

**Program Management Office
Safety Bulletin for January 2019**

Using Job Hazard Analysis to Improve Construction Safety

Construction sites can be a dangerous work environment. Safety managers and project managers are tasked with being able to identify and eliminate hazards to ensure the safety of everyone on the jobsite. Conducting a job hazard analysis for each job on a project is an effective method for mitigating potential hazards and protecting workers.

A job hazard analysis is a process used to identify and eliminate or mitigate potential hazards. The process involves breaking down the job into individual tasks, identifying potential hazards for each task, risk assessment to determine the likelihood and severity of each hazard, and developing preventative measures aimed at eliminating each hazard.

Getting started

The first step is to determine which jobs you want to create a job hazard analysis for and prioritize which ones you will tackle first. You might want to start with jobs that have a high rate of accident occurrence at your company or jobs that have the most potential for causing serious injuries or death. Jobs with low accident rates or potential for serious injuries should go to the bottom of your list.

New jobs and jobs that are performed infrequently should be prioritized accordingly since it's likely your workers won't have as much experience performing those tasks. They might not be as familiar with the necessary safety measures compared to jobs they perform on a regular basis.

Eventually, you will create a library of job hazard analyses on all the jobs your workers perform. Periodically, these will need to be updated and altered when the environment or site conditions change or if the sequence of steps to perform a job is modified or changed.

Break the job down into individual tasks

Once you've decided on which jobs to focus on first, it's time to break down each job into individual sequential tasks. The best way to do this is by having a supervisor or safety manager observe an experienced worker perform the job. The observer should take detailed notes of each step, focusing on what is being done rather than how the worker is performing each task.

Taking a video recording of the worker performing the job can be helpful in ensuring you haven't missed a step in the process or gotten any of the steps out of the order they were performed. The video can also be used to review the steps and verify their accuracy as well as providing a visual aid for your team to identify potential hazards.

When sequencing out steps in a job be sure to start each step with an action verb like "lift" or "cut" in order to focus on what is being done. Try to keep the number of steps or tasks in each job to 10 or fewer. If 10 or more steps are needed for a particular job, it might be a good idea to separate the job into two separate jobs.

Avoid being too general because you might leave out a crucial step in the process. On the flip side, being too detailed may cause you to lump individual tasks together or overcomplicate the steps needed to complete the job.

Identify potential hazards

Now that you have the job broken down into individual tasks, it's time to identify all the potential hazards for each task. Get workers familiar with the job involved in this step because they already know some of the potential hazards. Remember, you are trying to identify potential hazards, not just hazards you observed or that were eliminated when you observed the worker performing the job.

For example, let's say you observed a worker cutting concrete as part of conducting a job hazard analysis. During the observation, the worker used a concrete saw equipped with a blade guard and a dust collector. The worker was wearing safety goggles and earplugs to protect his eyes and ears.

Just because the worker implemented these safety measures doesn't mean there weren't potential hazards like being struck by flying debris or exposure to silica dust and loud noises. The potential hazards were eliminated because the worker followed proper safety procedures. You can't rely on every worker to do this which is why conducting a job hazard analysis is so important.

OSHA suggests asking the following questions during your job hazard analysis to identify potential hazards:

- What can go wrong?
- What are the consequences?
- How could it arise?
- What are other contributing factors?
- How likely is it that the hazard will occur?

In addition to those questions, it's important to factor in potential hazards from working at height, hazards from using specific tools and equipment, and changes to weather conditions. Falls, electrocutions, getting struck by objects and getting caught in or between are some of the deadliest hazards on construction sites.

Assess the risks of each hazard

After you've identified the potential hazards for each task of a job, the next step is to conduct a risk assessment of each hazard. The risk assessment of the job hazard analysis will identify the probability of the hazard occurring and the severity of possible accident-injuries.

Knowing which potential hazards present the highest risks will help when determining which preventative measures should be put in place to mitigate those hazards. Higher risk hazards should take precedence over hazards that have a low chance of occurring.

Conducting a risk assessment during your job hazard analysis will also come in hand for safety training purposes. A greater emphasis should be put on hazards that have a higher likelihood of occurring and causing severe injuries or death.

Establish preventative measures to eliminate or mitigate hazards

Now it's time to determine what measures need to be implemented to mitigate the hazards. Your top priority should be to eliminate the hazard whenever possible. If the hazard can't be eliminated, try and contain the hazard with engineering controls like machine guards or cordoning off work areas. Other methods to mitigate hazards include revising the work procedures by modifying or adding steps or by changing the sequence of tasks. OSHA's standards and regulations for construction are a good starting point when determining which preventative measures to implement.

Reducing exposure to a hazard should be your last line of defense since it is generally regarded as the least effective method for hazard mitigation. This might include limiting the amount of time a worker is allowed to perform a specific task or using personal protective equipment (PPE) to reduce the potential for injuries should an accident occur.

Using job hazard analyses is a proven method for helping to identify and eliminate hazards on the construction site. They can be used to conduct safety training and as topics to cover when conducting safety meetings or toolbox talks. A job hazard analysis is also a useful tool in accident investigations when mishaps occur.

Each job hazard analysis should be reviewed periodically. Updates should be made when conditions or work procedures change in order to ensure that the job hazard analysis is accurate and effective in identifying and eliminating hazards.