



AMERICAN SOCIETY OF
SAFETY PROFESSIONALS

Southern Oregon Chapter

Effective Incident Analysis

David Hanson, CSP

Sr. Safety Management Consultant



1

Objectives today:

- Review WHY we analyze incidents/accidents
- Safety Committee Responsibilities
- Practical Approach to Incident and Accident Analysis
- Learn to find SYSTEM causes to incidents
- Identify root causes to accidents and injuries
- How to use the Incident Analysis process to achieve best results

2

WHY conduct an Incident Analysis?

- Prevent employees from suffering injuries
- Dig down to ROOT and SYSTEM CAUSES of incidents
- Determine corrective actions
- Evaluate and implement BEST PRACTICES
- Discover trends
- Required by OR-OSHA

3

Oregon OSHA rules for all workplaces:

- OAR 437-001-0760 (3): Each employer must investigate or cause to be investigated every **lost time injury** that workers suffer in connection with their employment, to determine the means that should be taken to prevent recurrence. The employer must promptly install any safeguard or take any corrective measure indicated or found advisable.

4

OR-OSHA Requirements – the role of the safety committee

- 437-001-0765(8) The **safety committee** must work with management to establish, amend, or adopt accident investigation procedures that will identify and correct hazards...
- Evaluate all accident and incident investigations and make recommendations for ways to prevent similar events from occurring.

5

What do we Analyze?

- Personal Injury



6

What do we Analyze?

- Personal Injury
- Property Damage



7

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses



8

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses



9

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses
- Unsafe Behavior



10

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses
- Unsafe Behavior
- Unsafe Work Practices



11

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses
- Unsafe Behavior
- Unsafe Work Practices
- Unsafe Conditions



12

What do we Analyze?

- Personal Injury
- Property Damage
- Near Misses
- Unsafe Behavior
- Unsafe Work Practices
- Unsafe Conditions



13

Same Hazard, Different outcome

Example: An employee trips in a pothole in the parking lot – Possible outcomes:

#1: He catches himself and avoids injury

14

Same Hazard, Different outcome

Example: An employee trips in a pothole in the parking lot – Possible outcomes:

#2: He stumbles and ends up with a sore ankle

15

Same Hazard, Different outcome

Example: An employee trips in a pothole in the parking lot – Possible outcomes:

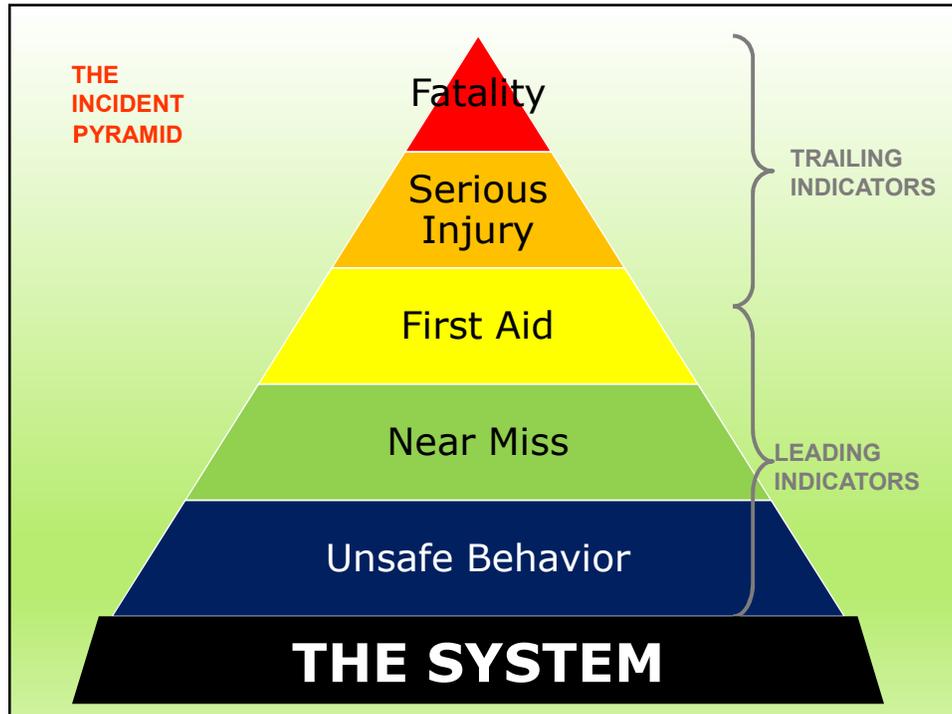
#3: He falls down and fractures his ankle

For every recordable, there are 7-9 near-misses.

I recommend:

ALL accidents and incidents should be analyzed!

16



17

Underlying beliefs...

- 98% or more of accidents are **SYSTEM FAILURES** that can be understood and addressed
- **All accidents are preventable** – a thorough analysis will determine causes and contributing factors, and will prevent future injuries...
- No accidents are acceptable...our goal is **ZERO HARM TO PEOPLE**

18

Process for incident analysis

- Preserve the Scene
- Gather the Facts
- Systems Analysis
- Counter Measures/Best Practices
- Follow-up and Follow Through
- Continuous Improvement Process

19

Process for incident analysis

INCIDENT INVESTIGATION WORKSHEET

Note: This form can be completed in hardcopy. Scan or send electronic form to Safety Department

Incident / Employee Name:	Date of Incident:
Employee Address:	Time of Incident:
Employee Email:	Classification:
Facility:	Department:
Investigator Team:	Date of Investigation:

Brief Description of Incident:

Step 1 – FACT FINDING

Main Facts Found during investigation:

ACTION Form
Accident/Incident Analysis: a step-by-step approach that simplifies the analysis process

Company: _____ Department: _____ Supervisor: _____
 Employee: _____ Job Title: _____ Date Injured: _____
 Date/Time of incident: _____ Date/Time Reported: _____ Incident Location: _____
 Witnesses: _____
 Incident/Injury Cause Accident First Aid
 *No 911 if major Medical Care *Phone Call *Hired
Issues are checked

Describe accident/incident:

A-C-T-I-O-N
Establishing accident analysis procedures are not only required, but also beneficial to your business. Having a process in place will allow you to recognize the contributing factors involved and prevent future injuries. In order to complete the analysis process, here is an approach using the ACTION steps. Each step requires action, either by the employee or safety committee members.

Accident/incident scene preservation
This is the beginning of your analysis. Your primary goal is to secure the scene. Do what you can to secure all scene data as much as possible in order to preserve critical information.

Is the hazard sufficiently controlled to prevent further injury? No Yes Check
 Were first aid provided to ensure well-being of injured employees? No Yes Check
 Is the scene secured to protect clues for analysis purposes? No Yes Check

Collect the facts
Focus on finding the facts about the event. Determine to gather valid information without allowing bias opinions or assigning blame.

Take appropriate actions
Review the information gathered and determine the cause of events. Reconstructing an accurate timeline is critical to conducting an effective analysis.

Protect tools and equipment from being removed.
 Document your observations, take photos and check if your incident is reportable.
 Interview witnesses and employees.
 Review relevant records, such as incident reports, training policies, procedures, etc.
 Document what happened before, during and after the event.
 Arrange this information chronologically to determine the order of events.

OSHA requirements. All works-related facilities and companies must be required to Oregon OSHA within eight hours. Report severe incident (fatalities, hospitalizations, loss of day, or an occupation of more than 24 hours). Call 800-452-5347 or call your nearest Oregon OSHA area office. OSH 307 September 2018

20

Develop Analysis Team and system for follow-up

- Employee from work area
- Supervisor from different work area
- Maintenance Supervisor
- Safety Person
- Safety Committee Member

21

Collect the Facts:

Focus on finding the facts about the event. Remember to gather valid information without drawing conclusions or assigning blame. Create a sequence of events to show chronological relationships.

Remember to:

- Document your observations.
- Take photos and check video surveillance, if available.
- Interview employees and witnesses.
- Review relevant records, such as maintenance, training, policies, procedures, etc.
- Include timelines of events leading up to incident.

22

Identify System Causes:

Every accident/incident is caused by a set of contributing factors. These factors represent the surface or system causes that led to the event. The goal is to identify these by analyzing how/why each consecutive event happened.

Reminders:

- **Surface Causes:** Unsafe behaviors and hazardous conditions.
- **System Root Causes:** Underlying problems that cause the incident.
 - Identify how the causes are related.
 - If you're having trouble getting to underlying root causes, follow **5-Why** approach.

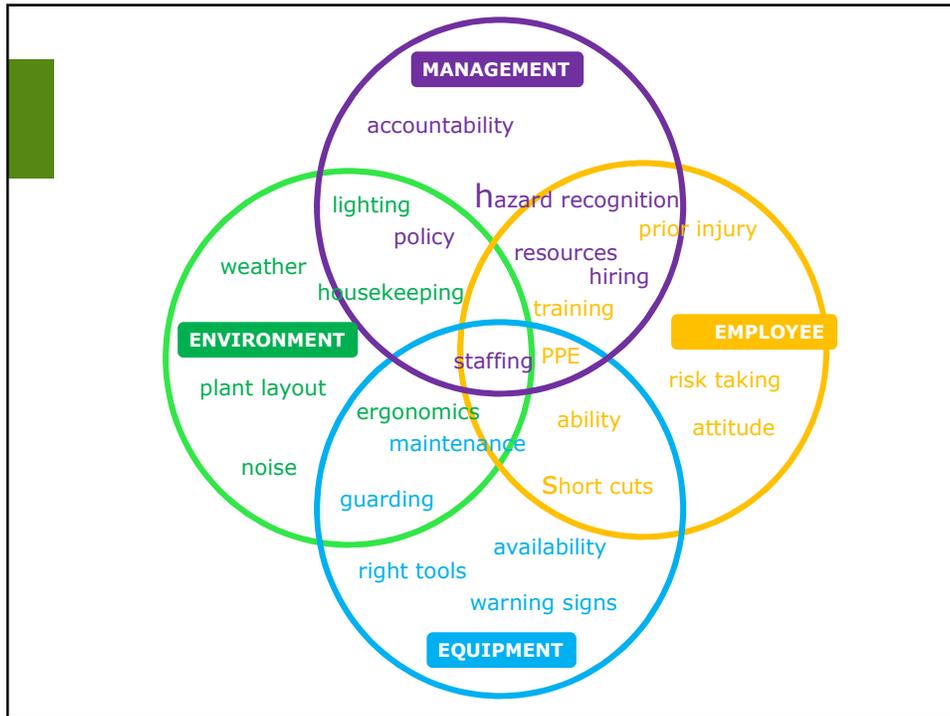
23

Systems-MEEE

MANAGEMENT	EMPLOYEE	EQUIPMENT	ENVIRONMENT
<ul style="list-style-type: none"> •Policy Enforcement •Hazard Recognition •Accountability •Supervisor Training •Corrective Action •Production Priority •Proper Resources •Job Task •Orientation / Hiring Practices •Job Descriptions •Preventive Maintenance •Staffing Levels •CULTURE 	<ul style="list-style-type: none"> •Not Following Procedures •Training •Pre-existing Conditions •Mental & Physical Capacity •Equipment Use •Safety Attitude •Taking Shortcuts •PPE Worn •CULTURE 	<ul style="list-style-type: none"> •Tool Suitability •Tool Adequacy •Tool Availability •Maintenance •Maintenance Records •Guarding •Manufacturer Warnings 	<ul style="list-style-type: none"> •Plant Layout •Chemicals •Temperature •Noise •Radiation •Weather Conditions •Terrain •Vibration •Ergonomics •Ventilation •Housekeeping

THE SYSTEM

24



25

When you don't ask WHY
you miss out on
opportunities to LEARN



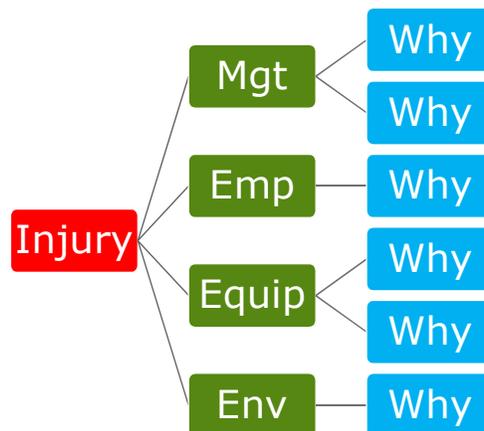
26

5-Why Approach

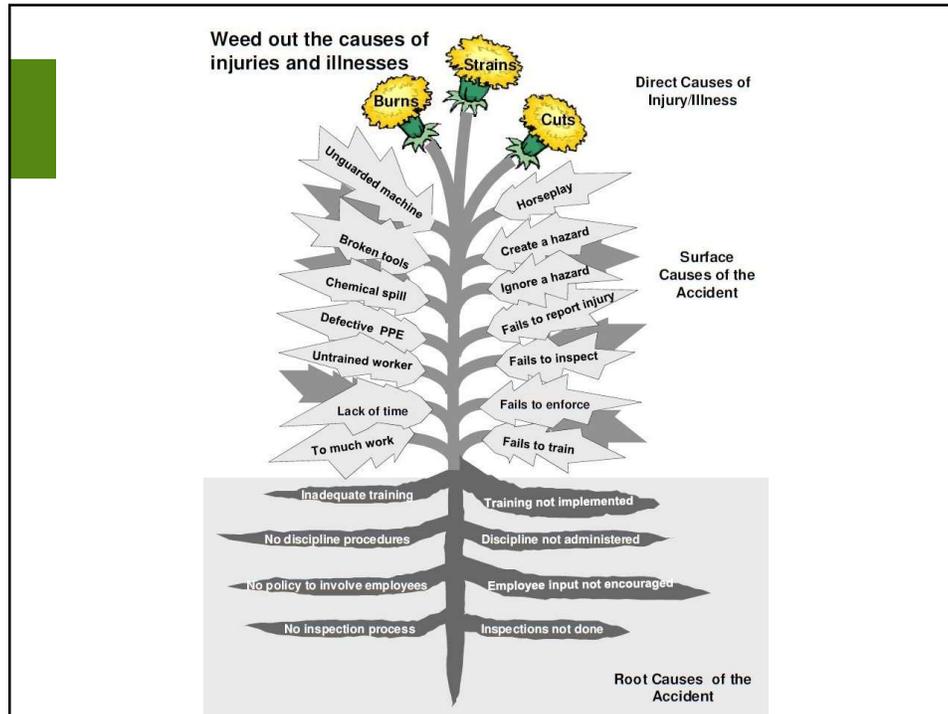


27

Fishbone



28



29

Remember:

- Every incident/injury has multiple contributing factors and root causes
- Human behavior always occurs within a larger system
- Avoid jumping to conclusions and climbing the “ladder of inference”
- Remember to ask the injured person: how can we prevent this from EVER happening again?

31

Common deficits in accident investigation/analysis:

- Not giving sufficient time/importance to the process
- Not involving enough people or the right people
- Making assumptions and/or jumping ahead to conclusions
- Failing to follow up
- Failing to document and communicate findings, actions, and results

32

Incomplete analysis

- Surface Cause:
 - In a hurry, not paying attention
- Root Cause:
 - Work environment hazard
 - Unsafe work practice
- Corrective action:
 - Counseled employee to pay attention to surroundings

33

Things to understand

- Common Sense is not common
- The employee was not stupid
- We can improve safety controls (the system)
 - Training
 - Safeguards
 - Procedures
 - JHA



34



We can blame and punish or learn and improve.”

- Todd Conklin



35



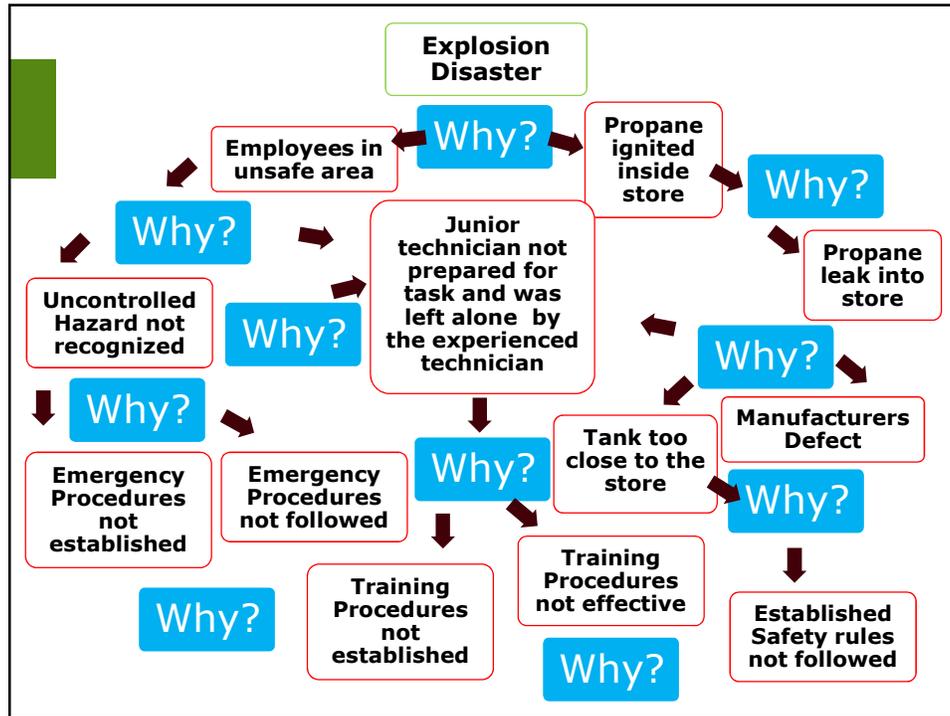
36

Identify System Causes:

- **Surface Causes:**

- Employees in Unsafe area (Environment)
- Propane tank too close to building (Environment, Equipment)
- Propane was able to get into building to be ignited (Environment, Equipment)
- Manufacturer defect in tell-tale valve (Equipment)
- Junior technician was not prepared to be left alone for the task (Employees)
- Hazards not properly evaluated or recognized in order to implement adequate procedures (Employees, Management)

37



38

Identify System Causes:



- System Root Causes:**
 - Established procedures not followed (Management, Employee)
 - Established procedures were ineffective or inadequate (Management)
 - Training procedures were ineffective or inadequate (Management)
 - Training procedures were not followed (Management)
 - Supervision accountability systems were not adequate to make sure that procedures were followed by front line employees or updated as needed.

39

Consider Possible Solutions:

Once the surface and system causes have been determined, you are ready to identify possible solutions. These solutions should be prioritized based on their level of effectiveness. Remember to always list multiple solutions when possible.

Hierarchy of Controls:

- Eliminate Hazard
- Substitute hazard
- Engineering Controls: Removes or reduces the hazard.
- Management Controls: Removes or reduces the exposure.
- Personal Protective Equipment (PPE): Puts up a barrier.

40

Injury



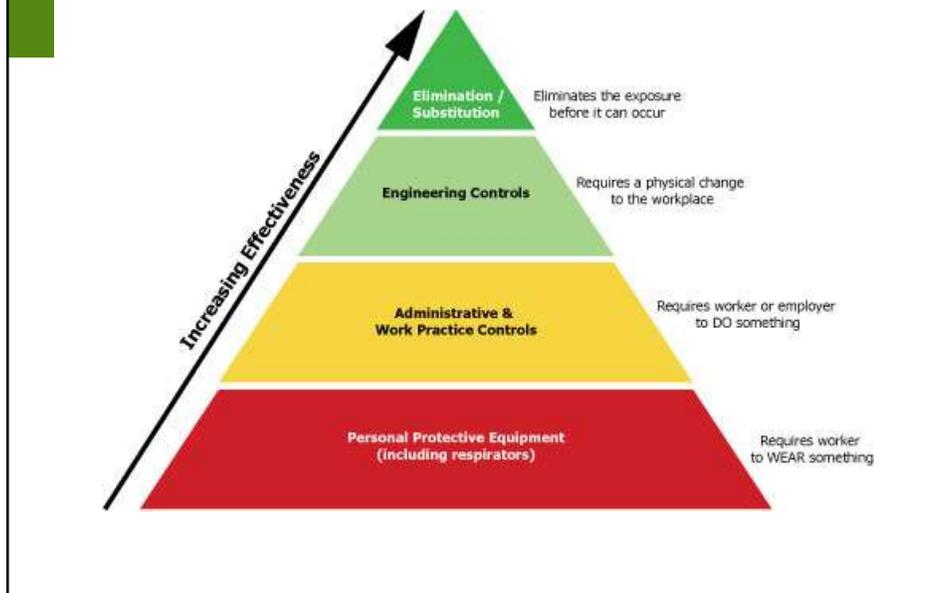
It takes a **hazard** and someone **exposed** to the hazard to produce an **injury**.

Hazard + Exposure = Injury



41

Hierarchy of Controls



42

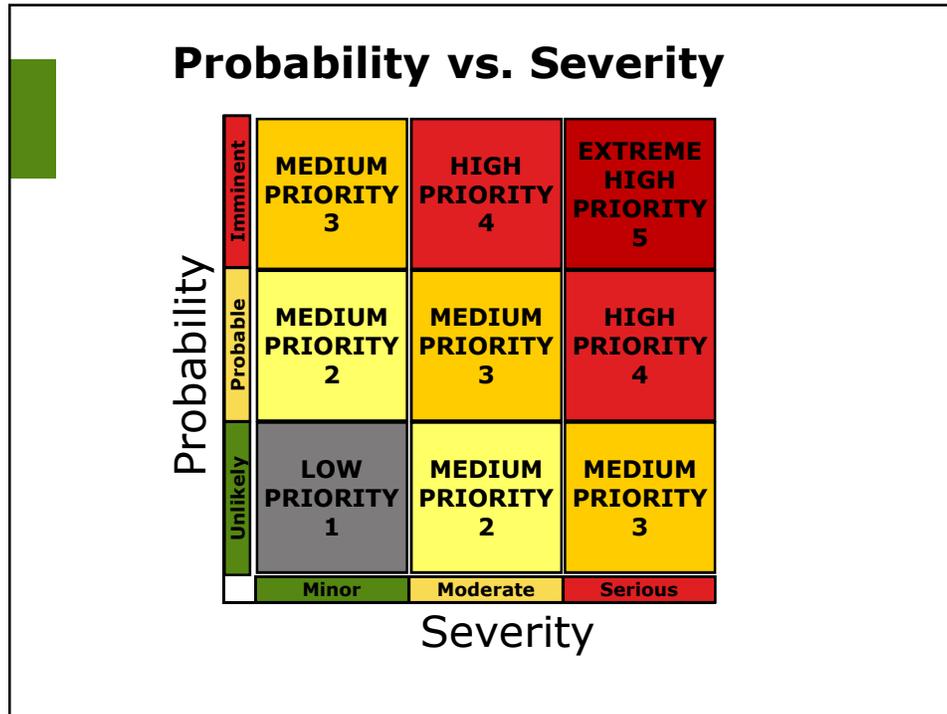
Note Corrective Measures

The last step is to use your notes from the previous steps to complete the form.

Remember to:

- Write recommendations that are relevant and concise.
- Identify who will be responsible for completing the action items, and specify a date for completion.
- Report your findings to members of management who have the authority to act; communicate with employees.
- Keep accident reports on file for recordkeeping purposes.

43



44

Keys to Effective Analysis

- Ensure process is supported by top management and leadership.
- Train supervisors and key employees in incident/accident analysis – have an engaged team and analysis tools ready.
- Encourage reporting of unsafe conditions and work practices, and near misses – require immediate reporting of incidents/accidents.

45

Keys to Effective Analysis

- Whenever possible, blame the Systems, not individuals.
- Approach the incident/accident analysis process with the mindset of improving processes and reducing the potential for human error.
- Consider employee impact when making operational decisions.
- Take and document appropriate corrective actions and communicate results.

46

Incident Analysis Review

Incident Analysis 30 Day Review

Incident Number: Today's Date: 30 Day Incident Review Team:	Incident Date: Original Investigation Team:						
Describe incident briefly:							
Review any incident reports, pictures or hazard reports from the original incident analysis.							
Counter Measurement Practices: <small>How do we ensure these identified in the MOPS plan, who make changes and when were the changes completed?</small>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Completed?</td> <td style="width: 33%;">When?</td> <td style="width: 33%;">Report Made?</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </table>	Completed?	When?	Report Made?			
Completed?	When?	Report Made?					
Comments from affected Operator: <ul style="list-style-type: none"> • Did we do what we said we were going to do? • Were the Solutions effective at reducing the likelihood of recurrence? • Did our implementation of solutions create new problems? • Are there any other actions that we should take to reduce risk of injury or harm? Signature:							
Comments from affected Maintenance Representative: <ul style="list-style-type: none"> • Did we do what we said we were going to do? • Were the Solutions effective at reducing the likelihood of recurrence? • Did our implementation of solutions create new problems? • Are there any other actions that we should take to reduce risk of injury or harm? Signature:							

47

Incident Analysis Review

- Was corrective action implemented?
- Was corrective action effective?
- Were any new hazards created?
- What else still needs to happen?

48



49



AMERICAN SOCIETY OF SAFETY PROFESSIONALS
Southern Oregon Chapter

Effective Incident Analysis

David Hanson, CSP
Sr. Safety Management Consultant




50



AMERICAN SOCIETY OF SAFETY PROFESSIONALS
Southern Oregon Chapter

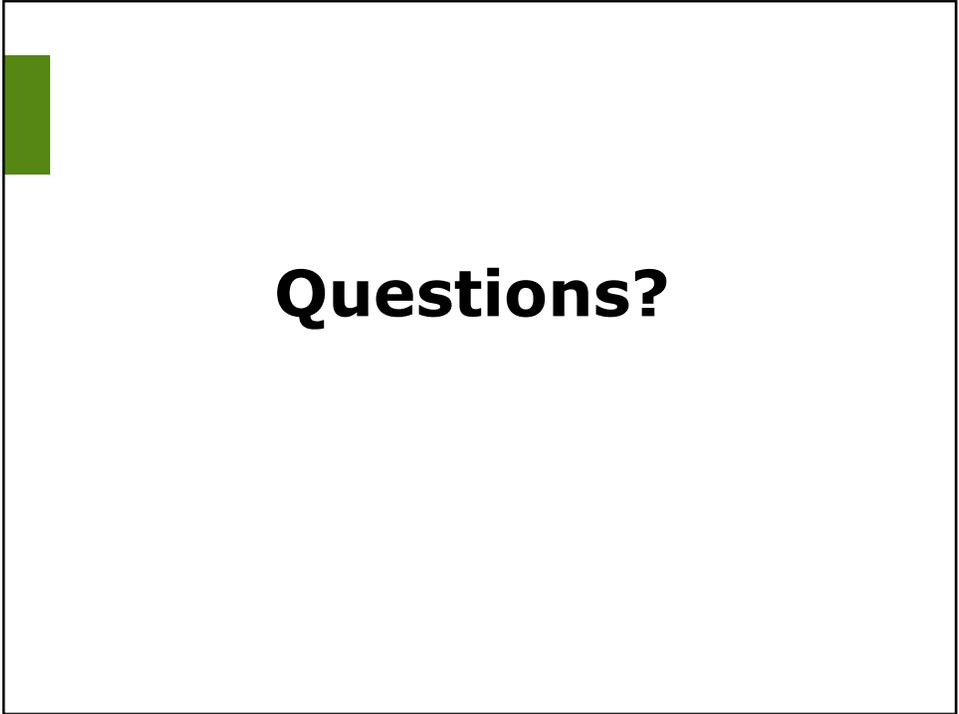









51



52