

RiskTopics

Job hazard analysis (JHA) for construction

Zurich Resilience Solutions - Risk Engineering

A Job hazard analysis (JHA) is one of the key components to identifying and mitigating exposures on a construction project. There are multiple layers of analysis that can be used to prevent loss and a JHA is just one of the steps that should be taken as a part of a comprehensive project risk review.

Introduction

As part of an overall hazard identification through use of a risk register, hazardous activities are identified. Once they are identified, a Job Hazard Analysis (JHA) should be developed for each hazard. A JHA focuses on all the major components and risks of the project and identifies hazards. Once hazards are identified, controls can be put in place to reduce or eliminate those risks.

The learning opportunity presented through the difference between work as imagined by managers and work as completed by workers requires all interested parties to come together and deeply understand the processes and procedures in play. This exercise should be a collaborative effort with mutually agreed upon outcomes for all parties where all have an equal voice. This notion may scare managers, but the consequence could be workers resorting to completing tasks in unimaginable ways, not out of spite but to achieve the perceived goals expected by the organization.

Discussion

Definitions

Job hazard analysis (JHA): Focuses on all the major components and risks of the project and identifies hazards. Furthermore, controls are identified to reduce or eliminate those risks. Address specific high hazards such as quality, procurement, scopes of work that present high hazards such as traffic control, pedestrian traffic, shutdowns, utilities, vibration, blasting, excavation near other structures, risks of collapse, water infiltration, etc. This analysis should lead to which activities or scopes will require a specific activity hazard analysis.

Definitions continued

Activity hazard analysis (AHA): Analysis (AHA) analyzes each task, scope of work or defined feature of work to be performed associated with the project. The analysis focuses on the relationship between the worker, the task, the tools, and the work environment. The AHA includes site conditions, equipment, materials, PPE and required training to perform the task. This applies to all defined features of work such as sheeting and shoring, curtainwall, waterproofing, flying forms, concrete placement, steel erection, excavation, sprinkler shutdowns for renovations, utility tie-ins, roofing, solar panel installation, etc. This analysis should also lead to what mock-ups should be constructed.

Daily hazard analysis (DHA): Looks at the day’s activities and what potential hazards exist based on site conditions and the scope of work for that day. Review the DHA prior to starting work, after a shift change or when conditions change. Consider things like weather, traffic, overhead hazards, work area hazards, fall hazards, silica exposures, construction traffic, deliveries, PPE, tools in good working condition, housekeeping, etc.

For any hazard analysis, the risks should be identified, defined, and evaluated based on their possible causes, potential outcomes, and associated risks. Each risk should be rated based on their priority, severity, potential impact, and probability. Each risk should have an associated control measure. Each risk should be assigned to an individual for responsibility. Risks should be discussed among the entire project team as each member may have seen risks arising from unexpected causes on other projects. Using employees performing the tasks to help create and maintain these documents is considered a key practice

For more detailed information on breaking down these steps, please see the Zurich Risk Topic entitled “Hazard identification and risk register.”

The lifecycle analysis of hazard identification should start with a Risk Register and then flow down to the DHA:



Guidance

Job hazard analysis (JHA)

Job hazard analysis

Establish a program to conduct, update and maintain a job hazard analysis program (JHA) to identify relevant exposures associated with all the major tasks performed throughout the project. Some potential hazards to consider:

- Quality management system
- Schedule
 - Procurement issues such as long lead items or sole source or proprietary products

- Schedule issues such as fast tracked schedules, shift work and overtime. Also consider loss of production when schedules are accelerated.
- Site Issues
 - Traffic control and any phasing
 - Site security and nearby crime
 - Visitor safety
 - Project access and parking
 - Pedestrian traffic
 - Project staging and material storage
 - Worker parking
 - Mobilization
- Job sequencing
- Housekeeping and trash removal, material recycling
- Utilities
 - Any required shutdowns including utilities, equipment, sprinkler systems, etc.
 - Underground utilities
- Adjacent exposures
 - Such as buildings, railroads, airports, etc.
 - Excavation near other structures (undermining risk which may require shoring or under pinning)
 - Vibration
- Noise pollution
- Dust control
- Blasting hazards
- Risks of collapse
 - Building or structural
 - Crane
 - Slope failures
- Fire
 - Fire risks and hot work
 - Fire protection plan including fire department communication, temporary standpipes, access and connection points
 - Flammable liquids
 - Smoking
 - Fire department emergency response times
- Environmental risks and hazardous materials such as lead, asbestos, mold, silica, etc.
- Natural weather issues such as hurricanes, risk of wildfires, extreme heat or cold, flooding
- Water intrusion risks such as groundwater, storm water, working in areas prior to them being fully closed in, spills, leaking or broken pipes, temporary roof drainage, temporary weather protection, water pipes over equipment, water testing, etc.
- Medical emergency response times

- Third party testing
- Adequate ventilation
- Chemicals storage and access to SDS
- Confined space
- Fall protection
- Are there are other contractor activities in or near the work area that could create potential exposures/hazards?

The JHA should identify:

- Affected parties (subcontractors, public, adjacent structures, etc.)
- Controls and best safe work practices
- Probability of occurrence and possible severity
- Recommended actions to prevent incidents
- Contingencies when problems arise

Once the hazards are identified, the next step is to determine how to mitigate the risk and what control measures need to be put in place. These measures will vary by project and risk, but may include additional safety measures such as PPE, training, procedures, engineering, or administrative controls, etc. Once the JHA's are completed, they should be reviewed, tracked, and audited to ensure that the measures are being followed.

Conclusion

Identifying and mitigating risks is a critical step in any construction project to reduce risk, injuries, and potential claims. These risks should be continually monitored, updated, and communicated to workers as any conditions change. Even if no changes were made, hazards that were previously missed may be identified as work progresses.

For more information on Zurich's extensive Risk Engineering and Sustainability services, please contact your Risk Engineer or visit us at [Risk Engineering and Sustainability Services | Zurich Insurance \(zurichna.com\)](https://zurichna.com).

Other Resources

[OSHA Job Hazard Analysis](#)

Zurich can help! The Zurich Hazard Analysis (ZHA) approach leverages your in-house expertise to systematically identify and manage key hazards. We then work with you to tailor risk improvement measures to help you reduce those hazards. A Zurich risk engineering consultant can help you identify key risks and assign a probability and severity to each, which can help you prioritize risk improvement actions designed to reduce those hazards. To learn more, please contact your risk engineering account coordinator.

Other related Zurich RiskTopics

- Hazard identification and risk register
- Activity hazard analysis (AHA) for construction
- Daily hazard analysis (DHA) for construction

July 2023

The Zurich Services Corporation
Zurich Resilience Solutions | Risk Engineering
1299 Zurich Way, Schaumburg, IL 60196-1056
800.982.5964 www.zurichna.com

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