Incident Investigation Techniques

Getting to the Bottom of It

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What are some of the characteristics of an incident?
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• Unplanned event
• Multiple factors involved - Unsafe behaviors and/or unsafe physical conditions
• Incidents result in some form of loss – people, property, environment, process
What is a fundamental reason for investigating incidents?
What is a fundamental reason for investigating incidents?

Prevention of similar future loss

In other words – an investigation is a reactive process that should result in proactive improvements to incident prevention measures.
Although reactive, effectively conducted incident investigations allow us to learn from the loss experience in order to strengthen our proactive efforts and prevent future similar loss situations.
Who is the primary person responsible for the Investigation?
Aside from showing concern - why do supervisors need to be directly involved in the investigation process?

Personal interest – accidents directly affect department personnel, equipment, and productivity.

Knowledge of people and conditions.

Responsibility for (or at least involvement in) taking corrective action.

Demonstrates control.
OTHERS INVOLVED MAY INCLUDE:

**MANAGERS**
- A major loss or a high potential incident
- The circumstances cross into other supervisors' areas
- The remedial actions have a broad scope or significant costs

**STAFF PERSONNEL**
- When they can serve as advisors to the investigators - but they are not the prime investigator
- Special knowledge areas such as safety, industrial hygiene, engineering, purchasing, maintenance, human resources, etc.
What types of Incident would we investigate?
What’s the difference between an incident and a “near-miss” (or near hit)?

Under slightly different circumstances they could have resulted in loss

- Difference in severity
- Warning/Caution signs
STEPS IN THE INVESTIGATION:

• Initial response
• Gathering information
• Analyzing the data and determining the causes
• Determining/initiating actions and writing the report
• Follow-up
Initial response

Taking control of the scene

Avoiding secondary accidents

Obtaining medical treatment
Identifying sources of information

Note your surroundings; people present; environmental conditions (light, noise, heat, cold, etc.); position of materials, tools and equipment; anything out of the ordinary

Preserve the scene

Protection of the area from alteration as much as possible, ensure required notifications are made and gather information quickly and completely.

Be a sponge
Gathering Information

It is important to distinguish between FACT and OPINION and understand the role BOTH play in the investigation.
Gathering Information (continued)

Depending on the emotional state of those involved - Interview eye witnesses first, then secondary witnesses
Tips on Conducting Interviews

- Interview separately
- Interview in an appropriate place, on-site (if not dangerous or uncomfortable) or in a private area. Offices may appear too much like interrogation/cross examination.
- Put the person at ease - assure them that the mission is "fact" finding to prevent a recurrence.
- Avoid intimidating voice and body language.
- Get the individual's version
  * Avoid interrupting
  * Don't put words in their mouth
  * Don't make judgmental statements like "that was sure a dumb thing to do."
CONDUCTING THE INTERVIEW (continued)

- Don't ask leading questions and avoid yes-no questions.

- Give the witness some feedback. Repeat information to ensure understanding and provide a chance for correction. This creates "active" listening on the part of both parties.

- Use visual aids (sketches, digital photos).

- End on a positive note. Thank them for their time and effort. Ask their ideas on how this situation could be prevented in the future. Keep the line open.
Information gathering from other sources

Depending on the situation, other sources of information may be helpful, such as:

- Training Records
- Maintenance records (repair and PM)
- Safety inspection reports
- JHA, JSA, JSP and MOC documents
Information gathering from other sources (continued) –

- Changes in production schedule, materials, tools and equipment
- Special testing such as Material Failure Analysis
- Drawings and photos*

Note: If you use photography (still or video) be sure to photograph from all angles and provide scale reference.
Evaluation of data and identification of causes (Root Cause Analysis)

- Immediate causes (symptoms)

- Basic causes (the why)

"CARELESSNESS" IS NOT AN ACCEPTABLE REASON FOR "WHY" AN ACCIDENT HAPPENED.

WE SHOULD ASK "WHY" WAS THE PERSON "CARELESS".
Accident Investigation Flowchart

Let’s Take A Look …….
## Accident Cause Analysis Flow Chart

<table>
<thead>
<tr>
<th>ACCIDENTS</th>
<th>IMMEDIATE CAUSES</th>
<th>BASIC CAUSES</th>
<th>MANAGEMENT ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Types</td>
<td></td>
<td>Personal Factors</td>
<td></td>
</tr>
<tr>
<td>1. Struck By</td>
<td>Unsafe Acts</td>
<td>1. Lack of knowledge or skill</td>
<td>1. Inadequate standards / procedures</td>
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<tr>
<td>2. Struck Against</td>
<td>1. Operating without authority</td>
<td>2. Improper motivation attempting to:</td>
<td>2. Lack of knowledge of standards / procedures</td>
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<tr>
<td>3. Contact With</td>
<td>2. Failure to warn or secure</td>
<td>a) Save time or effort</td>
<td></td>
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<td>4. Caught On</td>
<td>3. Operating at unsafe speed</td>
<td>b) Avoid discomfort</td>
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<tr>
<td>5. Caught In or Between</td>
<td>4. Nullifying safety devices</td>
<td>c) Attract attention</td>
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<tr>
<td>6. Fall on Same Level</td>
<td>5. Using defective equipment</td>
<td>d) Assert independence</td>
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<td>7. Fall From Different Level</td>
<td>6. Using equipment improperly</td>
<td>e) Seek group approval</td>
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<td>8. Exposure</td>
<td>7. Moving without looking</td>
<td>f) Express hostility</td>
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<td>9. Overexertion</td>
<td>8. Improper loading or placement</td>
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<td>10. Other</td>
<td>9. Improper lifting</td>
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<td></td>
<td>10. Servicing equipment in motion</td>
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<td>11. Failure to use PPE</td>
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<td>12. Horseplay</td>
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<tr>
<td>Unsafe Conditions</td>
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<td>3. Physical or mental problem</td>
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<td></td>
<td>1. Inadequate guards or protection</td>
<td>4. Distraction</td>
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<td></td>
<td>2. Defective equipment or material</td>
<td>5. Complacency</td>
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<td></td>
<td>3. Congestion or inadequate work space</td>
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<td>4. Fire &amp; explosion hazards</td>
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<td>5. Unexpected movement hazards</td>
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<td>6. Projection hazards</td>
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<td>7. Poor housekeeping</td>
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<td>8. Hazardous environmental conditions</td>
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<td>9. Hazardous placement or storage</td>
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<td>10. Inadequate ventilation</td>
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<td>11. Inadequate illumination</td>
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<td>12. Unsafe personal attire</td>
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<td>Job Factors</td>
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<td></td>
<td>1. Inadequate work standards</td>
<td>1. Inadequate standards / procedures</td>
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<td>2. Inadequate design</td>
<td>2. Lack of knowledge of standards / procedures</td>
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<td>3. Inadequate maintenance</td>
<td>3. Lack of enforcement / consequences of standards / procedures</td>
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<td>4. Inadequate purchasing standards</td>
<td>4. No follow-up on reported hazards</td>
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<td></td>
<td>5. Normal wear and tear</td>
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<td>6. Abnormal use and wear</td>
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**INSTRUCTIONS:** Start at the left side, and ask all questions in each column starting with the Accident Types column. Then proceed to the subsequent columns until you reach the bottom of the Management Issues column. This should assist you in completing a quality accident investigation report.
Planning corrective and preventive actions

"Prescription without diagnosis is malpractice, whether it be in medicine or management."

- Karl Albrecht, Organization Development
ITC – Immediate Temporary Control

Bandage

Versus

Cure
Can we control the severity of an incident?
Can we control the severity of an incident?

Although the actual severity of an incident within a given range of potential severity is largely a matter of luck, the RANGE of POTENTIAL SEVERITY can be controlled.
Therefore, if you can’t eliminate the exposure, the name of the game is to reduce the “range” of potential severity to its lowest feasible level.
Elimination: The best method is to eliminate the risk entirely (risk avoidance)

Isolation: Loss prevention (no human intervention)

Minimization: Loss prevention (exposure reduction); or loss control (severity reduction).
Assumption of liability

Risk Transfer: Insurance, outside vendor, etc.
What was the “potential” for loss?
What control is recommended?
What’s the cost of the control (and the expected ROI)?
What’s the degree of control expected?
How difficult will it be to implement and maintain?
What’s the effect up and down stream?
What’s the alternatives and what is the justification for choosing the recommended control?
Distinguishing between fact and opinion

Legal Document
Report Writing Issues

Be specific – avoid generalities
Avoid legal opinions
Avoid extreme language
Watch your ADJECTIVES
Use familiar terminology
SUMMARY: Effective incident investigations

Determine what “really” happened rather than try and prove what we “think” happened.

Provide an assessment of the loss potential associated with the event (Risk).
SUMMARY: Effective incident investigations

Provide the information necessary to strengthen our proactive preventive program controls (PRE-CONTACT STAGE) and assist in improving our loss minimization controls (“Damage Control” – CONTACT STAGE).
SUMMARY: Effective incident investigations

Define incident trends

Demonstrate concern and improve perception

“…it is perception that governs beliefs, attitudes and behaviors.”
- Dr. Stephen Covey, Principal-Centered Leadership
QUESTIONS...

COMMENTS...

CONCERNS ????