

Root Cause Analysis: Getting to the Heart of the Matter



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Overview – at the end of this session you will be able to describe...

- The Case
- Key Definitions
- What Loss is
- How to Gather the Facts
- What Effective Interviews are
- How to Implement Analysis
- How to Develop an Action Plan

The Case

- **An employee reported feeling a “pop” followed by severe lower back pain, while lifting 50 lb bags from a conveyor and stacking them on a pallet.**
- **Hold this thought...**

Definitions

- Incident: **An unplanned sequence of events with the potential to cause bad stuff** (injury, illness death and/or property damage).
- Near Miss: An incident with no injury, illness or property damage but with the potential for any of these.

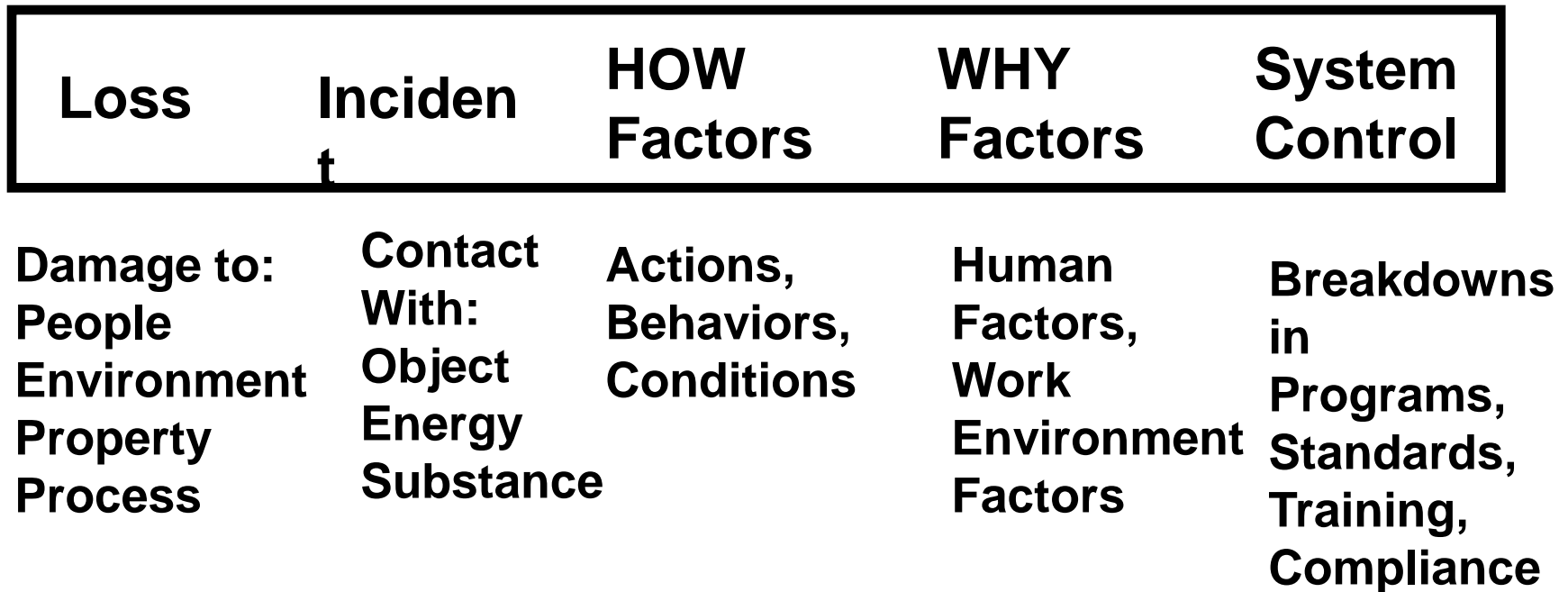
Definitions

- ***How Factors***: Contributing process actions, behaviors and conditions (ABC's) that affected or had the potential to affect the outcome of the incident
- ***Why Factors***: Root causes that are the most basic, identifiable and controllable human and work environment factor(s), that if changed could have ***prevented*** the incident.

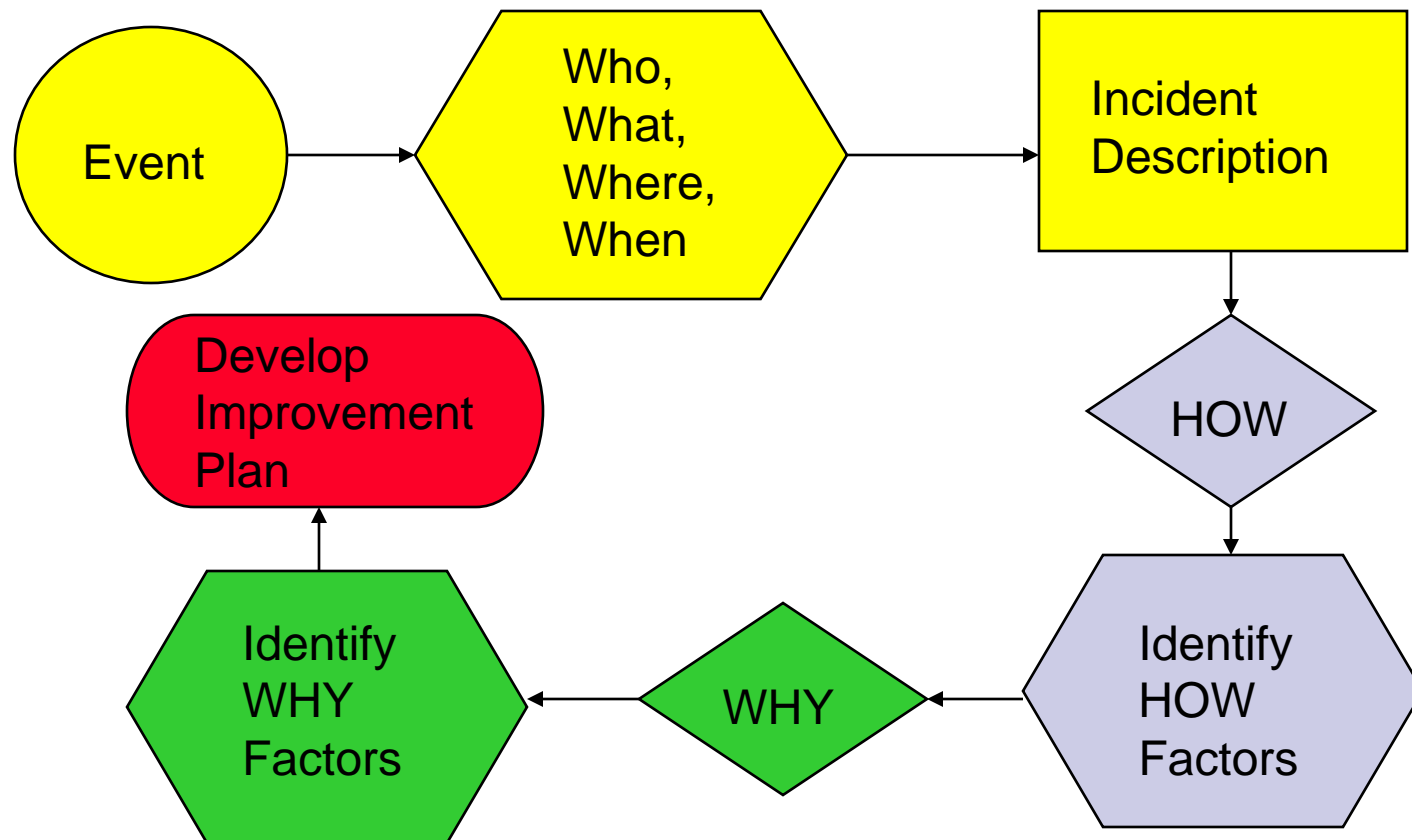
Understanding Loss



Loss as a Process



Root Cause Process



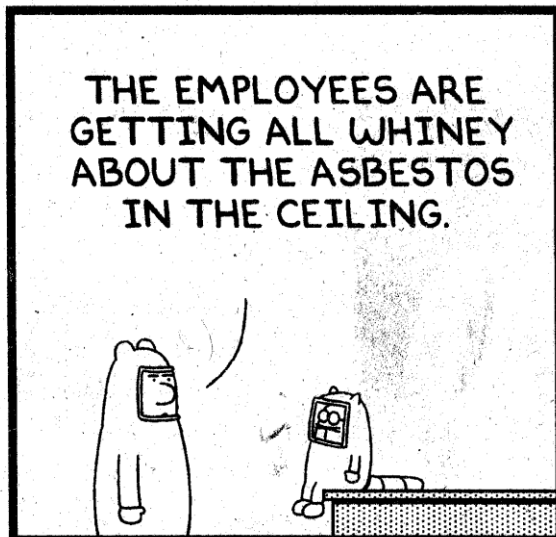
Analysis Steps

- Identify the incident
- Gather the facts
- Form the analysis team
- Evaluate the facts
- Identify HOW factors
- Determine WHY factors
- Develop an action plan for change
- Follow-up and documentation

Gathering Facts

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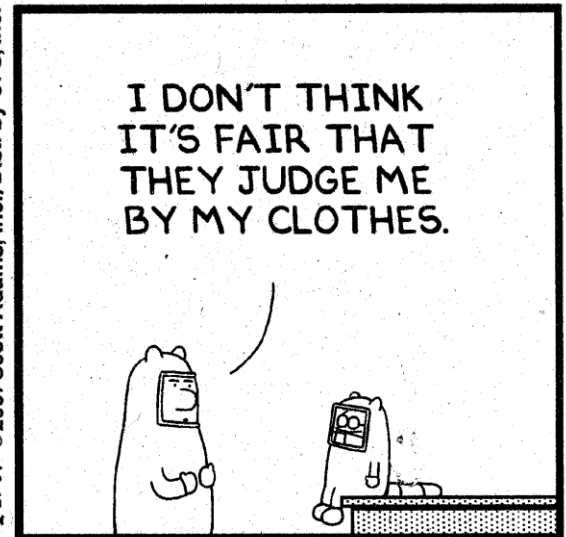
By Scott Adams



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Gathering the Facts

- Leave as much of the scene intact as possible
- Look at the 4 P's:
 - Parts - equipment, parts, pieces, product
 - Positions - of people and objects
 - Paper - manufacturing records, training documents, maintenance records, etc.
 - People - conduct witness interviews

Incident Interviews...

How to Make Them Effective...

Non-Threatening...

Information Based...

Interviewing Techniques

- Reduce fear and anxiety
 - Understand and acknowledge that they may be uncomfortable
 - Let them know the objective is prevention not blame
 - Stick to the facts, not faults

Interviewing

- Let them tell their story
 - In their own words
 - Start from the end and work backwards
 - Only ask questions for clarification
 - Don't lead them
- Tell them you appreciate their help
- Conduct interviews as soon as practical
- Take notes, document the interview

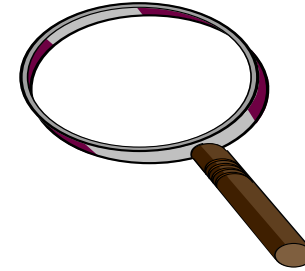
Forming the Analysis Team

- Facilitator - trained to lead an incident analysis
- Supervisor - leads the functional area that experienced the incident
- Knowledgeable employee(s) - the employee(s) involved in the incident if possible. If not, others with experience
- Technical or subject matter expert

Describe the Incident... Back to the Case

- Begin with an action statement
 - **An employee reported feeling a “pop” followed by severe lower back pain, while lifting 50 lb bags from a conveyor and stacking them on a pallet.**

Evaluating the Facts



- Describe the incident (What happened?)
- Identify the HOW Factors (How actions, behaviors and conditions affected the incident)
- Identify the WHY Factors (Why did the system breakdown and allow the incident to occur?)

Identifying the HOW Factors - Actions and Behaviors

- Operating equipment without authority
- Failure to warn
- Failure to secure
- Operating at improper speed
- Making safety devices inoperable
- Removing safety devices
- Using defective equipment
- Using equipment improperly
- Failing to use personal protective equipment properly
- Improper loading
- Improper placement
- Improper lifting
- Improper position for task
- Servicing equipment in operation
- Other

Identifying the HOW Factors - Conditions

- Inadequate guards or barriers
- Inadequate or improper protection
- Defective tools, equipment, or material
- Congestion or restricted access
- Inadequate warning system
- Fire and explosion hazards
- Poor housekeeping
- Hazardous environmental conditions: gases, dusts, smokes, fumes, vapors
- Noise exposures
- Radiation exposures
- High or low temperature exposures
- Inadequate or excess illumination
- Inadequate ventilation


Apply the HOW Factors

- Review and **identify** the HOW Factors
 - State **how** the person was injured, then list the HOW Factors
- **An employee heard a “pop” and felt lower back pain while lifting 50 lb. bags from a conveyor and stacking them on a pallet**
- **The employee was lifting 50 lb. bags from a conveyor behind him, then turning to stack them on a pallet, alternating direction on each row**
- **Identify the HOW Factors:**
 - Improper placement
 - Improper lifting
 - Improper position for task

Identifying the WHY Factors

- Policies, Procedures, and Programs
- Knowledge and/or Skills
- Commitment/Participation
- Leadership
- Climate
- Workplace Design
- Process
- Procurement
- Maintenance
- Measurement & Validation

Safety Management System



Policies
Procedures
Programs

Policies & Procedures are the Tools of the Management System

Safety Management System

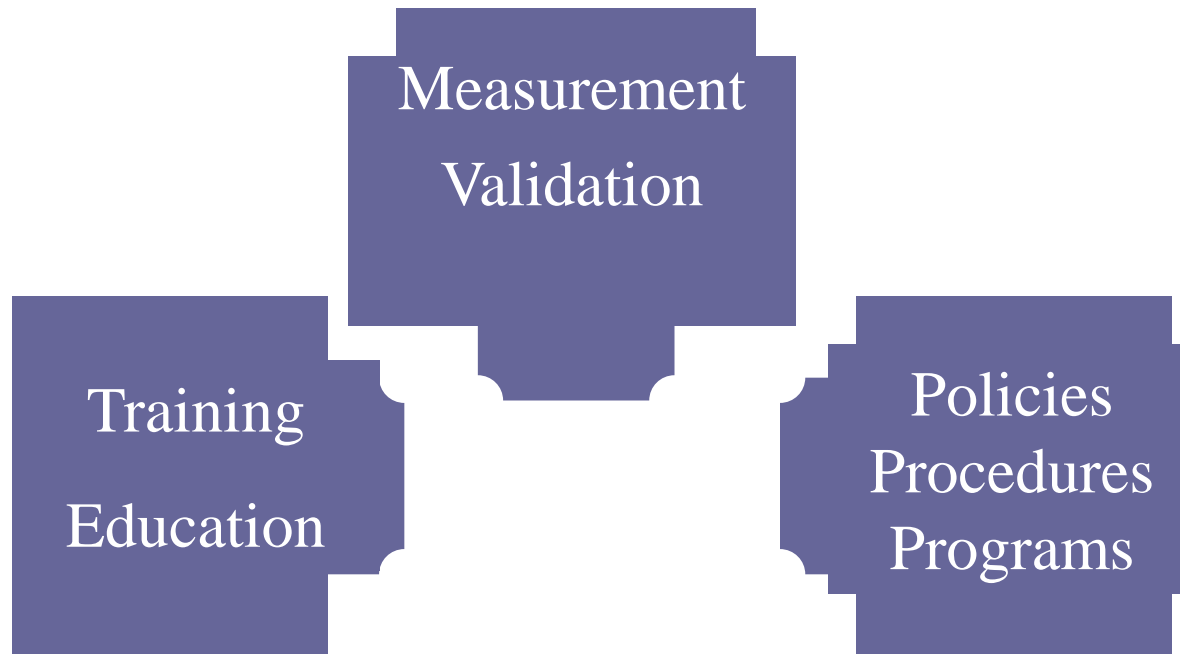


Training
Education

Policies
Procedures
Programs

Training & Education teach us how to select and use the Tools

Safety Management System



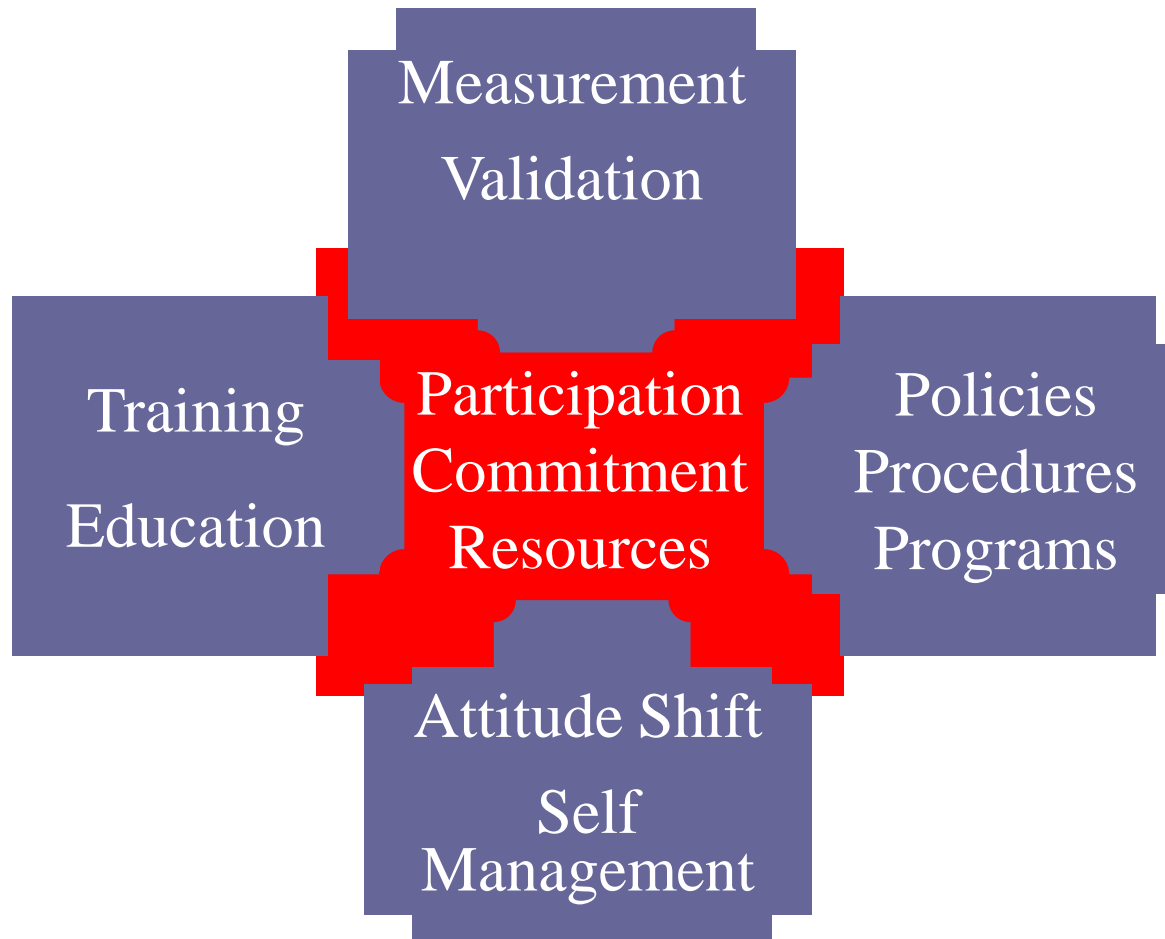
Measurement & Validation check to see if the Tools are working

Safety Management System



Attitudes and Self Management help us integrate Safety & Health concepts into the fabric of the company

Safety Management System



Participation, Commitment & Resources hold the rest of the pieces in place

WHY Factors

- Review and identify the WHY Factors
 - Determine why the HOW Factors were able to occur by identifying the applicable WHY Factors. State the reasons, then list the WHY Factors.

WHY Factors

- **An employee heard a “pop” and felt lower back pain while lifting 100 lb bags from a pallet and charging them to a blender**
- **The employee was lifting 50 lb. bags from a conveyor behind him, then turning to stack them on a pallet, alternating direction on each row**
- **There were no job instructions for the work station and no job hazard analysis had been performed. The employee did not know that bag stacking was supposed to be a two person task**
- **WHY Factors:**
 - **Workplace Design**
 - **Policies, Procedures, and Programs**
 - **Knowledge and/or Skills**

Developing a Plan for Change

- Identify changes that will control the WHY Factor(s)
- Make Sure:
 - the changes are **S**pecific
 - they are **M**easurable in some way
 - someone is **A**ccountable for them
 - changes are **R**elevant
 - they have a **T**ime frame to complete them

Pallet Stacking Work Station Action Plan

- WHY Factors:
 - Workplace Design
 - Policies, Procedures, and Programs
 - Knowledge and/or Skills
- **Identify the steps of an action plan to address the why factors**

Follow-up and Documentation

- Develop a consistent report format
- Develop a tracking system for actions defined in the Change Plan
 - Spreadsheet, database, etc.
- Update and track until **all** actions are completed or otherwise resolved
- If covered by OSHA Process Safety standard, maintain records for 5 years

Effective Root Cause Analysis...

Enables Management **System**
Improvements in an Organization by
Identifying Breakdowns in WHY Factors
and Implementing a Change Plan to
Improve Them...



Let's Review... Describe...

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