

# OVERVIEW OF ISO 14001:2015

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Day 4 – Emergency Preparedness, Performance Evaluation & Improvement





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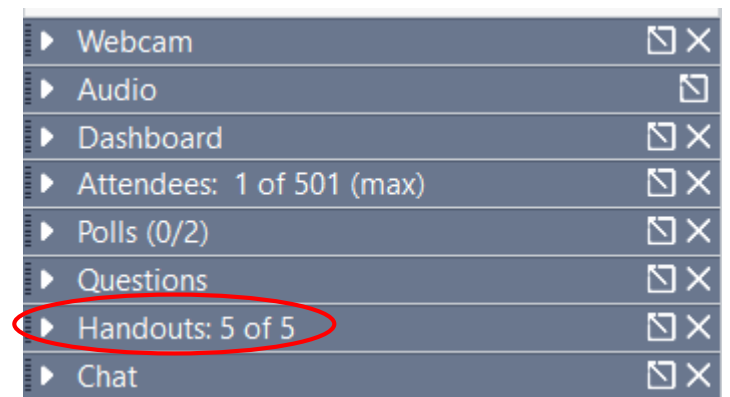
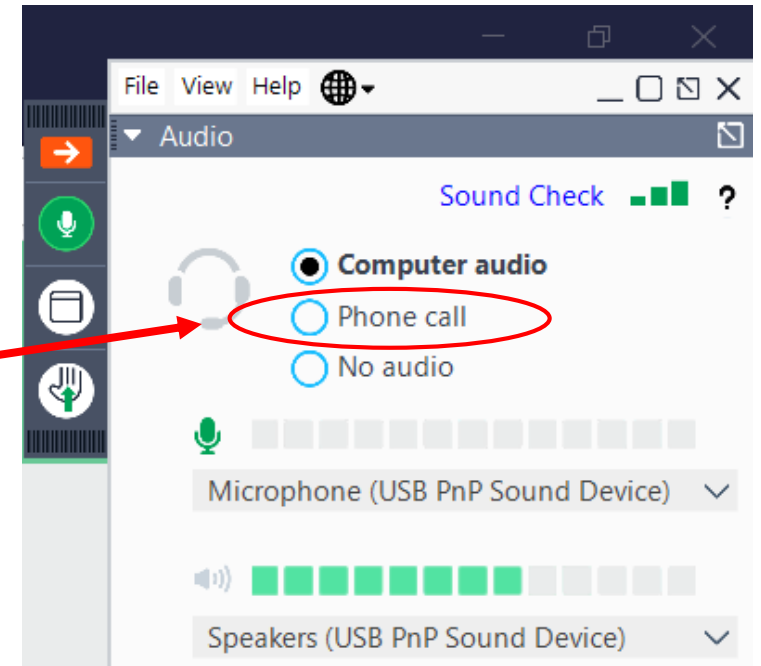




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# Webinar Housekeeping

- Hand Raising Test
- If you have computer audio issues:
  - Suggest switch to phone (number and webinar code appear once chosen)
- Handouts available for download
  - Slides
  - Design Guidance Workbook – EMS development (Excel)
    - ✓ New Project worksheet (Step 4b)
  - Root Cause Exercise
  - Class Certificate
  - Contractor Environment Briefing (EFo8BC – Control of Outsourced Processes)
- Recording will be sent out after this class





# 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

- Last week'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)







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## 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





# 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?



"SORRY, GUYS, BUT I'M BEHIND  
ON MY PARKING TICKET QUOTA."





# 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





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# 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





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# 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



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## 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



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## 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?





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## 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









## 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?

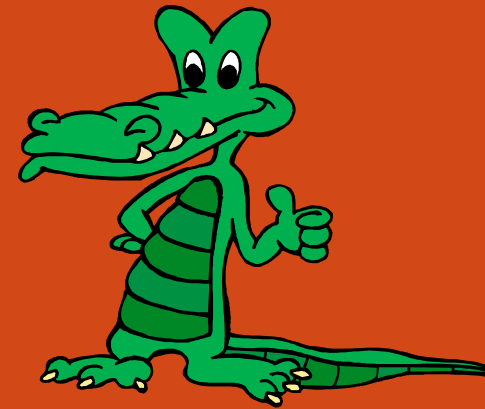
The person with the competence to conduct an Audit.

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.





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## 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



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## 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





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## 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	
<input type="checkbox"/> Audit results		
<input type="checkbox"/> Compliance Evaluations		
<input type="checkbox"/> External Communications		
<input type="checkbox"/> Environmental Performance (esp Key Characteristics)		
<input type="checkbox"/> Objectives and Targets		





# IMPROVEMENT

[Section 10.1 General](#)

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[Section 10.2 Nonconformity and corrective action](#)

[Section 10.3 Continual Improvement](#)



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## 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



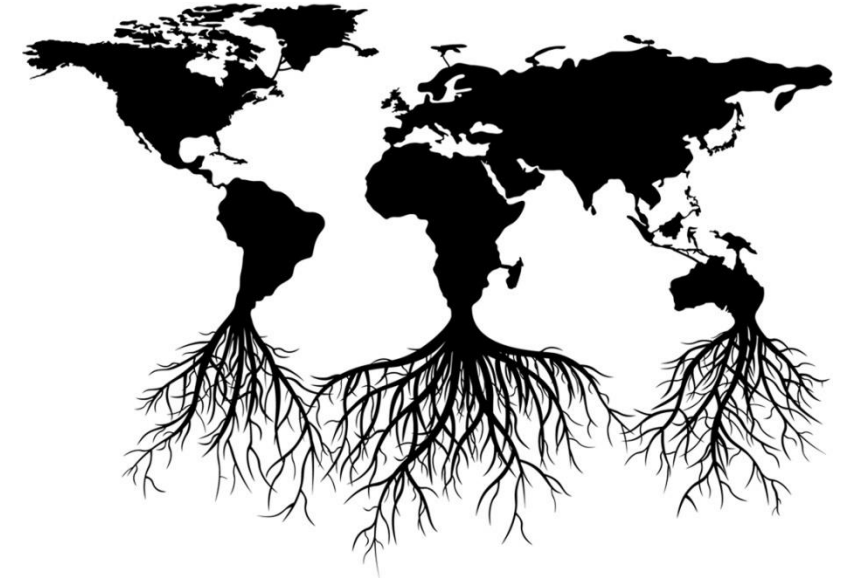
## 10.2 Nonconformity and Corrective Action (cont'd)

## 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.



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# 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...

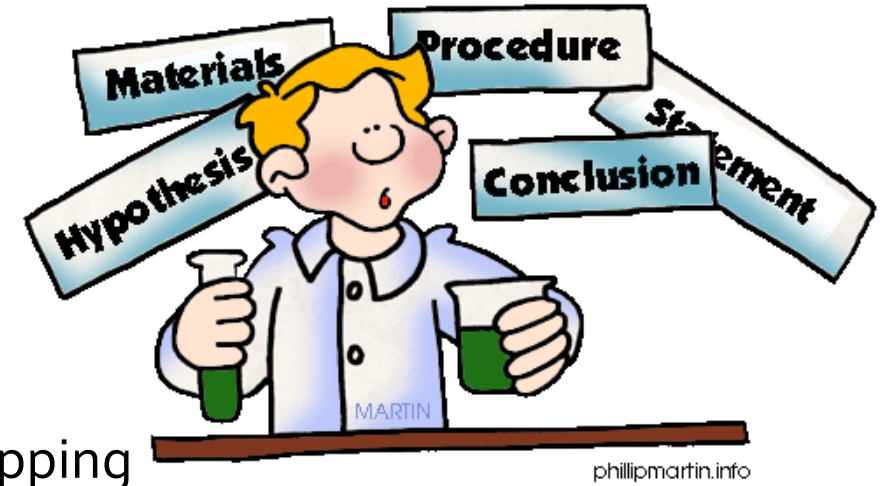


“To address this mistake we need to utilise our thorough system of root cause analysis. I will begin, if I may, by pointing out that it’s not my fault”

# 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

WHY?

↳ WHY?

↳ WHY?

↳ WHY?

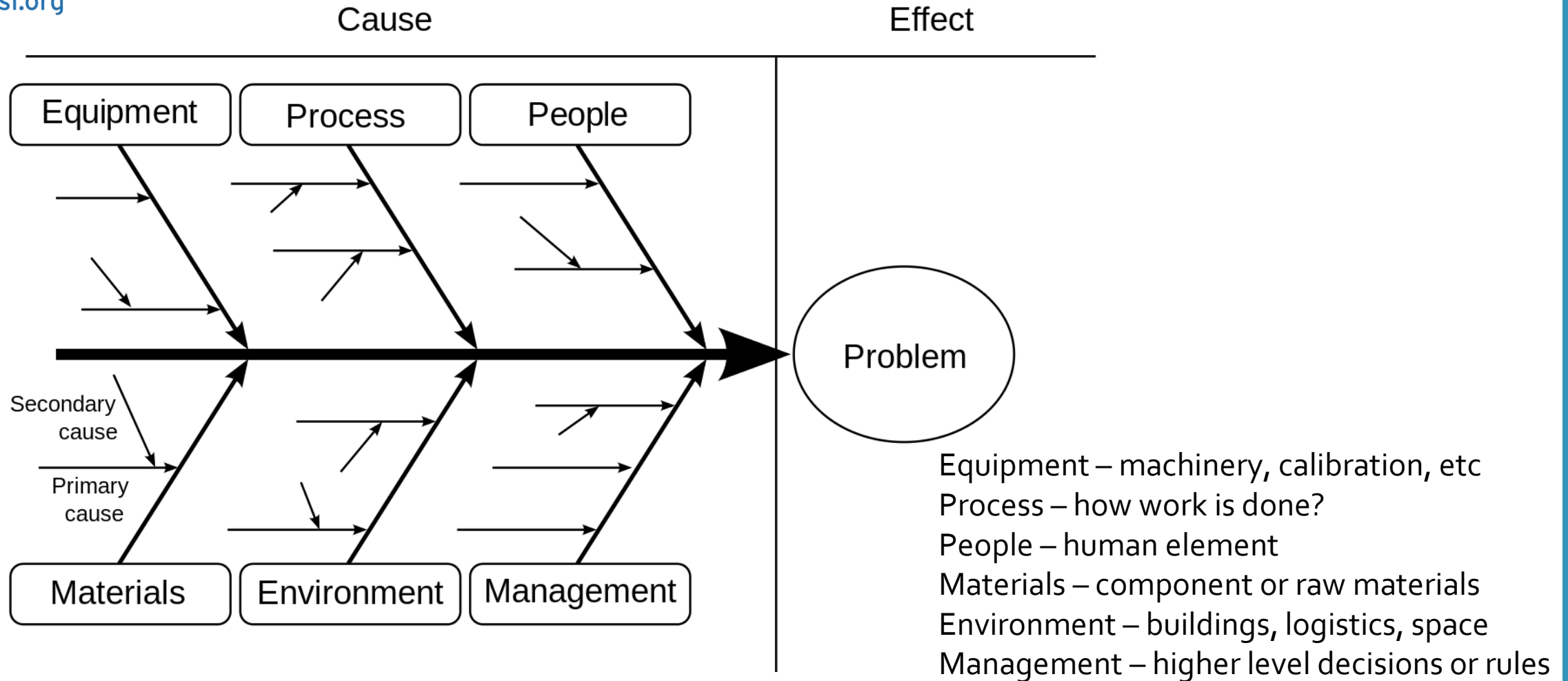
↳ WHY?

Real solution is found here



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# Fishbone Diagram





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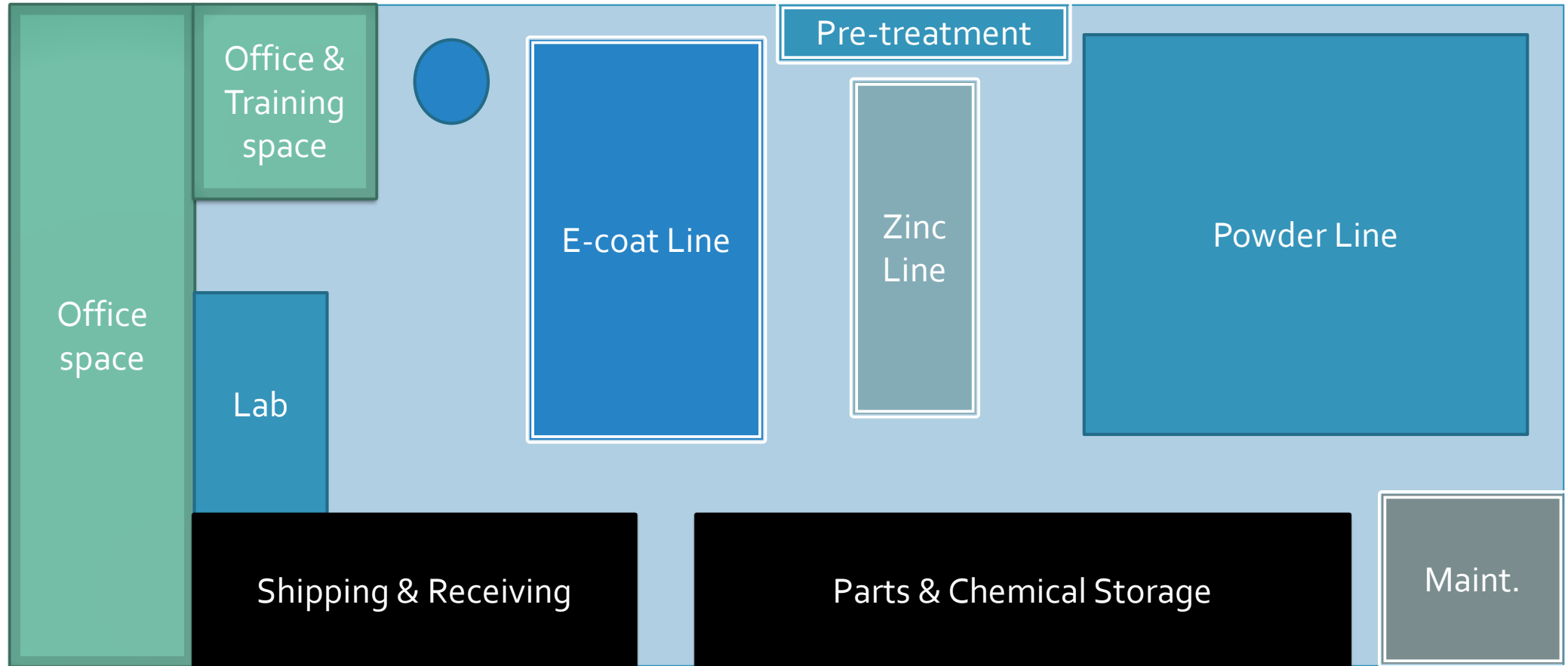
# Exercise





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# Plant Layout







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