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RiskTopics

Daily hazard analysis (DHA) for construction

Zurich Resilience Solutions - Risk Engineering

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

Introduction

A DHA looks at the activities that are being performed that day and what conditions exists that may present hazards. A simple way of looking at a DHA is "how can I get hurt today" and "how can I avoid it?"

A DHA is yet another useful tool in the hazard identification and elimination process. When used as a compliment to the Job Hazard Analysis (JHA) and Activity Hazard Analysis (AHA), DHA's focus on a specific task based on a snapshot in time. Typically, DHA's are intended to be initially completed and discussed among crews at the beginning of a work shift following the assignment of individual or team tasks. One major difference between a JHA or AHA and a DHA is that a DHA should be amended throughout the workday as the task or conditions change. In some cases where the task changes dramatically, it could be necessary to complete multiple DHA's in a single day.

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.

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.

Definitions continued

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

Daily hazard analysis (DHA)

The final step of the hazard analysis process is the DHA. Review each individual step of the task outlined in the AHA and identify all hazards that exist on the site that day. It is important to perform the DHA in the immediate work area where the task is to be performed to accurately capture the current conditions and hazards. Discuss all the possible questions concerning problems that may arise with all individuals involved in the task. Here are some questions that may be helpful:

- Are there materials on the floor or site that the employee could trip over?
- Is lighting adequate?
- Are there any electrical hazards present?
- Are any tools, machinery, or equipment in need of repair?
- Is there excessive noise in the area?
- Is fire protection equipment readily available?
- Are emergency exits clearly marked and free from any obstructions?

- Are all fork trucks properly equipped: brakes, overhead guards, backup signals, horns, steering gear, identification?
- Are employees properly trained?
- Are employees wearing the proper Personal Protective Equipment (PPE)?
- Are employees complaining of headaches, breathing problems, dizziness, or strong odors?
- Is ventilation adequate?
- What chemicals are used being used as part of the task or being used in the general area?
- What are the weights of items being lifted?
- What material handling equipment is used in the area?
- Are machines/equipment properly guarded? Do they have emergency stops/trip wires?
- Do the employee(s) have to perform any tasks that require lockout/tagout procedures?
- Are there lifting, pulling, pushing motions involved?
- Are there any repetitive motions involved?
- Is fall protection required?
- Has the proper fall arrest equipment been selected per the task and have anchorage points been identified?
- Are there are other contractor activities in or near the work area that could create potential exposures/hazards?

List mitigation steps/methods to eliminate or control the listed hazards. Review them with the workers working in the area that was evaluated. The discussion should focus on each individual hazard and the solution to eliminate or control the hazard. A good general procedure would be "lift with your legs, not your back" or "temperatures will be in the 90's today so drink plenty of liquids". It is important to avoid generalities like "be careful, or "take caution". Examples of hazard elimination or control methods might include:

- Initiate Lockout/Tagout procedure to isolate the energy source of a machine or process.
- Sawhorse workstations will be set up and used in fabrication areas to allow employees to work in an upright and neutral work position.
- Fall arrest systems with Self-Retracting lifelines will be used due to shorter fall distances.
- Specific and engineered anchorage points/devices identified for fall protection
- Red-Tape barricades used to isolate areas with overhead hazards.
- Tool tethers will be used to stop the drop.
- Coring machines with self-integrated water systems and water-vacs with HEPA filters will be used to control the airborne silica exposure.
- Isolated walking paths established to control foot traffic in high equipment traffic areas.
- Spotters used when operating equipment in tight work areas.
- Cords, hoses, and leads will be run overhead to eliminate slip, trip, or fall exposures.
- All materials heavier than 50 lbs. or with a greater surface area than X, will require mechanical assistance or worker assistance.

Review and amend the DHA based on changing conditions. DHA's are not intended to be completed once before the start of each work shift and placed in the foreman or crew leaders work truck for the remainder of the day. DHA's should be treated as a living document, reviewed, and updated throughout the day as the task or conditions change, after breaks and after lunch. A Step Back policy/program can be incorporated with the DHA to ensure employees are periodically stopping work to take a minute to review the current task and conditions in the immediate work area. Possible condition changes might include:

- Other contractors have moved into the immediate area performing a different scope of work.

- Weather conditions effecting work tasks. Examples might be rain or snow causing slick conditions, wind effecting lifting or roofing operations, and changes in temperature extremes.
- Changes in public exposures such as nearby schools letting out each afternoon.
- The task has moved to a new location.

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).

Resources

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 for construction
- Job hazard analysis (JHA) for construction
- Activity hazard analysis (AHA) for construction

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