

Incident Analysis



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The purpose of an incident analysis is to learn from an event and prevent the same or similar types of losses from recurring.

Introduction

The following information is presented to develop a strategy to prevent and eliminate recurrence of the chain- of-events that led to an incident. The term “incident” is used instead of “accident” because the energy one invests to investigate incidents can be

just as valuable and reduce the financial impact, injury severity, or the extent of damages. A thorough incident investigation file can also assist in the event of litigation.

Discussion

Employers should have a process to respond to the scene, examine evidence, analyze facts, and learn from the event to implement solutions to prevent losses from recurring. The ANSI Standard (2012)¹ published a brief list of suggested key concepts to include in the analysis process.

E6.2: Incidents may be a symptom of a problem in the Occupational Health and Safety Management System (OHSMS). Traditionally, only incidents that result in reportable injuries or major damage are investigated. However, most incidents are preceded by warnings or close calls. An incident that does not result in an injury or damage is often referred to as a “close call” or “near miss.”

The near-miss or close call often lacks an initial “response” as there are no injuries to treat, the customer/visitor does not complain or there is minor property damage at worst. However, these events provide a cost-beneficial opportunity to learn. For optimum safety results, the analysis of near-miss incidents is encouraged. Using these materials; the reader should consider any event that causes or could cause injury damage or liability to be an incident, regardless of whether the event is related to workers, contract labor, customers, third parties, property losses, or damaged products.

Before beginning an analysis, the investigator should first be grounded in a few basic concepts. **Cascading Variance²** – As work proceeds, staff may move away from intended safe work practices and lessen the safeguards that protect colleagues, guests, property or themselves. Over time, incremental changes in work practices may create a new way of working that is negatively different than originally intended.

- 1. Work as imagined** – Most work, when designed by workers and managers, is usually intended to be safe and productive. We call this “work as imagined.” Workers and immediate supervisors usually receive instructions, mentoring, training, and practice as a way of passing on these work practices. Work as imagined is often designed to minimize the potential for workers or third parties on-site to come in contact with hazards. These processes are also designed to minimize the potential for damage to equipment and the project itself.
- 2. Work as conducted** – As workers proceed through their workday, we recognize that when first assigned, the novice will be learning the steps of the assigned tasks and seek out ways to become valued, which is often synonymous with productive. Workers may deviate from known

safe work practices for a variety of reasons, including looking for ways to become faster, complete more tasks, minimize waste or fatigue. Competing interests may cause workers/supervisors to change their behavior; emotional state, and communication style. This may result in mixed messaging that can influence safe work behavior.

- 3. Risk Factors** – A risk factor is any attribute, characteristic, or exposure of people, material, equipment or the environment that increases the likelihood of injury/damage if not accounted for in the work design and practice. Some examples of the more important risk factors may include the weight of an object, equipment design, moving parts and pinch-points, gravity, height, electricity, flammability, weather, the pace of work, hot or cold surfaces, uniqueness of design and environmental issues.
- 4. The New Normal** – As unsafe unintended work practices are “accepted” by management through a lack of enforcement, or by permitting changes that increase productivity at the expense of safety; a new way of working becomes the “new normal” and the accepted practice. In essence, there is a lowering of safeguards in the process.

Cascading Variance²

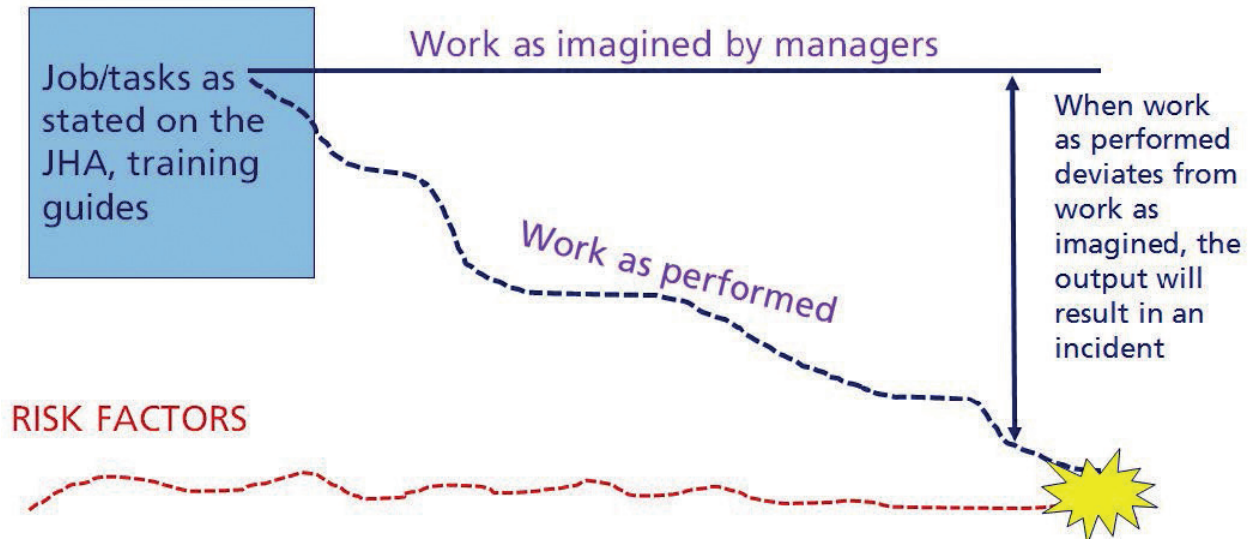


Figure 1 – Cascading Variance

Basic incident/incident terminology

An incident is a near miss, or, more nearly correct, a near hit. It has been described as a “lucky incident.” An incident does not result in an injury, damage, delay or complaint.

An incident is, by definition, an unplanned, unwanted event that disrupts the orderly flow of the work process. It involves the motion (energy) of people, objects, or substances. It is indicated by physical injury to staff or third parties, property damage and/or delay.

Two key conditions are **hazard** and **exposure**.

A written incident analysis program should contain the following:

- Company notification/contact list
- Documented training on incident analysis
- Procedures for implementing corrective actions
- Distribution list of report (including senior management)
- Procedures for documenting lessons learned or best practices, etc.

Guidance

Below are the primary types of incident types:

Incident types

Struck-by – A person, equipment or structure is forcefully struck by another object. The force of contact is provided by the object. Example – a pedestrian is struck by a moving vehicle.

Struck-against – A person, equipment or material forcefully strikes an object. These items provide the force. Example – a person strikes a leg on a protruding beam.

Contact-by – Contact by a substance or material that by its very nature is harmful and causes injury/damage. Example – Equipment is contacted by steam escaping from a pipe resulting in damage and inability to use.

Contact-with – A person, equipment or material comes in contact with a harmful substance. One of the listed items initiates the contact. Example – while touring the site an owner touches the hot surface of a boiler.

Caught-on – A person, equipment or material is caught on an object that is either moving or stationary. This may cause entanglement, loss of balance and fall, or suffer some other harm. Example – a person carrying rebar comes in contact with a load line, dropping the material onto the deck.

Caught-in – A person, equipment or material is trapped, stuck, or otherwise caught in an opening or enclosure. Example – a third party is walking on a floor when their foot is caught in a hole in the floor.

Caught-between – A person, equipment or material is crushed, pinched or otherwise caught between either a moving object or stationary object or between two moving objects. Example – material is dropped at a job site in front of a loading dock. A truck backs into the material that is caught between the loading dock and vehicle.

Fall-to-surface – A person slips or trips and falls to the surface he/she is standing or walking on. Example – a pedestrian slips on debris accumulated on the sidewalk in front of a building and falls.

Fall-to-below – A person slips or trips and falls to a surface level below the one they were walking or standing on. Example – a supervisor is on their phone while walking a floor; they trip on a stairway and fall to the floor below.

Exertion – Someone over-exerts or strains themselves while performing a task. Examples – a person lifts a heavy object; repeatedly flexes their wrist while moving materials or; a person twists their torso to place materials on a table. Interaction with objects, materials, etc. is involved.

Bodily reaction – Caused solely from stress imposed by free movement of the body or assumption of a strained or unnatural body position. Example – a person bends or twists to reach a valve and strains their back.

Exposure – Over a period of time, someone is exposed to harmful conditions. Example – a person is exposed to levels of noise in excess of 90 dba for 8 hours.

Four-step process for incident analysis

The steps of a thorough analysis include:



Figure 2 – Incident Analysis Steps

There are four primary tasks associated with incident analysis and reporting. An investigator should have a clear understanding of the process and the steps involved in conducting a formal analysis. The process is broken down as follows:

- **Respond**
 - Secure the scene
 - Collect the facts
- **Examine**
 - Gather evidence, conduct interviews, document the incident
- **Analyze**
 - Determine the how vs. the why
 - Identify the chain of events leading to the incident factors
- **Learn**
 - Recommendations (lessons learned/corrective actions)
 - Write the report

Step 1 – Respond

Secure the scene by keeping personnel from entering areas with structural

damage, flooding, fire, and damage to machinery or equipment, i.e., pressurized vessel equipment, equipment with stored energy, electrical malfunctions, and process safety issues. After checking the scene for safety, check anyone that appears to be injured and tend to their medical needs. Make sure it is safe to enter the area. Initiate the location emergency response plan if needed.

The primary goal of the first step is to gather incident information that can give critical clues to the causes associated with the incident. To ensure information is unbiased and accurate, it is imperative that the incident scene is secured.

The analyst's primary goal is to begin gathering incident information that can give critical clues into the causes associated with the incident. Priorities for scene securement include:

- Checking the scene for safety
- Initiate the location emergency response plan
- Provide medical care/transport for injured

- Beware of confirmation bias
- Control existing hazards
- Prevent further injuries
- Get more help if needed
- Preserve evidence
- How you react, when informed of an incident, matters a great deal
- Respond with empathy and understanding

To preserve evidence, access to the incident site should be limited. Names and numbers of witnesses should be recorded for future use. Removing witnesses from the incident area and separating them from each other is also beneficial. This allows witnesses to provide their account of events rather than compare stories. The incident site should be secured with some type of barricade or taped off to limit access and avoid adverse exposure to the scene. Any high-value or critical equipment should be protected during the analysis process.

Step 2 – Examine

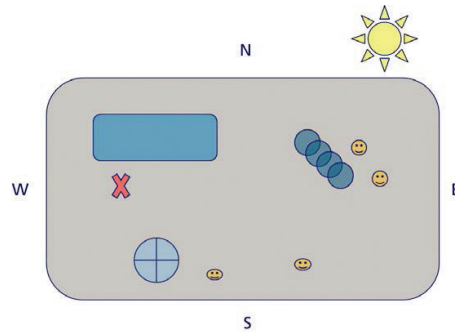
Incident analysis should begin as soon as practical. Experience shows valuable information may be lost when the analysis is delayed. Do not, however, allow the process to take precedent over attending to the injured parties or property/equipment preservation needs. The point of the analysis is to learn from mistakes and prevent a recurrence. Should institutional learning fail to occur, one can reasonably expect the risk factors to remain and negative outcomes to repeat. Various tools and techniques can be used in this step to assist in collecting pertinent facts about the incident to determine:

- Cause of injury including hazardous conditions and unsafe worker/management behaviors that produced or contributed to the loss
- Include injured parties in the analysis as they have firsthand knowledge of how the incident occurred
- Analyze the situation, not the person
- Gather factual evidence
- Capture photographic evidence of the scene to assist in “painting a picture”
- Variances – look to identify system weaknesses that produced the causes for the incident.

Critical items to document include the date, time, weather conditions, identification and location of injured parties or damaged equipment, along with witnesses and the sequence of events.

Take measurements and diagram the scene. Methods to document the incident scene may include the preparation of visual aids, such as photographs, field sketches, satellite maps, and other graphical representations to provide data for the analysis.

- Sketch the incident scene
- Locate direction of view
- Locate significant structures & equipment
- Locate injured parties / damaged equipment
- Locate witnesses
- Locate warning signs, markers, and barricades



Additionally, the following documents may help in determining facts about the incident.

- Standard operating procedures
- Job hazard analysis
- SDS sheets
- Training records
- Safety/health programs
- Discipline records
- Inspection records
- Maintenance records
- Operator/manufacture manuals

Interviews

A key element in collecting facts is related to the interview process. Interviewing the injured party and witnesses soon after the incident is important. People may forget details, they may talk to others about what happened, they might consider the impact of the event on them or they can overhear others talking about the event. All have the potential to reduce the accuracy of their memory that lessens the quality of the data. An important aspect of interviewing is to listen to the person talking. Avoid asking leading questions, rather ask open-ended questions and confirm with a closed-ended question. It is best to interview one-on-one, but if the individual requests another person to be present, that is okay.

Look for a comfortable, relaxed atmosphere for conducting the interview that is in a non-threatening location. Use on-scene interviews when beneficial but provide privacy and limit interference with the process. In practice, an interview should move from the general to the specific (i.e., how, who, what and when).

Put the person at ease by:

- Explaining the purpose and what your role is (fact-finding not fault-finding)
- Express concern and the desire to prevent a similar incident
- Tell the person that their knowledge is important
- Be approachable, understanding and open-minded
- Be calm and unhurried; allow the individual time to think
- Ask for their opinion and ideas as to what could have been done to prevent the incident/injury

When the interview is completed, offer a copy of your notes for clarification. Thank them for their time and contributions. If possible, (subject to legal/insurance advice) provide highlights of findings to the persons interviewed before the information becomes public.

Develop the chain of events in sequence

In this step, use the information collected and determine the events before, during, and immediately after the incident. Record the chain of events starting with the beginning of the shift or a time when everything was fine if it is necessary to go further back. Consider asking, “How did you start your day”. List the events/steps until after the activities up to the incident have been described. Each step should be noted showing the sequence, time, and if anything varied from the routine/planned activities and the reason for the variance.

After checking on the condition of the person being interviewed, ask; “How did you start your day”

- Include change decisions, if any in the information gathered
- Use the interviewing process to collect sequence timing from multiple perspectives
- Collect machine data recorded on gauges and instrumentation
- Merge all evidence collected during interviews on to a single timeline chart
- Examine any inconsistencies discovered
- Stop the timeline when all has returned to normal or processes stopped to address injuries and damage.

Write the report

A primary reason incident analysis may fail is that report forms lead to the identification and correction of surface/immediate/single causes while ignoring the multiple cause factors. The report should reflect all the hard work and efforts from Step 1 through Step 4. Follow-up is critical to improving the likelihood that recommendations have been completed.

When the incident analyst completes the report, he or she will give it to someone who will decide a course of action. That's the role of the decision-maker. For an incident analysis to be effective, management must consider the findings and develop an action plan for taking corrective action and making system improvements. Finally, periodic evaluation of the quality of incident analysis and report is critical to maintaining an effective program.

Post analysis

- After the analysis is concluded, consider the following:
- Prepare a comprehensive report
- Generate a corrective action list and track corrective actions to improve timely completion
- Prepare a lessons learned document and share with the entire company ~ subject to the advice of counsel if potential litigation may be involved
- Follow-up with injured parties, owner and others that may have been impacted by the event
- Stay involved with the claim file
- Assign corrective actions to individual(s) with a completion date

Step 3 – Analyze

Analysts should realize there is rarely a single cause for how or why an incident occurs. More likely there is a chain of events, interactions, and factors that lead to causation. Working through all the data may be frustrating when attempting to create mitigation strategies but is important to provide the greatest number of effective solutions.

The cause of injury describes the harmful transfer of energy. This may take the form of:

- Acoustic – excessive noise and vibration
- Chemical – corrosive, toxic, flammable, reactive
- Electrical – low/high voltage, current
- Kinetic – energy transferred from impact
- Mechanical – components that move
- Potential – “stored energy” in objects
- Radiant – ionizing and non-ionizing radiation
- Thermal – excessive heat, extreme cold

The surface causes of an incident could include:

- Specific/unique hazardous conditions and/or unsafe actions
- Directly produce or contribute to the incident
- They may exist/occur at anytime, anywhere and involve anyone
- They may or may not be controlled by management
- If you're highlighting a person or thing, it's probably a surface cause

Multiple causation

There are five steps involved in determining the causes of an incident. These steps include:

1. Analyzing the event to identify and describe the direct cause of the incident
2. Reviewing activities from the beginning of the day up to events occurring just before the incident to identify conditions and behaviors that contributed to the incident. (primary surface causes)
3. Analyzing conditions and behaviors to determine other specific conditions and behaviors (contributing surface causes) that contributed to the incident
4. Analyzing the contributing condition and behavior to determine if weaknesses in carrying out safety policies, programs, plan, processes, procedures, and practices (inadequate implementation) exist

5. Determining system flaws to determine the underlying design weaknesses

Cause factors of the incident can be defined under the following:

- People (Any person with a role/involvement in the incident)
 - Selection – How are staff recruited for or assigned to tasks
 - Training – How are staff trained in general safe practices and the processes specific to the work being performed
 - Enforcement – How active are the various levels of management in encouraging and requiring adherence to safe work practices
 - Policies/Procedures – Are the policies and procedures adequate for the work being performed?
- Material (Any material utilized in the process)
 - Safe Design – Is the material appropriate for the task being performed
 - Safe Arrangement – Is the material utilized as intended in the process
 - Purchasing – How are materials sourced, what are the criteria and how are conflicts between safety and costs managed
 - Maintenance – Are materials protected and kept up to standard for utilization
- Equipment (Any equipment utilized in the process)
 - Safe Design – Is the equipment appropriate for the task being performed
 - Safe Arrangement – Is the equipment utilized as intended in the process
 - Purchasing – How is equipment sourced, what are the criteria and how are conflicts between safety and costs managed
 - Condition/Availability – How is equipment maintained and is it readily available as needed to the staff
- Environment (Includes the physical conditions of the job and culture at the location)

- Safe Design – How is the overall work designed for safety
- Safe Arrangement – How are processes/interactions managed to minimize loss potential
- Housekeeping – How is cleanliness managed to minimize the potential for loss.
- Atmosphere – What is the company culture for the particular job location and what impact is it having on safety decisions

Implement solutions

The last two steps are designed to assist in the development of potential solutions that correct hazards and offer long-lasting system improvements.

Step 4 – Learn

There are likely multiple paths/steps of cause and effect to be discovered during the analysis process. The analyst is provided the opportunity through the discovery of the chain of events to create a holistic view of the loss and a systemic corrective action approach. A systemic approach is likely to develop multiple corrective actions. The role of the analyst is to help the organization learn from the event, implement the appropriate corrective actions to break the chain of events, control various interactions, and prevent a recurrence.

After completing the incident analysis, the next step is to recommend corrective actions and discuss lessons learned. Corrective actions could be related to the hierarchy of controls as follows:

- **Engineering controls.** Engineering controls consist of substitution, isolation, ventilation, and equipment modification. These controls focus on the source of the hazard, unlike other types of controls that generally focus on the people or items exposed to the hazard. The basic concept behind

engineering controls is that, to the extent feasible, the work environment and the job itself should be designed to eliminate or significantly reduce exposure to hazard(s).

- **Management controls.** Eliminate/reduce frequency and duration of exposure to hazards by controlling processes. Management controls may result in a reduction of exposure/risk through methods such as changing procedures, improving equipment utilized, or adjusting the work station or environment. The use of personal protective equipment is not considered a means of management control. Four primary strategies for management controls are:
 - Safe procedures and practices
 - Scheduling
 - Improved tools
 - Interim measures; improvement strategies to fix the system
- **Personal protective equipment (PPE).** Personal protective equipment creates a temporary barrier from exposure, but again, it is not as effective or enduring as engineering controls. For instance, a maintenance shop might operate older but still functional tools, which exceed the permissible exposure limits for noise. The company can control the exposure through a hearing conservation program with required hearing protection, but this still doesn't eliminate the noise, rather it only provides a barrier to the exposure.

When exposure to hazards cannot be engineered out of normal operations or maintenance work, and when safe work practices and other forms of administrative controls cannot provide sufficient additional protection, a supplementary method of control is the use of protective clothing or equipment. This is collectively called personal protective equipment, or

PPE. PPE may also be appropriate for controlling hazards while engineering and work practice controls are being installed. For specific OSHA requirements on personal protective equipment, see OSHA's standard, 1910 Subpart I.

- **Interim measures.** Interim measures should be initiated to remove hazards until a more permanent solution can be arranged. For instance, if a broken electrical outlet cannot be repaired immediately, locking and tagging out the breaker is a reasonable temporary quick-fix until a qualified electrician can be contracted to repair the fixture.

Additionally, it is important to use any incident to determine if improvements to policies, programs, plans, processes, and procedures are necessary for one or more of the following elements of the safety management system:

- Management commitment
- Accountability
- Worker involvement
- Hazard identification/control
- Incident/incident analysis
- Education/training
- System evaluation

System improvements might include some of the following:

- Writing a comprehensive safety and health plan that includes all safety management elements
- Improving a safety policy so that it establishes responsibility and accountability
- Changing a training plan to include a demonstration
- Revising purchasing policy to include safety considerations as well as cost
- Changing the safety inspection process to include all supervisors and workers

Conclusion

Conducting a thorough incident analysis includes training workers in proper emergency and incident response; analyzing the incident to determine multiple cause factors associated with cascading variance and using the information to prevent similar incidents (lessons learned).

References

1. American National Standards Institute, Inc. (2012). *Occupational Safety and Health System Management – ANSI/AIHA/ASSE Z10 / ANSI/ASSE Z590.3 – Occupational Health and Safety Design Package*
2. Conklin, T., (2012). *Pre-Incident Analysis – An Introduction to Organizational Safety*. Ashgate Publishing Limited, Farnham, Surrey England

Resources

Zurich can help! The Zurich Incident Analysis approach can be delivered to you through onsite training sessions. To learn more about Zurich Incident Analysis; please contact your risk engineering account coordinator or call 800 982 5964.

Appendices

Appendix A – Five key questions to Incident analysis ~ Start with How

Five Key Questions to Incident Analysis	
<p>Who...</p> <ul style="list-style-type: none"> was injured? saw the incident? was working with injured person? had instructed, trained, assigned? was the affected employee? else was involved? can help prevent recurrence? <p>What...</p> <ul style="list-style-type: none"> was the incident? was the injury/illness/damage? was being done at the time of incident? were they told to do? tools were being used? machine was involved? operation was being done? instructions had been given? precautions were necessary? PPE was in use used? did others do to contribute to incident? problem or question was encountered? did the employee and others do after the incident? did witnesses see? will be done to prevent recurrence? safety rules were violated? safety rules were lacking? safety rules/procedures are needed? <p>When...</p> <ul style="list-style-type: none"> did the incident occur? did workers begin the task? were people assigned to the task? were hazards pointed out workers? did supervision last check on the progress of the job/task? did workers/others notice something was wrong? 	<p>How...</p> <ul style="list-style-type: none"> was the employee injured? did the employee perform their work? did others perform their work? was PPE used? was equipment/tools used? were instructions given to people working? was the process/workers arranged? did supervisors engage workers? did the workers assess working conditions? were employees safety concerns heard? was the supervisors schedule arranged? could the incident have been avoided? could co-workers avoid similar incidents? could the supervisor prevent the incident? <p>Where...</p> <ul style="list-style-type: none"> did the incident occur? was the worker/material at the time of event? was the supervisor at the time? were co-workers at the time? were the other people involved at the time? were witnesses when the incident happened? else does this condition/activity exist?

Appendix B – Do's and Don'ts

Do's and Don'ts

Do	Don't
<ul style="list-style-type: none">• Create an incident analysis strategy• Assemble an incident analysis response kit• Train management and key workers• Encourage timely reporting• Analyze all incidents• Follow the four steps to create an effective analysis: 1) Respond, 2) Examine, 3) Analyze, 4) Learn• Attend to the injured parties/protect physical damage• Listen intently to the injured parties• Ask open-ended questions starting with how, what, where, how and when• Report the incident on the same day it occurs or when first notified• Analyze the situation and chain of events• Follow-through on all actions to prevent recurrence	<ul style="list-style-type: none">• Ignore complaints• Ask leading questions• Place blame• Don't place yourself or others in harm's way while responding• Don't Investigate the person

Appendix C – Injury investigation form

SUPERVISOR INJURY INVESTIGATION REPORT
(To be completed by the Supervisor with employee input)

Today's Date:	Date/Time of Injury:
Injured Employee:	Occupation:
Department:	Supervisor:

MEDICAL AND LOST TIME STATUS		
<input type="checkbox"/> Lost Time	<input type="checkbox"/> Medical Only	<input type="checkbox"/> Report Only
If Lost Time, last day worked:		
If Lost Time, has employee returned to work? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, date returned:		
Was first aid administered: <input type="checkbox"/> Yes <input type="checkbox"/> No		
If yes, describe:		
Was employee treated in the emergency room? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Was employee hospitalized overnight? <input type="checkbox"/> Yes <input type="checkbox"/> No		

INJURY LOCATION
Describe (include building and room, if outside reference land marks to identify location):

ACCIDENT INFORMATION
Please answer the following questions and provide any additional information describing how the accident or injury occurred.
Describe injury (include body part and nature of injury):
What was the employee doing?
Was the employee following established work procedures (e.g., proper lifting)? Describe.
Was the work a routine task or something the employee has not done before or does infrequently?
If the employee was carrying materials, what were they, how heavy were they, should the employee have asked for help?
If environmental factors (e.g., temperature, snow/ice, lighting) contributed to the accident, what were they and how did they contribute?

Appendix D – Witness statement

WITNESS STATEMENT
(To be completed as soon as possible following incident)

Today's Date:
Injured Employee (if applicable):

WITNESS INFORMATION
Name:
Age:
Address:
Phone Number:
Department / Job Title:
If not an employee, employed by:
Reason for presence at location:
If there was an injury, are you related to the injured employee? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If yes, how?
How long have you known this employee (if applicable)?

INCIDENT INFORMATION
Date of incident: _____ Time: _____ <input type="checkbox"/> AM <input type="checkbox"/> PM
Did you actually see this incident happen? <input type="checkbox"/> Yes <input type="checkbox"/> No
If no, how do you know about it?
How near were you at the time of the incident?

INCIDENT INFORMATION CONTINUED...

Please explain in detail what you know about this incident:

If there was an injury, did this employee talk to you about this incident? Yes No

If yes, when?

What did the employee say?

Do you know of any other incident, injury, accident or illness that this employee has ever had?

List any other persons who may have information about this incident:

Additional comments:

To the best of my knowledge, this statement is true and correct.

Witness Signature: _____ **Date:** _____

Appendix E – Incident analysis kit

Engaging in proper planning may help ensure that best practices are consistently used. Any workplace should have a consolidated list of emergency numbers for police, fire, hospitals, poison control, and all other relevant agencies. This list should be placed in strategic areas including in the incident analyst kit for easy access at the time of an incident.

An incident analysis kit is pre-assembled for immediate access/“grab and go” when needed. Listed below are some items that may be considered to include in an incident analysis kit:

Suggested kit supplies

Supplies stocked in the incident analysis kit should be appropriate for the types of exposures and anticipated hazards. This list may and should be altered to account for the specific industry involved. Be careful to not overstock what will be needed to respond to an incident. Responding to injuries, then damage, then safety needs and controlling the site of the occurrence is a priority over-analyzing the incident.

Use During the Event		Use After
Response Supplies	Emergency Numbers	Analysis Supplies/Contacts
<ul style="list-style-type: none"> • Camera (fully charged battery) • Personal Protective Equipment appropriate for the type of exposures, i.e., Respirator, Gloves, Hard Hat, Hearing Protection, etc. • Blood borne Pathogen (BBP) Kit • Caution Tape • Tape measure • Safety Utility knife • First-Aid kit • Flashlights • Mobile phone 	<ul style="list-style-type: none"> • 911, Police, Ambulance, Fire Department local numbers • Local Hospital Emergency Room • Urgent Care Center (PPO Network) numbers • Poison control 	<ul style="list-style-type: none"> • Clipboard, paper, pencils • Analysis Forms • Witness Statement Forms • Workers’ Compensation and General Liability-Quick Guide • State First Report of Injury • Zurich’s Cause Mapping Tool <p>Phone Contacts</p> <ul style="list-style-type: none"> • Company Legal • Claims Handling Service • Corporate Office Emergency Notification Guidelines • OSHA for Serious Incidents and Fatalities

Appendix F – Zurich cause analysis

Zurich Cause Analysis

Overview		
Investigation Process		
Step 1	Respond	Secure the scene, take care of the injured party, do no further harm
Step 2	Examine	Identify Who, What, When, Where, How
Step 3	Analyze	Use a cause map to identify the factors observed
Step 4	Learn	Engineering, administrative, PPE controls

Step 1 – Collect the facts

Who?

When?

Where?

What was the employee doing just before the incident occurred?

What happened?

What was the injury or illness?

What object or substance directly harmed the employee?

Step 2 – Cause Analysis

Possible contributing factors that build toward the systematic causes

Human Elements	Tools and Equipment	Materials – raw or finished products	Environment
Selection Training Enforcement Policies/procedures	Safe design Safe arrangement Purchasing Maintenance	Safe design Safe arrangement Purchasing Condition/availability	Safe design/work area Safe arrangement Housekeeping Atmosphere

Describe how the job/task is supposed to occur as imagined by management. Refer to JHA's, SOP's or other descriptions if needed

Human elements

Process mapping (chain of events leading to the incident)

How?

How?

How?

How?

How?

Response to how

Factor (from chart above)

Corrective action(s)

Action

Owner

Target completion date

Tools and equipment

Process mapping (chain of events leading to the incident)

How?

How?

How?

How?

How?

Response to how

Factor (from chart above)

Corrective action(s)

Action

Owner

Target completion date

Materials – raw or finished products

Process mapping (chain of events leading to the incident)

How?

How?

How?

How?

How?

Response to how

Factor (from chart above)

Corrective action(s)

Action

Owner

Target completion date

Key learnings from the incident

Intersecting causes

Human elements

Tools and equipment

Materials – raw or finished products

Environment

Describe where the job/task deviated from the expected processes as imagined by management

Response

Factor (from chart above)

What did you learn from the event that can be shared broadly?

Appendix G – Incident analysis document checklist

Privileged and confidential-attorney work product

Listed below are documents that may be part of an incident analysis required in future litigation. Certain documents must be secured, provided to legal counsel and insurance carrier claims handler. These documents will assist the attorney in preparing the defense. All documents provided should be marked or stamped as “Attorney-Client Privileged Information in Preparation for Litigation”

Contracts/project agreements/change orders/work orders/purchase orders

- Signed client contract or agreement (Please provide all addendums)
- Architect agreement
- Client consultant agreement (if applicable)
- Subcontractor agreement
- Other (i.e. lower-tier subcontractor or supplier contracts, purchase orders or vendor agreements)

Progress schedule data (state of construction on date of incident)

- Project directory listing all GC, subcontractor and sub-tier firms present
- Weekly safety meeting minutes
- Project progress reports/project completion reports
- Major milestones
- Certificate of substantial completion
- Certificate of completion, if we were not on site at time of incident
- Certificate of occupancy

Subcontractor information

- Certificate(s) of insurance and policy endorsements submitted by subcontractor and lower-tier subcontractor (if applicable)
- Evidence of indemnification of with the client
- Copy of subcontractor’s safety program
- Copy of subcontractor’s substance abuse program
- Copy or copies of OSHA citations issued to subcontractor and/or lower-tier subcontractors
- Copy of site safety orientation attendance sheets
- Safety / Toolbox meetings conducted by subcontractor and/or lower-tier subcontractors

Incident reporting

- Workers’ compensation first report of injury form
- Incident/incident analysis report (general liability or workers compensation). This includes your handwritten notes and voice recordings, if any.
- Subcontractor’s incident report
- Incident/incident reports from all other parties with knowledge of incident, including but not limited to, lower-tier subcontractor(s)
- Photographs of incident scene to include negative and/or disc
- Witness/client statements regarding this incident or any correspondence from client or their agent(s) discussing, informing or notifying this company of the incident

- New worker orientation report
- Police, paramedic and first aid reports
- Correspondences with subcontractor (all tiers) or clients relating to the incident

Evidence of company safety enforcement on project site

- Progress photographs taken of the “construction site” on or near date of incident
- Copy or copies of safety notification forms issued
- Project inspection documents or log books
- OSHA 300 log
- Toolbox meeting reports
- Incident / incident / first aid log
- Worker orientation report

Reminder:

Project plans and supervisors’ logbooks may be requested in preparation for litigation.

You may be contacted by the media, family members of injured parties, insurance representatives and attorneys. You are reminded that you may not provide anyone contacting you to discuss this incident must be directed to _____ at _____.

The Zurich Services Corporation
Risk Engineering
1299 Zurich Way
Schaumburg, Illinois 60196-1056
800 982 5964 www.zurichna.com

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