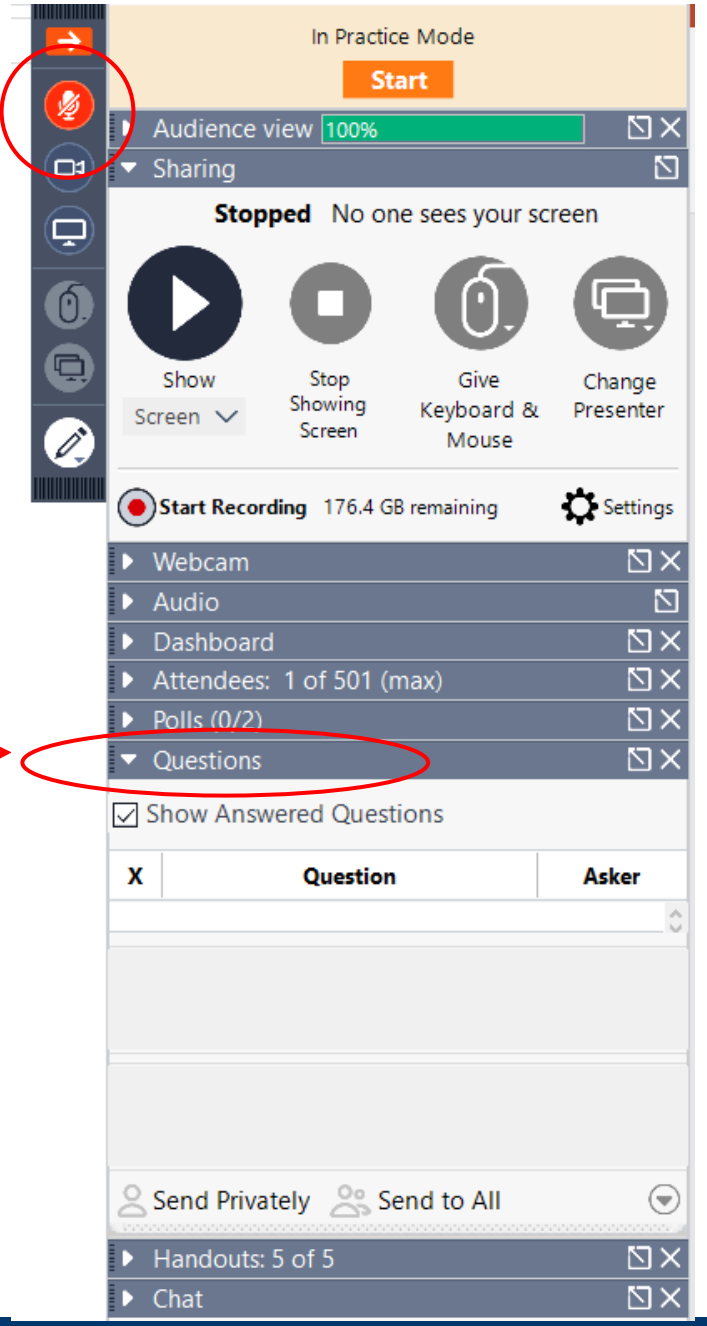
Participation

Mute/Unmute

- Everyone has been brought in muted (red)

How to Ask Questions/Comment:

- Please type in your question or raise your hand
- If you raise your hand, we'll send you an unmute request



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Agenda

- Welcome
- Emergency Preparedness & Response (Clause: 8.2)
- Monitoring & Measurement (Clause: 9.1.1)
- Compliance Evaluation (Clause: 9.1.2)
- Internal Auditing (Clause: 9.2.1 & 9.2.2)
- Management Review (Clause: 9.3)
- Corrective Action & Continual Improvement (Clause: 10.1, 10.2 & 10.3)

Questions

Yesterday's material:

- Resources, Competence, and Awareness (7.1, 7.2 & 7.3)
- Communication (Clause: 7.4.1, 7.4.2 & 7.4.3)
- Documentation and Document Control (Clause: 7.5.1, 7.5.2 & 7.5.3)
- Operational Control, Environmental Requirements & Outsourced Processes (Clause: 8.1)

OPERATIONS, PERFORMANCE EVALUATION AND IMPROVEMENT

Clauses 8.2; 9.1; 9.2; 10.1; 10.2; and 10.3

8.2 Emergency Preparedness & Response

- Organization ***shall*** establish, implement, control and maintain processes needed to prepare for and respond to potential emergency situations identified in 6.1.1.
- Organization ***shall:***
  - Prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations
  - Respond to actual emergency situations
  - Take action to prevent or mitigate consequences of emergency situations
  - Periodically test the planned response actions, where practicable
  - Periodically review and revise processes and planned response actions, in particular after the occurrence of emergency situations or tests
  - Provide relevant information and training related to emergency preparedness and response
- Organization ***shall*** maintain ***documented information*** to the extent necessary to have confidence that the processes are carried out as planned

Take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact

- Before an emergency situation even arises, what can you do to reduce the environmental impact should it happen?
  - New to the 2015 standard
- Example:

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Emergency Preparedness and Response

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Emergency Preparedness and Response

Periodically test the planned response actions, where practicable

Training for Emergency Broadcast System workers.

Periodically review and revise the processes and planned response actions, in particular after the occurrence of emergency situations or tests

- Review could be done during your Management Review
- Review should be done after every test or actual emergency.
  - Did it go as planned?
  - Can the process be improved?

Provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties , including persons working under its control

- Train employees
- Ensure contractors/suppliers can access emergency information (and procedures if needed)
  - Current phone number (s)
  - Map
- Note: this goes beyond employees and contractors to include relevant interested parties.

PERFORMANCE EVALUATION

Section 9.1 Monitoring, measurement, analysis and evaluation

9.1.1, 9.1.2

Section 9.2 Internal Audit

9.2.1, 9.2.2

Section 9.3 Management Review

9.1.1 Monitoring, Measurement, Analysis, & Evaluation - General

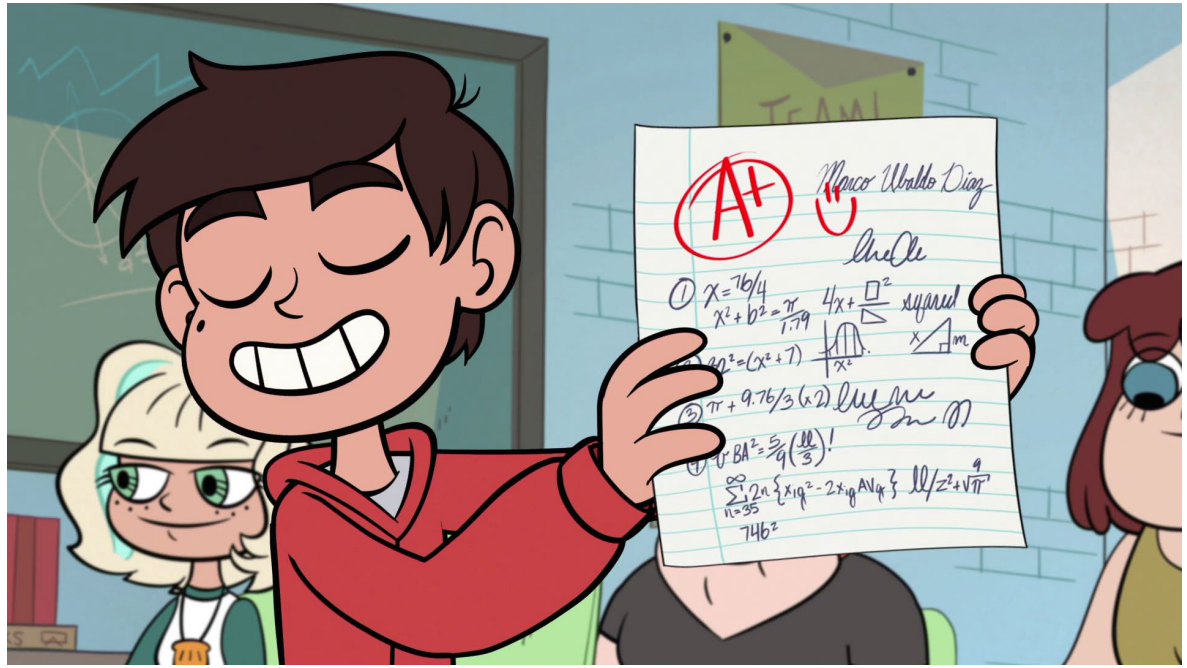
- Organization ***shall*** monitor, measure, analyze and evaluate its environmental performance
- Organization ***shall*** determine:
  - What needs to be monitored and measured
  - Methods for monitoring, measurement, analysis, and evaluation to ensure valid results
  - Criteria against which the organization will evaluate its environmental performance and appropriate indicators
  - When monitoring and measuring ***shall*** be performed
  - When the results from monitoring and measurement ***shall*** be analyzed and evaluated
- Organization ***shall*** ensure that calibrated or verified monitoring and measurement equipment is used and maintained, as appropriate

9.1.1 MMAE – General … continued

- Organization ***shall*** evaluate its environmental performance and the effectiveness of the EMS
- Organization ***shall*** communicate relevant environmental performance information both internally and externally as identified in its communication process and by its compliance obligations
- Organization ***shall*** retain ***documented information*** as evidence of the monitoring, measurement, analysis, & evaluation results

Evaluation

- "The organization shall evaluate its environmental performance and the effectiveness of the environmental management system."
- Could be done:
  - By the EMR or equivalent
  - By the EMS team
  - By middle management
  - During top management review



Communication of MMAE

- "The organization ***shall*** communicate relevant environmental performance information both internally and externally, as identified in its communication processes and as required by its compliance obligations."

How to communicate internally:
EMS boards
Gemba walks
Leadership boards
Training
Emails
Newsletters

Externally:
Regulatory agencies
Websites
Newsletters
News/press release
Billboards
Vehicle magnetic signage

9.1.2 Evaluation of Compliance

- Organization ***shall*** establish, implement, and maintain the process needed to evaluate fulfillment of its compliance obligations
- Organization ***shall*** :
  - Determine the frequency that compliance will be evaluated
  - Evaluate compliance and take action if needed
  - Maintain knowledge and understanding of its compliance status
- Organization ***shall*** retain ***documented information*** as evidence of the compliance evaluation results

9.2.1 Internal Audit - General

- Organization ***shall*** conduct internal audits at planned intervals to provide information on whether the EMS
  - Conforms to:
    - ✓Organization's own requirements for its EMS
    - ✓Requirements of ISO 14001
  - Is effectively implemented and maintained

9.2 EMS Internal Auditing

Must conduct audits at Planned Intervals

What are you auditing for?

- Requirements you have set within your EMS
- EMS conformance to the standard
- Is EMS effectively implemented & maintained?

9.2.2 Internal Audit Program

- Organization ***shall*** establish, implement, and maintain an internal audit program including the frequency, methods, responsibilities, planning requirements, and reporting of its internal audits
- When establishing the IA program, the organization ***shall*** take into consideration the environmental importance of the processes concerned, changes affecting the organization, and results of previous audits.
- Organization ***shall*** :
  - Define audit criteria and scope for each audit
  - Select auditors and conduct audits to ensure objectivity and impartiality of the audit process
  - Ensure that the results of the audits are reported to relevant management
- Organization ***shall*** retain ***documented information*** as evidence of the implementation of the audit program and audit results

9.2 EMS Internal Auditing

Audit plan must include:

- Frequency
- Methods
- Responsibilities
- Planning requirements
- Reporting

When developing the audit plan must consider:

- Environmental importance of the process
- Changes affecting the organization
- Results of previous audits

Element	Plant Wide by Element											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
4.1 Understanding the Organization & Its Context	XX											
4.2 Understanding the needs and expectations of interested parties	XX											
4.3 Determining the scope of the EMS	XX											
4.4 EMS	XX											
5.1 Leadership and commitment	XX											
5.2 Environmental Policy										XX		
5.3 Organizational roles, responsibilities, & authorities	XX											
6.1.1 Actions to address risks and opportunities	XX											
6.1.2 Environmental Aspects			XX					XX				
6.1.3 Compliance obligations					XX							
6.1.4 Planning Action	XX											
6.2.1 Environmental Objectives				XX					XX			
6.2.2 Planning actions to achieve environmental objectives				XX					XX			
7.1 Resources	XX											
7.2 Competence		XX										
7.3 Awareness	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
7.4.1 General Communication					XX						XX	
7.4.2 Internal Communication					XX						XX	
7.4.3 External Communication					XX						XX	
7.5 Documented Information & Control						XX						
8.1 Operational Planning & Control				XX					XX			
8.2 Emergency Preparedness and Response							XX					
9.1.1 Monitoring, measurement, analysis & evaluation				XX								
9.1.2 Evaluation of Compliance		XX										
9.2 Internal Audit								XX				
9.3 Management Review	XX											
10.1 General Improvement	XX											
10.2 Nonconformity & Corrective Action										XX		
10.3 Continual Improvement	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

9.2 EMS Internal Auditing

Organization must:

- Define the audit criteria and scope for each audit
- Select objective and impartial auditors
- Perform audit in an objective and impartial way
- Report results to relevant management

Must document both the process and results to demonstrate evidence of implementation

What is the audit criteria?

For EMS Audits, The requirements can be:

- ISO 14001 Shall Statements
- EMS Procedures
- SOPs / Guidance / Work Instructions
- Schedules (i.e. audit schedules, monitoring schedules, calibration schedules)
- Plans (i.e. Objectives)
- Responsibilities Matrix / Procedures

Look at your EMS Manual, Operational Controls, Monitoring Matrix

Who is an Auditor?

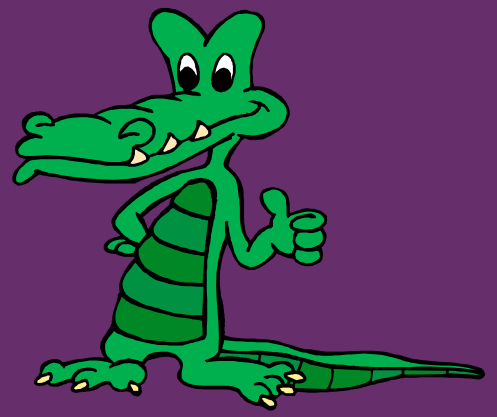
The person with the competence to conduct an Audit.

Competence = 2 things:

1. Person with the personal attributes listed in ISO 19011:2018 - 7.2.2 AND,
2. Person with the ability to apply the skills and knowledge gained through education, training, work experience and audit experience

Traits of a Good Auditor – Personal Behavior

- Ethical
- Open-minded
- Diplomatic
- Observant
- Perceptive
- Versatile
- Tenacious
- Decisive
- Self-reliant
- Acting with fortitude
- Open to improvement
- Culturally sensitive
- Collaborative



Traits of a Good Auditor – Knowledge & Skills

- apply audit principles, procedures, and methods;
- plan and organize the work effectively;
- conduct the audit within the agreed time schedule;
- prioritize and focus on matters of significance;
- collect information through effective interviewing, listening, observing and reviewing documents, records and data;
- understand and consider the experts' opinions;
- understand the appropriateness and consequences of using sampling techniques for auditing;
- verify the relevance and accuracy of collected information;
- confirm the sufficiency and appropriateness of audit evidence to support audit findings and conclusions;
- assess those factors that may affect the reliability of the audit findings and conclusions;
- use work documents to record audit activities;
- document audit findings and prepare appropriate audit reports;
- maintain the confidentiality and security of information, data, documents and records;
- communicate effectively, orally and in writing (either personally, or through the use of interpreters and translators);
- understand the types of risks associated with auditing.

9.3 Management Review

Top Management ***shall*** review the organization's EMS at planned intervals to ensure its continuing suitability, adequacy, and effectiveness (same as 2004)

Management review ***shall*** include consideration of:

- The status of actions from previous management reviews
- Changes in:
  - ✓External and internal issues that are relevant to the EMS*
  - ✓Needs and expectations of interested parties, including compliance obligations*
  - ✓The organization's significant environmental aspects*
  - ✓Risks and opportunities*

* - new in 2015

9.3 Management Review

Management review ***shall*** include consideration of:

- Extent to which environmental objectives have been achieved
- Information on the organization's environmental performance, including trends in:
  - Nonconformities and corrective actions
  - Monitoring and measurement results
  - Fulfillment of its compliance obligations
  - Audit results

9.3 Management Review

Management review ***shall*** include consideration of:

- Adequacy of resources*
- Relevant communications from interested parties, including complaints
- Opportunities for continual improvement

* - new in 2015

9.3 Management Review Outputs

Outputs from management review ***shall*** include:

- Conclusions on the continuing suitability, adequacy, and effectiveness of the EMS*
- Decisions related to continual improvement opportunities
- Decisions related to any need for changes to the EMS, including resources
- Actions, if needed, when environmental objectives have not been achieved

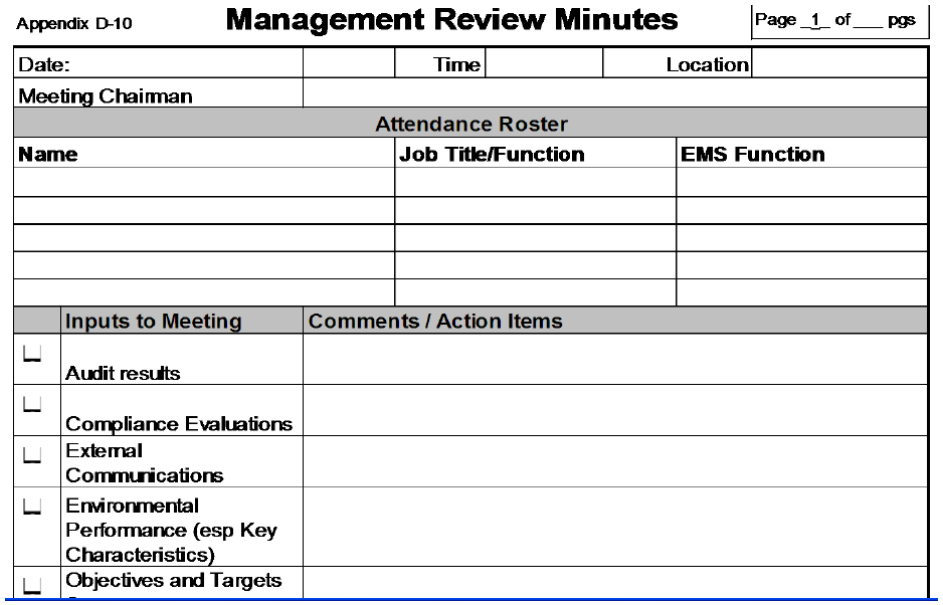
* - new in 2015

9.3 Management Review Outputs

Outputs from management review ***shall*** include:

- Opportunities to improve integration of the EMS with other business processes*
- Any implications for the strategic direction of the organization*

Organization ***shall*** retain documented information as evidence of the results of management reviews



Appendix D-10 **Management Review Minutes** Page _1_ of ___ pgs

Date:		Time		Location	
Meeting Chairman					
Attendance Roster					
Name		Job Title/Function		EMS Function	
	Inputs to Meeting	Comments / Action Items			
☐	Audit results				
☐	Compliance Evaluations				
☐	External Communications				
☐	Environmental Performance (esp Key Characteristics)				
☐	Objectives and Targets				

IMPROVEMENT

Section 10.1 General

Section 10.2 Nonconformity and corrective action

Section 10.3 Continual Improvement

10.1 General
10.2 Nonconformity and Corrective Action

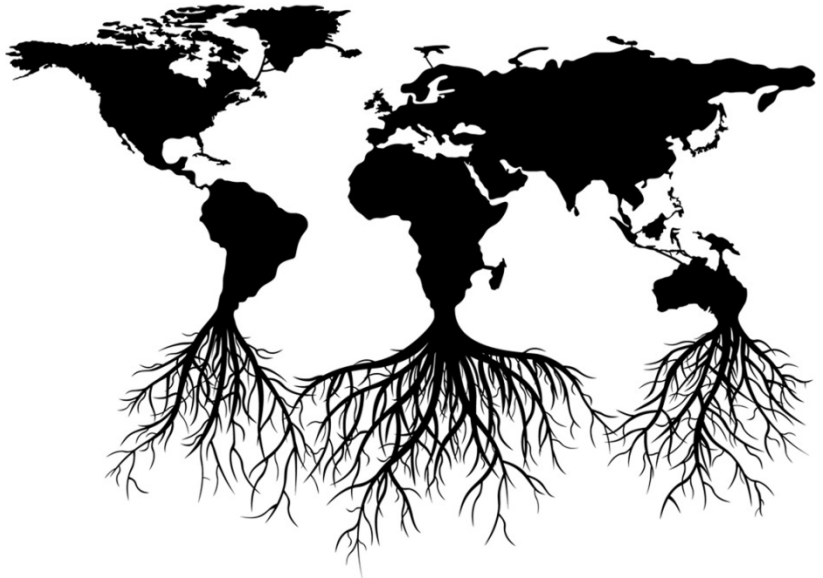
- Organization ***shall*** determine opportunities for improvement (9.1 – 9.3) and implement necessary actions to achieve intended outcomes of its EMS
- When a nonconformity occurs, the organization ***shall***:
  - React to the nonconformity and, as applicable
    - ✓Take action to control and correct it
    - ✓Deal with the consequences, including mitigating adverse environmental impacts
  - Evaluate the need for action to eliminate the causes of the nonconformity by:
    - ✓Reviewing the nonconformity
    - ✓Determining the causes of the nonconformity
    - ✓Determining if similar nonconformities exist, or could potentially occur
  - Implement any action needed
  - Review the effectiveness of any corrective action taken
  - Make changes to the EMS, if necessary

10.2 Nonconformity and Corrective Action (cont'd)

10.3 Continual Improvement

- Corrective actions ***shall*** be appropriate to the significance of the effects of the nonconformities encountered, including the environmental impacts
- Organization ***shall*** retain ***documented information*** as evidence of:
  - Nature of nonconformities and any subsequent actions taken
  - Results of any corrective action
- Organization ***shall*** continually improve the suitability, adequacy, and effectiveness of the EMS to enhance environmental performance

Root Cause



- A root cause is a factor that caused a nonconformance and should be permanently eliminated through process improvement.
- Root cause analysis is a collective term that describes a wide range of approaches, tools, and techniques used to uncover causes of problems.

Per American Society for Quality

Root Cause

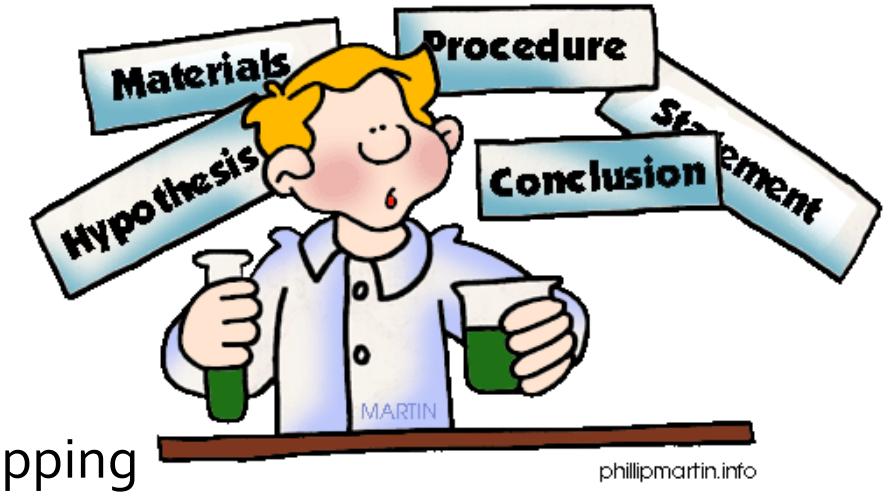
Try to avoid Operator Error as a Root Cause

- Training Needs
- Signage or lack thereof
- Unclear or Nonexistent Work Instructions
- Resources, not enough employees

are more likely root causes…

"To address this mistake we need to utilise our thorough system of root cause analysis. I will begin, if I may, by pointing out that it's not my fault"

Determine Root Cause



A Few Tools…

- Cause and effect analysis
- 5 Whys
- Kepner-Tregoe Problem Analysis
- Failure mode and effects analysis
- Pareto analysis
- Fault tree analysis
- Bayesian Inference
- Ishikawa (fishbone) diagram
- DMAIC
- Cause Mapping
- Barrier analysis
- Change analysis
- Causal factor tree analysis
- Event and Causal Factor Charting
- TapRooT
- ARCA; Apollo Root Cause Analysis
- RPR Problem Diagnosis
- 8D

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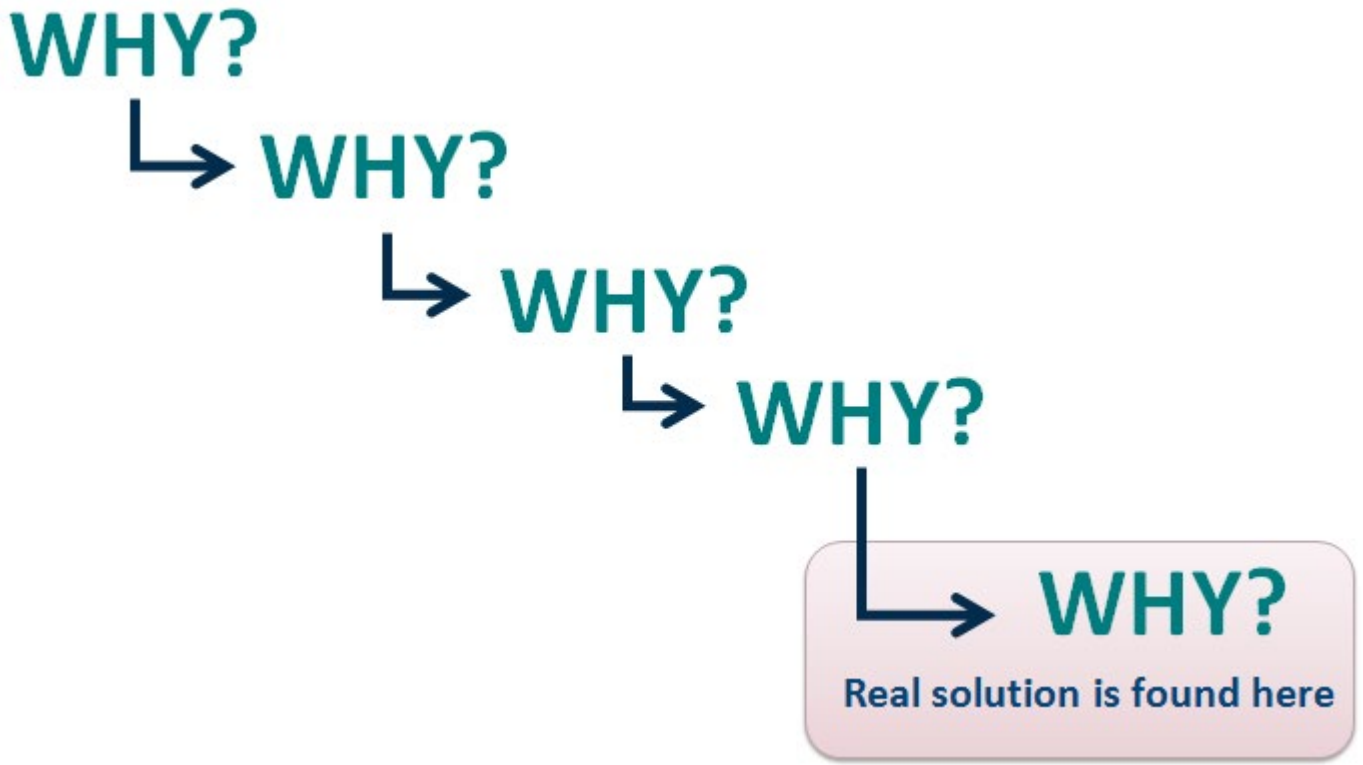
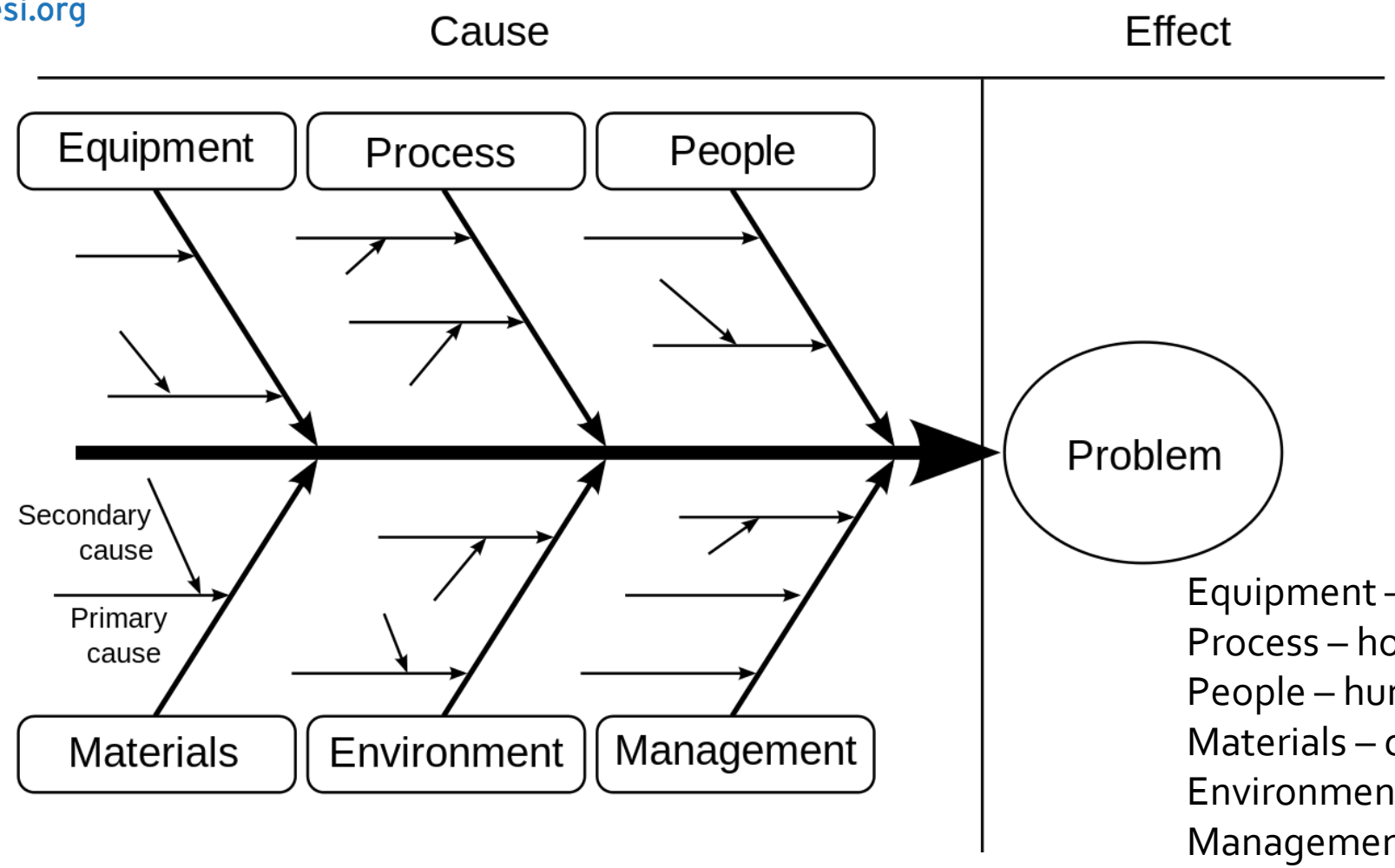
Exercise



Fishbone Diagram



Equipment – machinery, calibration, etc
Process – how work is done?
People – human element
Materials – component or raw materials
Environment – buildings, logistics, space
Management – higher level decisions or rules

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Exercise

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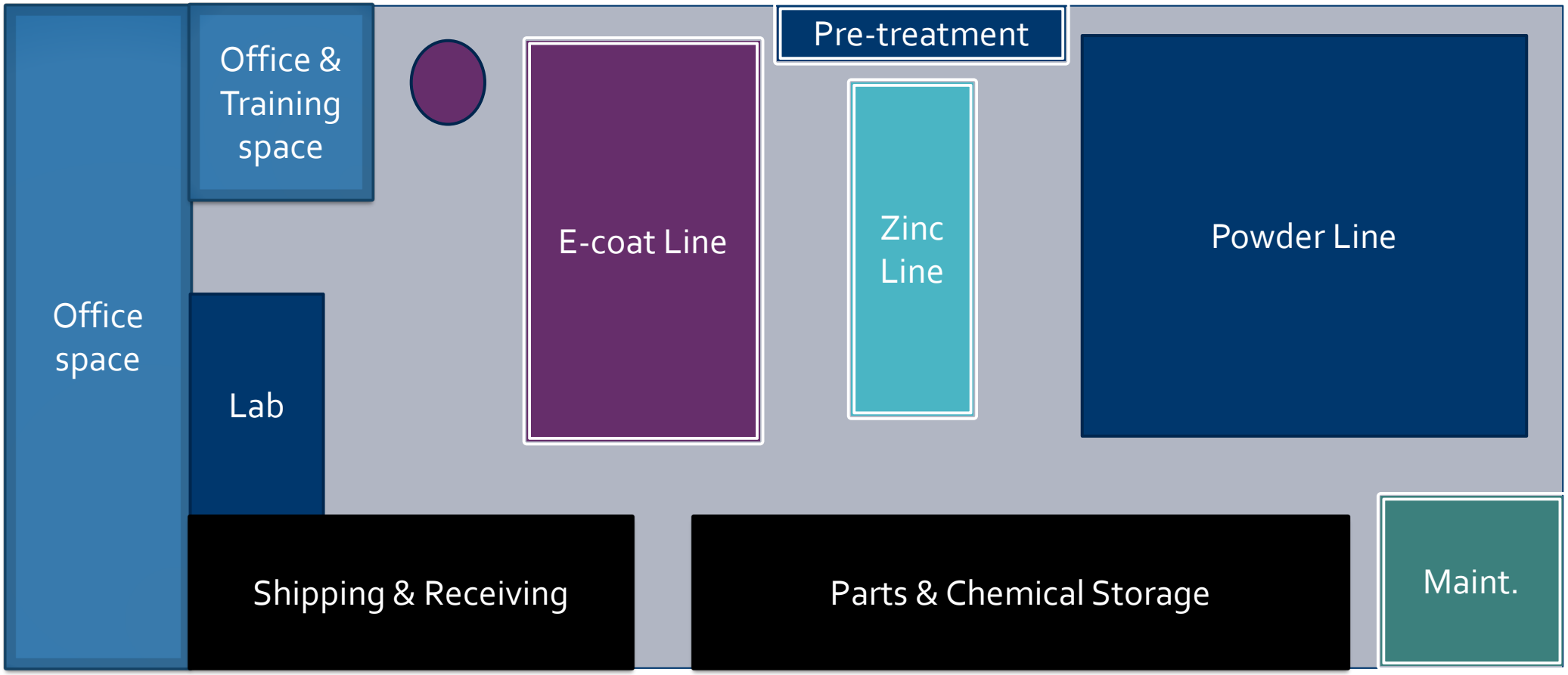
Plant Layout



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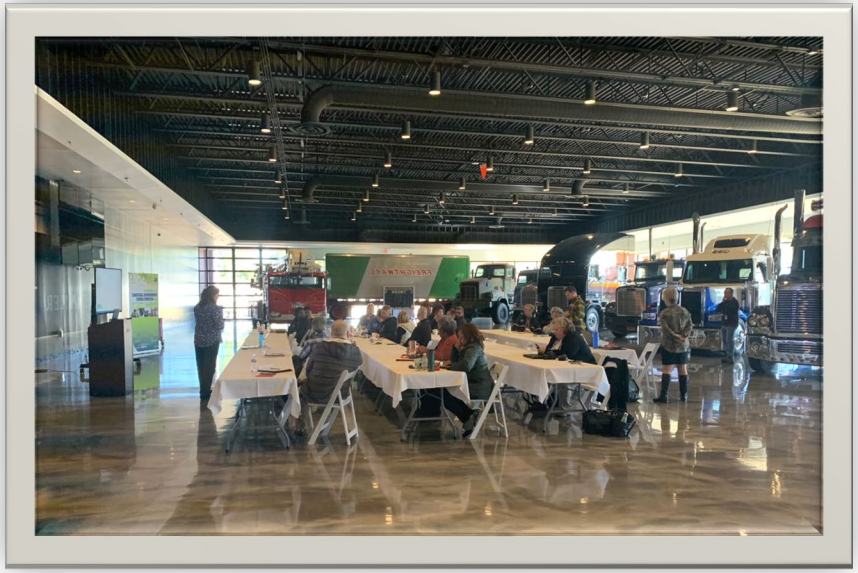
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