IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

ISO 14001 Environmental Management System Training

From Findings to Fixes –

A Guide to High-Quality Auditing and Root Cause Analysis

Iowa Department of Natural Resources

May 7, 2026

Presented By: Jess Nicholson, Environmental Engineer,
Burns & McDonnell

BURNS McDONNELL®

This webinar is being recorded

All slides and recordings of webinars in this series are available at

https://www.iowadnr.gov/environmental-protection/land-quality/pollution-prevention-services/p2-workshops

Welcome and Introductions

- Name
- Where do you work?
  - Title/Department/Facility
- What is your experience with:
  - EMS?
  - ISO 14001?
  - Environmental Compliance?
  - Audits?
- What do you hope to get out of this training?

Previous *EMS in Depth* Webinars

- Identifying Environmental Aspects & Impacts and Defining Significance
- Establishing Environmental Objectives and Actions to Achieve Them
- Auditing Your Environmental Management System
- EMS Corrective Actions & An EMS Professional Q&A Panel

Don't worry if you missed it!
Slides and recordings of webinars in this series are available at

https://www.iowadnr.gov/environmental-protection/land-quality/pollution-prevention-services/p2-workshops

Survey Results

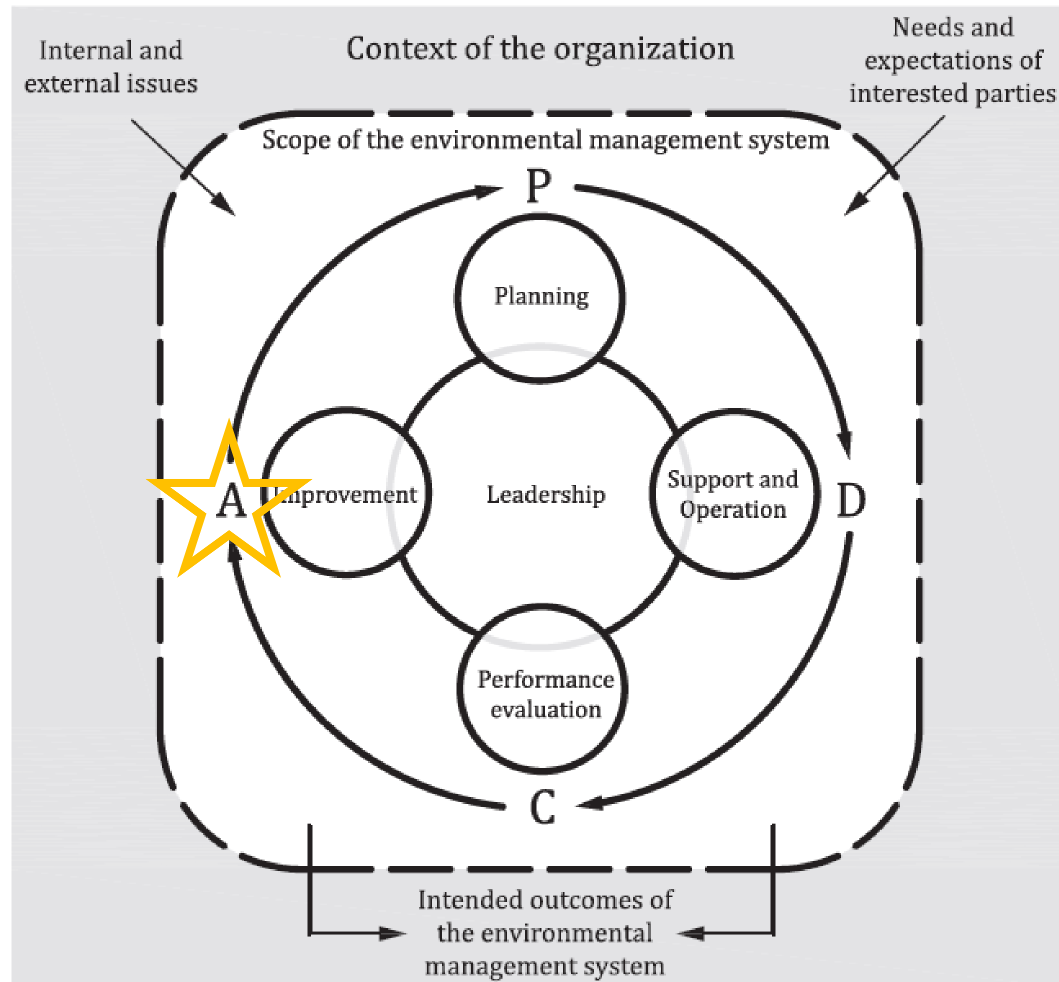
- What you want more of:

Webinar Agenda

- Being a Better Auditor
  - Beyond the Checklist: From “Findings” to “Understanding”
  - Examples of Common Pitfalls
  - Gathering “Root Cause-Ready” Evidence
  - Workshop Exercise
- Mastering Root Cause Analysis
  - Why do findings repeat?
  - The “5 Whys” Common Traps and Avoiding Them
  - Workshop Exercise
  - Developing Corrective Actions that Stick
- Driving Continual Improvement & Summary
- Next Webinar Sneak Peek

Plan – Do – Check - Act

- Improving audit findings and root cause analysis are part of **“Act”**



IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

Being a Better Auditor

BURNS McDONNELL®

Improving Auditing

- EMS Auditing is a:
  - Systematic and documented verification process of objectively evaluating whether an organization's EMS conforms to EMS audit criteria.
- **So, how do we become better auditors?**

High Quality Auditing

- The auditor's document review, interviews, notetaking practices, evidence collection, and judgements will aid in effectively identifying potential nonconformities.
  - Better auditing leads to better findings.
  - Better findings lead to better corrective actions and a more effective EMS.

Beyond the Checklist: Audit Objectives

Remember the reason(s) for conducting the audit:

- Meet customer or facility requirements
- Facilitate effective EMS implementation
- Identify areas for improvement
- Measure EMS effectiveness
- Investigate specific areas of nonconformance

Beyond the Checklist: Investigative Mindset

- The auditor should take on an **investigative** mindset:
  - EMS improvement is top of mind
  - Understanding the bigger picture

→ Reject a "gotcha" mentality, your goal as an auditor is to help make the EMS better

Effective Audit Preparation

- Consider when preparing for an audit:
  - When was this area last audited?
  - Were there any previous findings/nonconformities? Have they been resolved?
  - What is triggering this audit?
  - Have there been any revisions to the EMS or standards since the last audit?

Effective Audit Planning

- Create a written Audit Plan that includes:
  - Audit objectives
  - Audit scope
    - Define the criteria and boundary of the audit
    - If possible, conduct the audit when you can observe the procedure “in action”
  - Identification of lead auditor/audit team
  - Duration and schedule
  - Working documents that are within the audit scope

→ **Review working documents BEFORE the audit**

Common Pitfalls: Planning & Preparation

- Poor Risk Assessment
  - The audit plan should reflect the organization's current priorities, not just be a copy of last year's schedule.
- Inadequate Planning
  - Not setting aside enough time for planning.
- Overly Ambitious Scope
  - Trying to audit too much at once.
- Using Outdated Documents
  - Relying on old checklists and procedures from previous audits.

→ **A lack of proper planning can sabotage the entire audit before it begins**

Effective Audit Interviews

- Ask Questions to …
  - Understand the actual process
  - Find the “Why”
  - Test the stability of the EMS

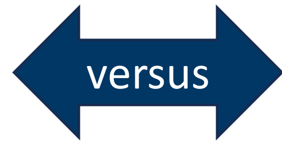
→ **Remember: We are seeking understanding**

Common Pitfalls: Audit Interviews

- Asking close-ended or leading questions
- Using accusatory language
- Not testing the resilience of the EMS

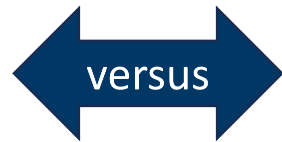
Examples: Close-Ended vs. Open-Ended

- Do you follow the procedure for handling hazardous waste?



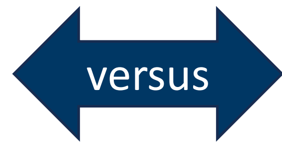
- Can you walk me through the steps you take when this waste container is full?

- Is your equipment calibrated?



- Show me how you would prepare for a task that requires this piece of monitoring equipment.

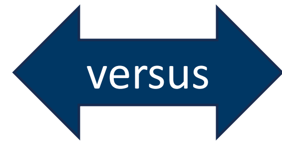
- Are you trained on the spill response plan?



- If a small hydraulic oil leak starts right here, what would you do first? And then what?

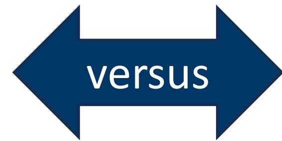
Examples: Accusatory vs. Process Focused

- Why didn't you label this container?



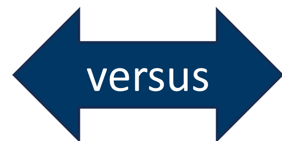
- Tell me about the last time you had trouble finding the right label.

- Why is this inspection log incomplete?



- What is the most common reason a check might get missed during a busy shift?

- Why aren't you following this procedure?



- What are some of the challenges of performing this task exactly as the procedure is written?

Examples: Testing EMS Resilience

Test EMS Linkages

- This log shows you had an issue with a pressure valve last month. Can you show me the maintenance request that was generated from that?

Test EMS Awareness & Communication

- The company recently updated its environmental policy. How did you find out about that change and what it means for your role?

Test EMS Continuity

- What would happen if the specific person who normally manages this waste shipment was on vacation? Who is the backup, and how would they know what to do?

Gathering "Root Cause-Ready" Evidence

- Collect evidence during
  - Observations
  - Interviews
  - Document and record reviews

- Objective evidence is …
  - Evidence that exists
  - Not influenced by emotion
  - Stated or documented
  - Based on observation
  - About the EMS
  - Can be verified

Tips & Techniques: Collecting Evidence

- Look through records to obtain “objective evidence”
  - Take good samples - don’t just look at last 2 or 3 records
  - Gather historical data
  - Ensure records are completed and kept consistently, as required by the EMS
- An auditor should not let the auditee choose what is to be sampled
- Follow where the audit trail leads

→ **Remember, our purpose is to improve the system**

“Root Cause-Ready” Evidence Workshop

Use an investigative mindset to collect “Root Cause-Ready” evidence

Observation vs Evidence

- Many employees have not taken their annual EMS Training.
  - Evidence?
- Designated method for tracking noncompliance and corrective actions are not being used.
  - Evidence?
- Secondary Containment inspections are not being performed.
  - Evidence?

"Root Cause-Ready" Evidence Examples

Use an investigative mindset to collect "Root Cause-Ready" evidence

Observation vs Evidence

- Many employees have not taken their annual EMS Training.
  - Evidence: In the past year, there is no attendance record of EMS Training or proficiency quiz for multiple employees.
- Designated method for tracking noncompliance and corrective actions are not being used.
  - Evidence: The only copy of a "No Further Action" Letter from state agency is stored in manager's email inbox.
- Secondary Containment inspections are not being performed.
  - Evidence: There are no secondary containment inspection forms for the past three months.

Common Pitfalls: Evidence Gathering

- Focusing Only on “Paper”
- Interviewing Only Management
- Auditing in Silos
- Pretending to Understand
- Relying on Verbal Data

Tips & Techniques: Low Hanging Fruit

- Common evidence to look out for:
  - Improper labeling or storage of materials
  - Broken links in digital documents
  - Outdated documents and revision records
  - Lack of an archive

→ What "low hanging fruit" have you encountered in your audits?

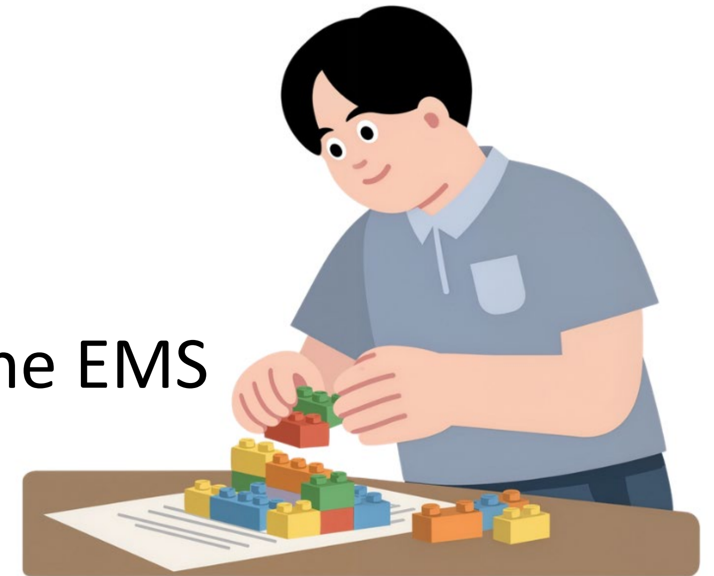
Informed Judgement

- Once the **objective evidence** is identified and reviewed, an **informed judgement** is made to determine whether there is a **nonconformity** or not.

- A **nonconformity** is a requirement that is not being met.
- The difference between what you *say* you do and what you *actually* do.

How to Build Your Finding

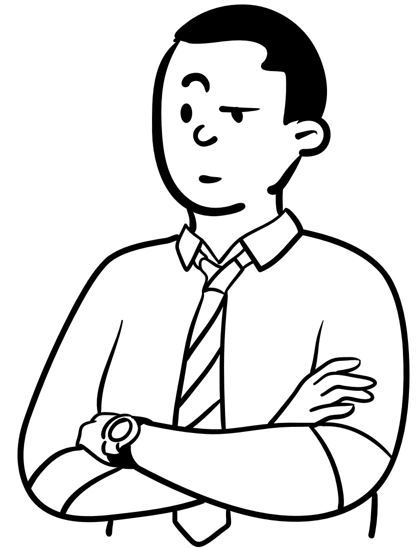
- Provide evidence of the observation
- Compare to the audit scope, and the EMS standard
  - Procedure or approach does not meet the requirements of the Standard
  - Action is not as stated in approach/procedure
  - Action is not effective
- Form a conclusion
  - Describe how the existing process deviates from the EMS



→ Remember: The audit finding is the basis for root cause analysis and making corrective action recommendations.

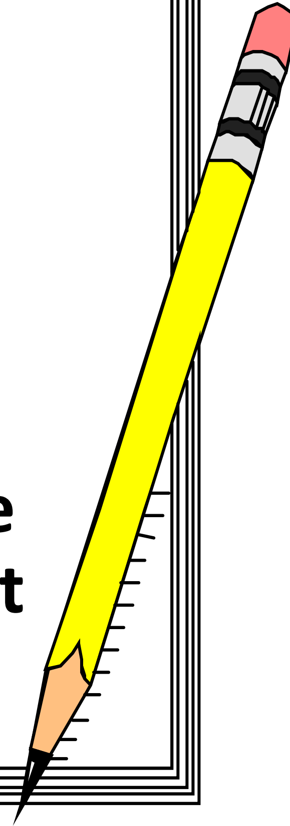
Common Pitfalls: Reporting & Follow-up

- Vague or Poorly Written Findings
  - Describing a nonconformity in a way that is unclear or incomplete.
- Lack of Communication
  - Maintaining poor communication with the auditee throughout the process.
- Ignoring Previous Findings
  - Starting a new audit without first reviewing the results of prior audits.
- No Follow-up
  - Failing to confirm that corrective actions are implemented and that they were effective.



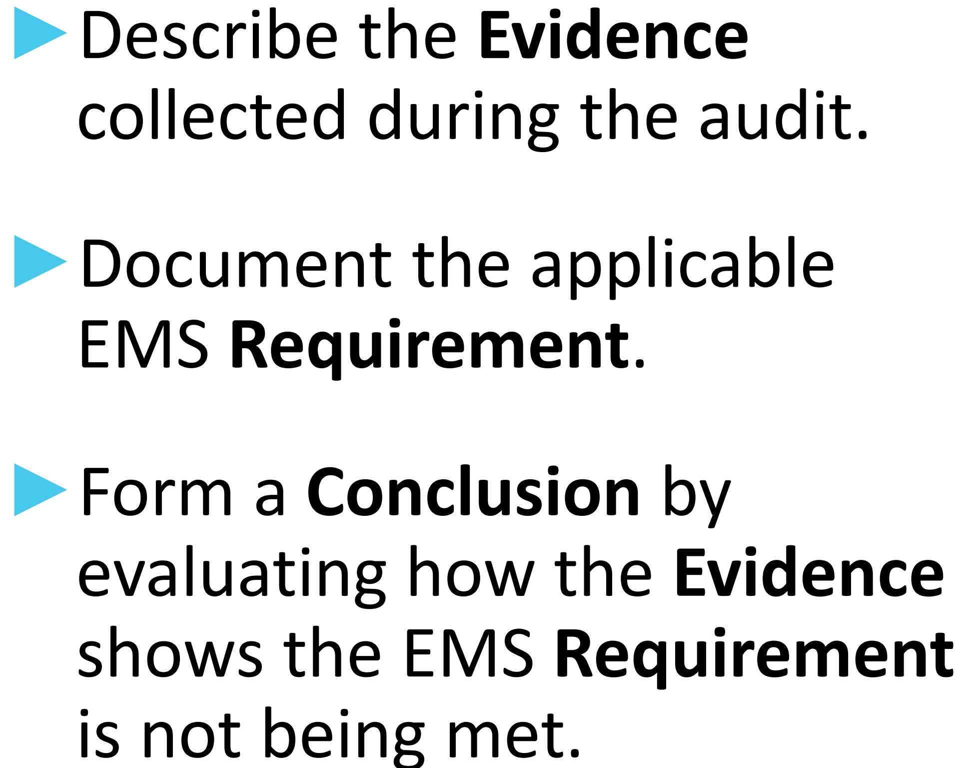
Workshop: Writing Nonconformities

- Describe the **Evidence** collected during the audit.
- Document the applicable EMS **Requirement**.
- Form a **Conclusion** by evaluating how the **Evidence** shows the EMS **Requirement** is not being met.



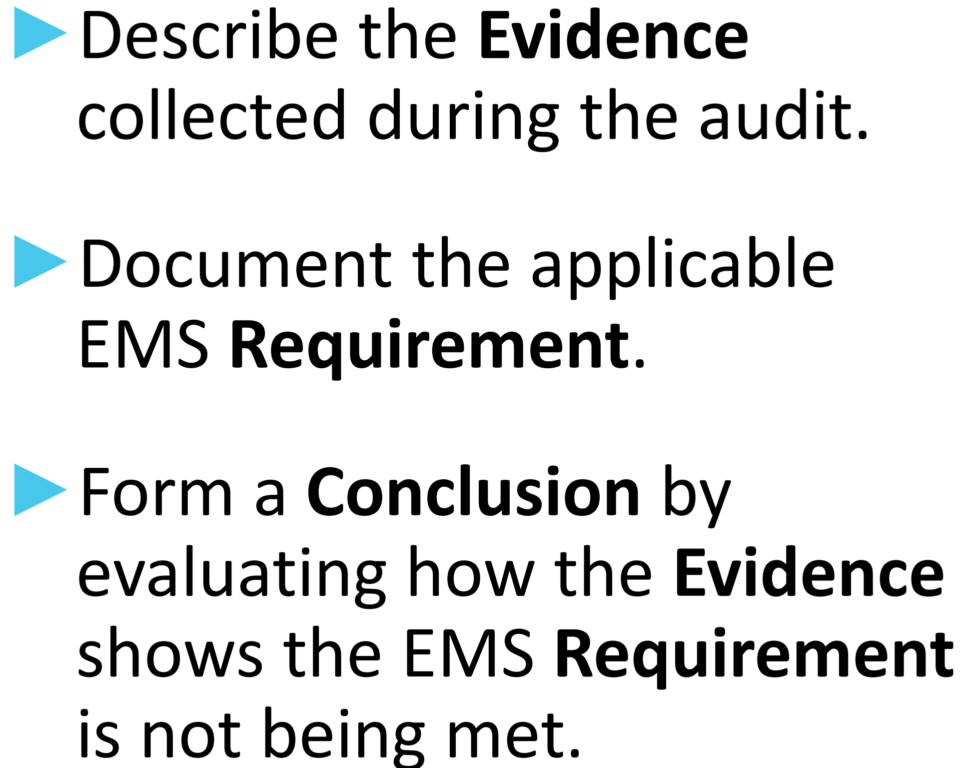
→ Let's practice writing nonconformities using the evidence we collected earlier

Workshop: Writing Nonconformities



- Evidence: In the past year, there is no attendance record of EMS Training or proficiency quiz for multiple employees.
- Requirement: Section 7.2 Competence of ISO 14001:2015
- Conclusion: There is a lack of objective evidence to demonstrate that formal training was completed. Non-conformant with Section 7.2 Competence of ISO 14001:2015.

Workshop: Writing Nonconformities



- Describe the **Evidence** collected during the audit.
- Document the applicable EMS **Requirement**.
- Form a **Conclusion** by evaluating how the **Evidence** shows the EMS **Requirement** is not being met.

- Evidence: The only copy of a "No Further Action" Letter from state agency is stored in manager's email inbox.
- Requirement: Section 7.5 Documented Information of EMS.
- Conclusion: No objective evidence could be provided to demonstrate that the facility is storing environmental compliance documentation in the facility's shared drive, as stated in EMS Section 7.5 Documented Information.

IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

pollution prevention services

Mastering Root Cause Analysis

BURNS McDONNELL®

Why Do Findings Repeat?

- Findings typically repeat when a root cause analysis is not thorough enough.

Why Do Findings Repeat?

- We Stopped Too Soon:
  - Our initial investigation didn't go deep enough. We identified an immediate cause but missed the underlying systemic issue.

Why Do Findings Repeat?

- We Focused on the *Who*, Not the *Why*:
  - Blaming an individual ("operator error") is the easiest and least effective path.
  - It ignores the system that allowed the error to happen.

Why Do Findings Repeat?

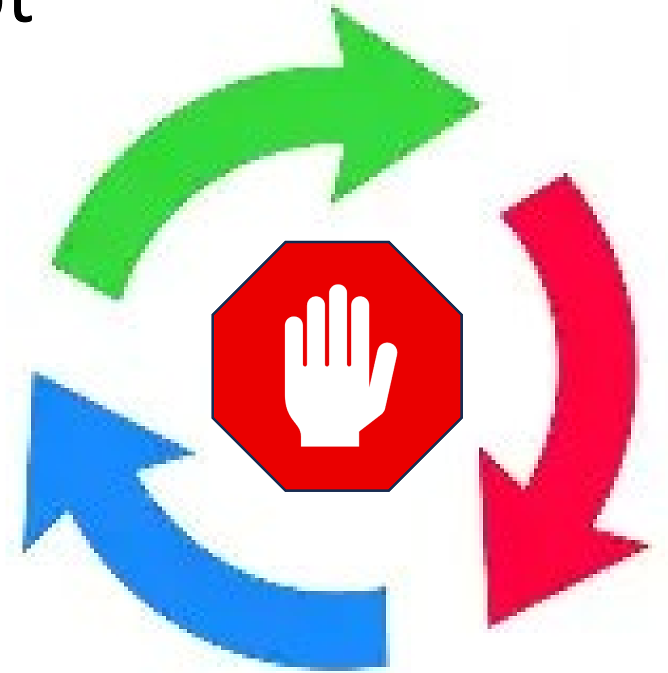
- The Corrective Action Was Just a Patch:
  - Actions like "retrain employee" or "remind team to follow the procedure" are rarely permanent solutions. They address the immediate event but don't change the conditions that led to it.

→ *A recurring finding is evidence that we fixed a symptom, not the cause.*

Stop Repeated Findings

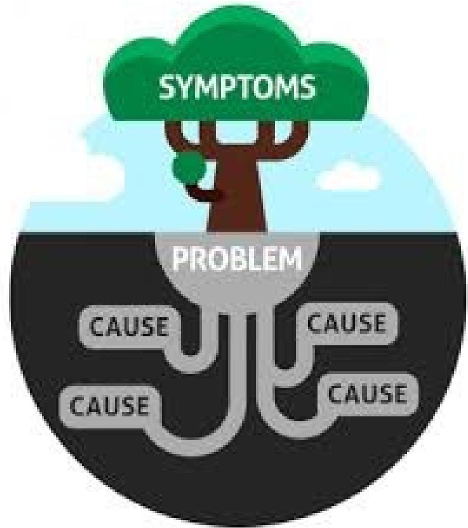
- Common auditing traps can lead to recurrence, and the root cause of a nonconformity was not properly addressed.

- **Instead of continually accepting recurrence, dig for an underlying systemic cause**



The "5 Whys" Root Cause Analysis

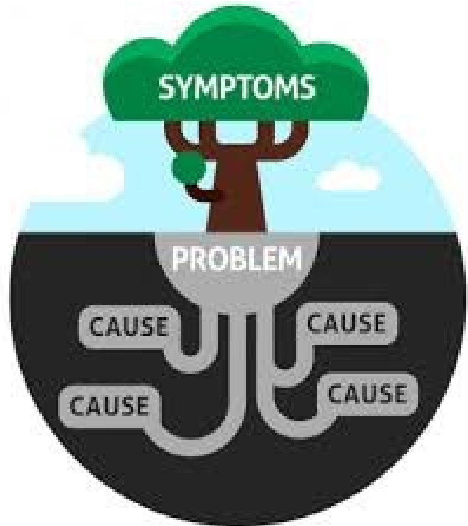
Digging for an underlying systemic cause



- What in the system failed which caused this problem?
- Should NOT be a restatement of the finding.
- "5 Why" method practice: solvent contaminated rags observed in a general solid waste dumpster
  - Why (1): New employee on the second shift threw them there.
  - Why (2): Employee was not aware of the specific procedure for segregating hazardous solvent rags from general waste.
  - Why (3): Employee had not yet received the mandatory hazardous waste management and disposal training.

The “5 Whys” Root Cause Analysis

Continue asking why,



- Why (4) hadn't the employee received the training before starting work?
  - Because there is a gap in the onboarding process. The new employee was put to work immediately after a basic safety briefing, with the environmental training scheduled for the following week.
- Why (5) is there a process gap that allows an untrained employee to handle hazardous materials?
  - Because the management system does not have a strict control point that prevents a new employee from starting work until all legally and environmentally required training is verified as complete.

→ The responsibility is not clearly defined, revealing a systemic failure in the training and competence assurance process.

How to Avoid Common “5 Whys” Traps

- Trap: Stopping Too Soon
  - Accepting simple answers to questions and failing to dig deeper can lead to shallow understanding of a root cause

- How to Avoid
  - Commit to asking "Why?" at least five times, even if an answer seems obvious.
  - Push past the easy answers. If you land on a person's action (e.g., "The operator didn't follow the procedure"), your next "Why?" must be about the process: "Why was the procedure not followed?" or "Why is the process designed in a way that allows it to be missed?"

→ *Utilize your “Investigative Mindset” to recognize superficial answers vs. a true process or system-level cause*

How to Avoid Common "5 Whys" Traps

- Trap: Investigator Bias & Jumping to Conclusions
  - Our own knowledge can prevent us from finding causes.

- How to Avoid
  - Go to the actual place where the work is done. Talk to the people who do the job every day.
  - Their perspective is crucial and often reveals factors the investigator would never have considered.

→ *Utilize your "Investigative Mindset" to eliminate cognitive biases from evidence collection*

How to Avoid Common “5 Whys” Traps

- Trap: Asking “Who” instead of “Why”
  - The framing of the “why” question can lead to blame instead of insight.

- How to Avoid
  - Frame every question around the process, not the person.
  - This shifts the focus from human error to systemic flaws, like lack of a final verification step, poor equipment design, or unclear instructions.

→ *Utilize your “Investigative Mindset” to rephrase questions to maintain focus on the process, not the person.*

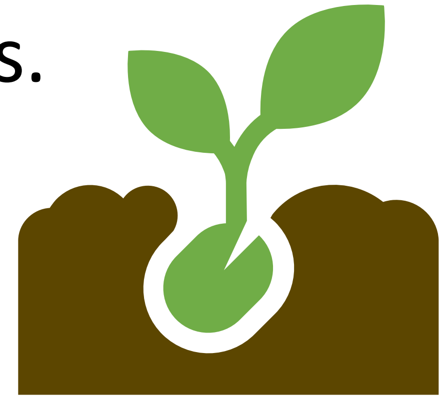
How to Avoid Common “5 Whys” Traps

- Trap: Following a single “Why”
  - Complex problems rarely have a single root cause.
- How to Avoid
  - If an answer to a "Why?" suggests multiple possibilities, explore them all.
  - Acknowledge that most significant problems result from multiple factors interacting.

→ *Utilize your “Investigative Mindset” to keep searching*

Workshop - Root Cause: Example #1

- **Finding:** In several inspection checklists reviewed, checklist items were marked “yes” (meaning there was a problem found) but have no additional information in the “comment” section. Therefore, no evidence of follow-up on these items.



- **Root Cause:** Personnel checked “yes” in error.
- **Corrective Action:** Supervisor will proofread before submission.

- *Have we identified the root cause?*

Workshop - Root Cause: Example #2

- **Observation:** Environmental incident report, communication with regulators, and No Further Action letter are stored in the Environmental Manager's email inbox.
- **Finding:** No objective evidence could be provided to demonstrate that the facility is storing environmental compliance documentation in the facility's shared drive, as stated in EMS Section 7.5 Documented Information.

- **Root Cause:** Manager forgot to download copies of the documents to the facility's shared drive.
- **Corrective Action:** Move the documents.
- *Have we identified the root cause?*

Root Cause to Corrective Action

- Corrective actions should:
  - Be permanent changes
  - Be specific, measurable, achievable, relevant, and time-bound (SMART)
  - Be documented and tracked
  - Have an owner, a deadline, a way to verify completion

Workshop - Training Finding

Finding: "There is a lack of objective evidence to demonstrate that formal training was completed. Non-conformant with Section 7.2 Competence of ISO 14001:2015."

Possible Answers to "Why?" For Root Cause Analysis
Training was not completed.
Lack of Communication around roles and responsibilities.
Complete list of personnel to be trained was not identified.
Training records were not retained.
Lack of central recordkeeping location.
Training needs was incomplete; activity was not listed on Operatory Training Analysis.
SOP or Process Control does not exist.
Activity has not been integrated into existing training process at the facility.

- **What Immediate Fix(s) can be made?**

- **What Corrective Actions can be performed to address the Root Cause?**

Workshop - Training Finding

Finding: "There is a lack of objective evidence to demonstrate that formal training was completed. Non-conformant with Section 7.2 Competence of ISO 14001:2015."

Possible Answers to "Why?" For Root Cause Analysis
Training was not completed.
Lack of Communication around roles and responsibilities.
Complete list of personnel to be trained was not identified.
Training records were not retained.
Lack of central recordkeeping location.
There is no mechanism or to track and schedule make-up sessions for those who were absent.
Existing employee transitioned to a new role that required additional training, but there is no process to check their training records.
Activity has not been integrated into existing training process at the facility.

- **Immediate Fix Examples:**
  - Complete training with employee who was lacking training.
  - Obtain training record and put in appropriate filing location.
  - Add training need to training matrix.
- **Corrective Action Examples:**
  - Review training matrix to ensure all appropriate employees who are to receive the training are identified with appropriate frequency and content.
  - Verify recordkeeping processes/responsibilities for training records have been identified, assigned, and communicated.
  - Review training matrix to assess if all relevant training needs have been identified and are being tracked.

Workshop - Document Control Finding

Finding: "There is an outdated document in the facility that does not have appropriate documentation control features (title, date, revision, etc.). This is non-conformant with Section 7.5 Documented Information of ISO 14001:2015."

Possible Answers to "Why?" For Root Cause Analysis
Document has always been there.
Nobody owns the document.
Document has not been incorporated into facility document control process.
Document provides no value to the organization and is ignored.
We needed a formal procedure, but one did not exist, so one was haphazardly created.
Inadequate removal of obsolete document.
Inadequate process to review and update posted procedures.
Document owner does not understand the document control process at the facility.

- **What Immediate Fix(s) can be made?**
- **What Corrective Actions can be performed to address the Root Cause?**

Workshop - Document Control Finding

Finding: "There is an outdated document in the facility that does not have appropriate documentation control features (title, date, revision, etc.). This is non-conformant with Section 7.5 Documented Information of ISO 14001:2015."

Possible Answers to "Why?" For Root Cause Analysis
Document has always been there.
Nobody owns the document.
Document has not been incorporated into facility document control process.
Document provides no value to the organization (Why are we doing it?).
We needed a formal procedure, but one did not exist, so one was haphazardly created.
Inadequate removal of obsolete document.
Inadequate process to review and update procedures on the shop floor.
Document owner does not understand document control process is required at facility.

- **Immediate Fix Examples:**
  - Update or remove document.
  - Formalize document to meet document control requirements.
  - Assign document owner.
- **Corrective Actions Examples:**
  - Determine if larger document control gaps exist at facility. Develop plan of action to focus on specific areas requiring action.
  - Review other areas to determine if other rogue documents exist that should be removed, updated, or formalized.
  - Provide training/awareness on document control process and its importance.

Workshop - NC/CA Process Finding

Finding: "Corrective action identified on corrective action form has not been completed and is past due. Non-conformant with 10.2 Nonconformity and Corrective Action."

Possible Answers to "Why?" For Root Cause Analysis
The target completion date was arbitrarily chosen without consulting the assigned person about realistic implementation timelines.
The person originally assigned the corrective action left the company.
The assigned individual knew what to do but lacked the financial approval, equipment, or manpower required to implement the fix.
The person assigned the corrective action was not notified of their responsibility.
Problem has multiple issues that need to be resolved separately.
The person assigned the task did not have the authority to make it happen.
There is not an automated tracking or reminder process to warn the person assigned the task that the deadline is approaching.
Incomplete corrective actions are not being actively reviewed on a regular basis, meaning there are no consequences for missing the deadline.

- **What Immediate Fix(s) can be made?**
- **What Corrective Actions can be performed to address the Root Cause?**

Workshop - NC/CA Process Finding

Finding: "Corrective action identified on corrective action form has not been completed and is past due. Non-conformant with 10.2 Nonconformity and Corrective Action."

Possible Answers to "Why?" For Root Cause Analysis
The target completion date was arbitrarily chosen without consulting the assigned person about realistic implementation timelines.
The person originally assigned the corrective action left the company.
The assigned individual knew what to do but lacked the financial approval, equipment, or manpower required to implement the fix.
The person assigned the corrective action was not notified of their responsibility.
Problem has multiple issues that need to be resolved separately.
The person assigned the task did not have the authority to make it happen.
There is not an automated tracking or reminder process to warn the person assigned the task that the deadline is approaching.
Incomplete corrective actions are not being actively reviewed on a regular basis, meaning there are no consequences for missing the deadline.

- **Immediate Fix Examples:**
  - Revise the target completion date.
  - Re-assign the task to a current employee.
  - Discuss the status of the task with the assigned person. If the task is relatively quick, have them complete the task.
- **Corrective Actions Examples:**
  - Add/create automated alert system. Establish notification rules that escalate the alerts the longer the is incomplete.
  - Integrate status of open corrective actions into the agenda of key meetings.
  - Update the corrective action procedure so that a task cannot be assigned without the approval of the appropriate department.

Developing Corrective Actions that Stick

- Does my proposed corrective action directly fix the *deepest* root cause I identified?
- Is this action a permanent change to a process or system, or is it a temporary patch that relies on a person "remembering" to do something?
- Is my proposed action specific, measurable, achievable, relevant, and time-bound (SMART)?
- Who is the owner of this action, what is the deadline, and how will we verify that it was effective in preventing recurrence?

Reviewing Corrective Actions

- Evaluate the documented root cause to ensure that it was properly identified and addressed, not just a quick fix.
- Ensure that the Corrective Action was completed as stated and scheduled.
- Was the Corrective Action effective? Any evidence of recurrence?
- Review evidence of implementation.
- If Corrective Action is not effective or incomplete, perform a new root cause analysis.

IOWA | DNR

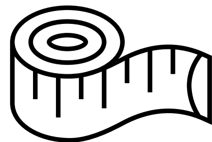
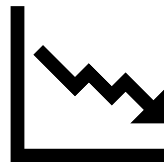
IOWA DEPARTMENT OF NATURAL RESOURCES

Driving Continual Improvement Summary

BURNS McDONNELL®

Summary: Being a Better Auditor

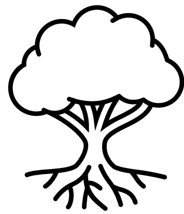
- Ask yourself:
  - Am I utilizing an Investigator’s Mindset?
  - Am I considering the audit scope and objectives in my audit plan?
  - Have I reviewed the findings from previous audits?
  - Is my finding statement clear, concise, and based entirely on objective evidence?

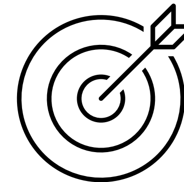



→ **Remember, better auditing leads to better findings.**

Summary: Mastering Root Cause Analysis

- Ask yourself:
  - Have we seen this finding before?
  - Have I committed to asking "Why?" at least five times, even if the answer seems obvious?
  - How complex is the finding? Could there be more than one cause?
  - Does my proposed corrective action address the deepest root cause identified?
  - Will my corrective actions improve facility practices and the EMS?

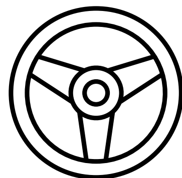
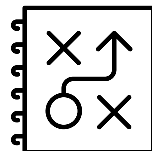
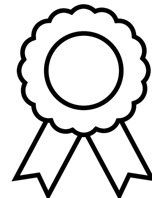




→ Remember, correcting the root cause prevents repeat findings.

Driving Continual Improvement

- Reminder: Having an EMS requires Continually Improving
  - When you perform a high quality audit, you promote understanding with the auditees and prepare all included for "root cause-ready findings"
  - When findings are root-cause ready, determining the true root cause will lead to higher quality corrective actions, preventing reoccurrence, and demonstrating continual improvement.
  - When continual improvement occurs, your EMS will be truly effective.

IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

Next Webinar Sneak Peek

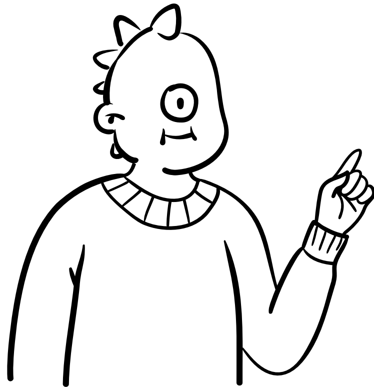
BURNS McDONNELL

ISO 14001:2026 Sneak Peek

- Our next webinar will be on the new ISO 14001:2026 standard
- We will discuss
  - What is changing in the standard
  - When changes should be made
  - Guidance for updating your EMS to a new standard
- Tell us what questions you have …
  in the chat now or in the post-webinar survey!

For Next Time…

Please fill out this survey that will also be sent shortly after this meeting. Let us know how we did, and what you want to hear next time. We really do care!



IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

Questions??

Christine Mayo
crmayo@burnsmcd.com

Jess Nicholson
jbnicholson@burnsmcd.com

BURNS McDONNELL®

IOWA | DNR
IOWA DEPARTMENT OF NATURAL RESOURCES

IOWA™ | Department of Natural Resources