Northwestern
Incident Investigation Program
Risk Management
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I. Goals and Objectives
The purpose of this program is to identify the conditions, behaviors, hazards, and root causes of an incident, and identify and implement corrective actions necessary to prevent similar occurrences. Incident investigations focus on identifying and correcting root causes, not establishing fault.

II. Scope and Application
This program applies to any incident investigation conducted by Risk Management. Incidents subject to investigation include, but are not limited to:

- Injury, illness, or fatality
- Property damage
- Environmental impacts
- Near-misses
- Fires or explosions
- Significant equipment damage
- Structural damage
- Uncontrolled release of toxic materials

The scope includes injuries to staff, faculty, students, contractors, visitors, and damage to equipment or property owned by Northwestern, staff, faculty, students, contractors, and visitors.

III. Responsibilities
A. Risk Management
   i. Investigate incidents as necessary
   ii. Update and maintain this program
   iii. Provide tools and equipment necessary for investigations
   iv. Cooperate with Occupational Safety and Health Administration (OSHA) and other regulatory officers during investigations
   v. Notify OSHA under the following conditions:
      a) Work-related fatalities within 8 hours
      b) All work-related inpatient hospitalizations, all amputations, and all losses of an eye within 24 hours

B. Northwestern departments and units
   i. Immediately notify Risk Management of incidents
   ii. Cooperate with Risk Management investigator(s) during incident investigations
   iii. Cooperate with OSHA and other regulatory officers during investigations
   iv. Provide Risk Management investigator(s) with:
      a) Records and documents pertinent to the investigation
      b) Access to spaces and areas necessary for the investigation
      c) Access to faculty, staff, and students to conduct interviews

C. Northwestern staff, faculty, and students
   i. Cooperate with Risk Management investigator(s) and participate in interviews during incident investigations
ii. Cooperate with OSHA and other regulatory officers during investigations

D. Contractors
i. Cooperate with Risk Management investigator(s) and participate in interviews during incident investigations
ii. Cooperate with OSHA and other regulatory officers during investigations

IV. Notifications

A. Emergencies
Call 911 or dial 456 from any university phone for all emergency situations and incidents.

B. Risk Management
Risk Management must be immediately notified of all incidents identified in Section II of this document by using the contact information in Section VII of this document. Non-emergency incidents may also be reported by visiting the Risk Management website.

V. Requirements

A. Safety
Before conducting an investigation, Northwestern departments and units, or contractors if in control of the site, are responsible to ensure the incident site is safe and secure for entry and investigation.

B. Preserve and document the scene
i. Preserve the scene to prevent material evidence from being removed or altered. Refer to Appendix A – List of Items to Use to Conduct Incident Investigations.
ii. If the scene could potentially be disturbed before the investigator can arrive, have a supervisor or other individual on scene take detailed pictures to document the incident site.
iii. Some investigations may require the use of video recording and/or photographing. Refer to Appendix B – Tips for Video / Photo Documentation.
iv. Some investigations may require scene sketching. Refer to Appendix C – Scene Sketching Techniques.

C. Information collection
Incident information is collected through interviews, document reviews, and other means. Document the incident facts using Appendix D – Information Collection Table as a guide to ensure all information pertinent to the incident is collected.

i. Interviews
Interviews provide detailed, useful information about an incident and must be conducted as promptly as possible when the site is both safe and secure.

An incident investigation always involves interviewing and possibly re-interviewing some of the same or new witnesses as more information becomes available. Carefully question witnesses to solicit as much information as possible related to the incident.

Since some questions will need to be designed around the interviewee, each interview will be a unique experience. When interviewing injured workers and witnesses it is crucial to reduce their possible fear and anxiety, and to develop a
good rapport. When conducting interviews, investigators should:

a) Conduct the interview in the language of the employee/interviewee; use a translator if needed
b) Clearly state that the purpose of the investigation and interview is fact-finding, not fault-finding
c) Emphasize that the goal is to learn how to prevent future incidents by discovering the root causes of what occurred
d) Establish a climate of cooperation, and avoid anything that may be perceived as intimidating or in search of someone to blame for the incident.
e) Let employee know that they can have an employee representative (e.g., labor representative), if available/appropriate
f) Ask the individuals to recount their version of what happened
g) Do not interrupt the interviewee
h) Take notes and/or record the responses; interviewee must give permission prior to being recorded
i) Have blank paper and/or sketch available for interviewee to use for reference
j) Ask clarifying questions to fill in missing information
k) Reflect back to the interviewees the factual information obtained; correct any inconsistencies
l) Ask the individuals what they think could have prevented the incident, focusing on the conditions and events preceding the injury

ii. Additional resources
In addition to interviews, investigators may find other sources of information useful, such as:

a) Equipment manuals
b) Industry guidance documents
c) Company policies and records
d) Maintenance schedules, records, and logs
e) Training records
f) Historical meteorological data
g) Closed-circuit television (CCTV) footage
h) Audit and follow-up reports
i) Enforcement policies and records
j) Previous corrective action recommendations

D. Determine root cause
Upon completion of information collection, identify the contributing factors using Appendix E – Example Inquiries to Identify Contributing Factors. Determine the root cause(s) of the incident using Appendix F – Example Inquiries to Identify Root Cause. The root cause of an incident is the underlying reason why the incident occurred. Finding the root cause goes beyond the obvious proximate or immediate factors as it is a deeper evaluation of the incident. The main goal must always be to understand how and why the existing barriers against the hazards failed or proved insufficient, not to find someone to blame. The root cause will be one of the following categories:
E. **Corrective actions**

Once the root cause(s) has been identified, corrective actions must be identified that address the root cause(s) of the incident. Partnership with supervisors and managers to develop corrective actions will ensure feasibility and help establish timelines and target completion dates. Corrective actions must always be supported by senior management.

F. **Approval**

All incident investigations, which include root cause(s) and corrective action(s), must be approved by the Director of Environmental Health and Safety, or designee.

G. **Communication**

Upon approval, all incident investigations, which include root cause and corrective actions must be communicated to relevant parties, including superiors and management, by the investigator.

H. **Implementation and follow-up**

It is the responsibility of the investigator to follow-up on corrective action implementation, target completion dates, and update the investigation as necessary.

I. **Completion**

The incident investigation must be approved by the Director of Environmental Health and Safety, or designee for closure, once all corrective actions have been completed. The investigators must notify all relevant parties, including supervisors and managers, must be notified that the incident investigation is closed.

VI. **Recordkeeping**

Northwestern injury and illness records and incident investigations will be kept on file by Risk Management in the Origami database.

VII. **Regulatory Authority**

Occupational Safety and Health Administration 29 CFR 1904.39 Subpart E – Reporting Fatality, Injury and Illness Information to the Government

VIII. **Contact**

For questions regarding incident investigations, please contact Gwen Butler, Director, Environmental, Health and Safety, at gwen.butler@northwestern.edu or 847.491.4936.
IX. Appendix A – List of Items to Use to Conduct Incident Investigations

- Camera
- Charged batteries (for electronic equipment)
- Video / audio recorder
- Keys / Wildcard
- Measuring devices in various sizes
- Leveling rod
- Clipboard and writing pad
- Pens, pencils, markers
- Graph paper
- Straight-edge ruler
- Incident investigation forms
- Flashlight
- Strings, stakes, warning tape
- Photo marking cones
- Personal protective equipment: Gloves, hat, eyewear, ear plugs, face mask, etc.
- Magnifying glass
- High visibility plastic tapes to mark off area
- First aid kit
- Latex gloves
- Sampling containers with seals
- Identification tags
- Variety of tapes
- Compass
- Carpenters ruler
- Hammer
- Paint stick
- Chalk
- Protractor
- Clinometer
- Appendix D – Information Collection
- Table

X. Appendix B – Tips for Video / Photo Documentation

Interviewees must be aware that they are being video recorded and/or photographed. Investigators must obtain proof of permission from the interviewee prior to the interview.

A. Tips for Video Documentation:
   i. Video the scene as soon as possible
   ii. Scan slowly 360 degrees left and right to establish location
   iii. Narrate what is being taped, and describe objects, size, direction, location, etc.
   iv. If vehicles were involved, record direction of travel, going and coming

B. Tips for Photograph Documentation:
   i. Start by taking distance shots first then move in to take closer photos of the scene
   ii. Take photos at different angles (from above, 360 degrees of scene, left, right, rear) to show the relationship of objects and minute and/or transient details such as ends of broken rope, defective tools, drugs, wet areas, or containers
   iii. Take panoramic photos to help present the entire scene, top to bottom - side to side
   iv. Take notes on each photo; these should be included in the incident investigation file with the photos
   v. Identify and document the photo type, date/time/location taken, subject, weather conditions, measurements, etc.
   vi. Place an item of known dimensions in the photo to add a frame of reference and scale (e.g., a penny, a pack of cards)
   vii. Indicate the locations where photos were taken on sketches (refer to Appendix C – Scene Sketching Techniques)
XI. Appendix C – Scene Sketching Techniques

- Make sketches large and be sure to print legibly.
- Sketches can be created using computer programs, such as Windows PowerPoint.
- Include “Incident Details” (i.e., time, date, injured, location, conditions, etc.).
- Include measurements (i.e., distances, heights, lengths, etc.) and use permanent points (e.g., telephone pole, building) to clearly present the measurements.
- Indicate directions – N= North; E= East; W= West; S= South.
- Make notes on sketch to provide additional information such as the photo location and/or where people were at the time of the incident.
- Note: The sketch can be used during interviews to help interviewees identify their location before, during or after the incident.
### XII. Appendix D – Information Collection Table

<table>
<thead>
<tr>
<th>Who</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who was injured?</td>
<td>Where did the incident occur?</td>
</tr>
<tr>
<td>Who saw the incident?</td>
<td>Where was the employee at the time?</td>
</tr>
<tr>
<td>Who was working with the employee?</td>
<td>Where was the employee at the time?</td>
</tr>
<tr>
<td>Who had instructed/assigned the employee?</td>
<td>Where was the supervisor at the time?</td>
</tr>
<tr>
<td>Who else was involved?</td>
<td>Where were fellow workers at the time?</td>
</tr>
<tr>
<td>Who else can help prevent recurrence?</td>
<td>Where were other people who were involved at the time?</td>
</tr>
<tr>
<td>Who else can help prevent recurrence?</td>
<td>Where were witnesses when incident occurred?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>What was the incident?</td>
<td>Why was the employee injured?</td>
</tr>
<tr>
<td>What was the injury?</td>
<td>Why and what did the employee do?</td>
</tr>
<tr>
<td>What was the employee doing?</td>
<td>Why and what did the other person do?</td>
</tr>
<tr>
<td>What had the employee been told to do?</td>
<td>Why wasn’t protective equipment used?</td>
</tr>
<tr>
<td>What tools was the employee using?</td>
<td>Why weren’t specific instructions given to the employee?</td>
</tr>
<tr>
<td>What machine was involved?</td>
<td>Why was the employee in the position?</td>
</tr>
<tr>
<td>What operation was the employee performing?</td>
<td>Why was the employee using the tools or machine?</td>
</tr>
<tr>
<td>What instructions had the employee been given?</td>
<td>Why didn’t the employee check with the supervisor when the employee noted things weren’t as they should be?</td>
</tr>
<tr>
<td>What specific precautions were necessary?</td>
<td>Why was the employee in the position?</td>
</tr>
<tr>
<td>What specific precautions was the employee given?</td>
<td>Why was the employee using the tools or machine?</td>
</tr>
<tr>
<td>What protective equipment should have been used?</td>
<td>Why didn’t the employee check with the supervisor when the employee noted things weren’t as they should be?</td>
</tr>
<tr>
<td>What protective equipment was the employee using?</td>
<td>Why was the employee in the position?</td>
</tr>
<tr>
<td>What had other persons done that contributed to the incident?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What problem or questions did the employee encounter?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What did the employee or witnesses do when the incident occurred?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What extenuating circumstances were involved?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What did the employee or witnesses see?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What will be done to prevent recurrence?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What safety rules were violated?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
<tr>
<td>What new rules are needed?</td>
<td>Why wasn’t the supervisor there at the time?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>When</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td>When did the incident occur?</td>
<td>How did the employee get injured?</td>
</tr>
<tr>
<td>When did the employee start on that job?</td>
<td>How could the employee have avoided it?</td>
</tr>
<tr>
<td>When was the employee assigned on the job?</td>
<td>How could fellow workers have avoided it?</td>
</tr>
<tr>
<td>When were the hazards pointed out to the employee?</td>
<td>How could supervisor have prevented it - could it be prevented?</td>
</tr>
<tr>
<td>When was the employee’s supervisor last check on job progress?</td>
<td>How could supervisor have prevented it - could it be prevented?</td>
</tr>
<tr>
<td>When did the employee first sense something was wrong?</td>
<td>How could supervisor have prevented it - could it be prevented?</td>
</tr>
</tbody>
</table>
XIII. Appendix E – Example Inquiries to Identify Contributing Factors

1. If a procedure or safety rule was not followed, why was the procedure or rule not followed?
2. Was the procedure out of date or safety training inadequate?
3. Was there anything encouraging deviation from job procedures such as incentives or speed of completion? If so, why had the problem not been identified or addressed before?
4. Was the machinery or equipment damaged or fail to operate properly? If so, why?
5. Was a hazardous condition a contributing factor? If so, why was it present? (e.g., defects in equipment/tools/materials, unsafe condition previously identified but not corrected, inadequate equipment inspections, incorrect equipment used or provided, improper substitute equipment used, poor design or quality of work environment or equipment)
6. Was the location of equipment/materials/worker(s) a contributing factor? If so, why? (e.g., employee not supposed to be there, insufficient workspace, “error-prone” procedures or workspace design)
7. Was lack of personal protective equipment (PPE) or emergency equipment a contributing factor? If so why? (e.g., PPE incorrectly specified for job/task, inadequate PPE, PPE not used at all or used incorrectly, emergency equipment not specified, available, properly used, or did not function as intended)
8. Was a management program defect a contributing factor? If so, why? (e.g., a culture of improvisation to sustain production goals, failure of supervisor to detect or report hazardous condition or deviation from job procedure, supervisor accountability not understood, supervisor or worker inadequately trained, failures to initiate corrective actions recommended earlier)

XIV. Appendix F – Example Inquiries to Identify Root Cause

1. Did a written or well-established procedure exist for employees to follow?
2. Did job procedures or standards properly identify the potential hazards of job performance?
3. Were there any hazardous environmental conditions that may have contributed to the incident?
4. Were the hazardous environmental conditions in the work area recognized by employees or supervisors?
5. Were any actions taken by employees, supervisors, or both to eliminate or control environmental hazards?
6. Were employees trained to deal with any hazardous environmental conditions that could arise?
7. Was sufficient space provided to accomplish the job task?
8. Was there adequate lighting to properly perform all the assigned tasks associated with the job?
9. Were employees familiar with job procedures?
10. Was there any deviation from the established job procedures?
11. Were the proper equipment and tools available and being used for the job?
12. Did any mental or physical conditions prevent the employee(s) from properly performing their jobs?
13. Were there any tasks in the job considered more demanding or difficult than usual (e.g., strenuous activities, excessive concentration required, etc.)?
14. Was there anything different or unusual from normal operations? (e.g., different parts, new or different chemicals used, recent adjustments/maintenance/cleaning on equipment)
15. Was the proper personal protective equipment specified for the job or task?
16. Were employees trained in the proper use of any personal protective equipment?
17. Did the employees use the prescribed personal protective equipment?
18. Was personal protective equipment damaged or not properly functioning?
19. Were employees trained and familiar with the proper emergency procedures, including the use of any special emergency equipment and was it available?
20. Was there any indication of misuse or abuse of equipment and/or materials at the incident site?
21. Is there any history of equipment failure, were all safety alerts and safeguards operational and was the equipment functioning properly?
22. If applicable, are all employee certification and training records current and up-to-date?
23. Was there any shortage of personnel on the day of the incident?
24. Did supervisors detect, anticipate, or report an unsafe or hazardous condition?
25. Did supervisors recognize deviations from the normal job procedure?
26. Did supervisors and employees participate in job review sessions, especially for those jobs performed on an infrequent basis?
27. Were supervisors made aware of their responsibilities for the safety of their work areas and employees?
28. Were supervisors properly trained in the principles of incident prevention?
29. Was there any history of personnel problems or any conflicts with or between supervisors and employees or between employees themselves?
30. Did supervisors conduct regular safety meetings with their employees?
31. Were the topics discussed and actions taken during the safety meetings recorded in the minutes?
32. Were the proper resources (i.e., equipment, tools, materials, etc.) required to perform the job or task readily available and in proper condition?
33. Did supervisors ensure employees were trained and proficient before assigning them to their jobs?