
Job Hazard Analysis

Overview

Introduction

One way to prevent workplace injuries is to establish proper job procedures and train all employees in safety and more efficient work methods. Establishing proper job procedures is one of the benefits of conducting a job hazard analysis (JHA). Improved job methods can reduce costs resulting from employee absenteeism and workers' compensations, and can often lead to increased productivity.

In this module

In this module we will discuss the following:

- What is a JHA?
- The stages of conducting a JHA.
- Post analysis.

Definition: Job Hazard Analysis

A job hazard analysis (JHA) is a procedure which helps integrate accepted safety and health principles and practices into a particular operation. In a JHA, each basic step of the job is examined to identify potential hazards and to determine the safest way to do the job.

The terms job and task are commonly used interchangeably to mean a specific work assignment, such as operating a grinder, using a pressurized water extinguisher, or changing a flat tire. JHAs are not suitable for jobs defined too broadly, for example, overhauling an engine; or too narrowly, for example, positioning a car jack.

Benefits of the JHA

The method used to complete a JHA is to observe a worker actually performing the job. The major advantages of this method include:

- It does not rely on individual memory.
- The process prompts recognition of hazards.
- The analysis process may identify previously undetected hazards.
- The analysis will increase job knowledge.
- Safety and health awareness is raised.
- Communication between workers and supervisors is improved.
- Acceptance of safe work procedures is promoted.

The completed JHA, or better still, a written work procedure based on it, can form the basis for regular contact between supervisors and workers on health and safety. It can serve as a teaching aid for initial job training and as a briefing guide for infrequent jobs.



Take some time and look around because safety hazards do abound.

The JHA Process

Four basic stages

There are four basic stages in conducting a JHA:

1. Select the job to be analyzed.
2. Break the job down into a sequence of steps.
3. Identify potential hazards.
4. Determine preventive measures to overcome these hazards.

Stage 1—Selecting the Job

What is important to know when selecting the job?

Ideally, all jobs should be subjected to a JHA. In some cases there are practical constraints posed by the amount of time and effort required to do a JHA. Another consideration is that each JHA will require revision whenever equipment, raw materials, processes, or the environment change. For these reasons, it is usually necessary to identify which jobs are to be analyzed. Even if analysis of all jobs is planned, this step ensures that the most critical jobs are examined first.

Determining priority

Factors to be considered in assigning a priority for analysis of jobs include:

- Accident frequency and severity: jobs where accidents occur frequently or where they occur infrequently but result in disabling injuries.
- Potential for severe injuries or illnesses: the consequences of an accident, hazardous condition, or exposure to harmful substance are potentially severe.
- Newly established jobs: due to lack of experience in these jobs, hazards may not be evident or anticipated.
- Modified jobs: new hazards may be associated with changes in job procedures.
- Infrequently performed jobs: workers may be at greater risk when undertaking non-routine jobs, and a JHA provides a means of reviewing hazards.

Stage 2—Break the Job into Steps

How do I break the job into basic steps?

After a job has been chosen for analysis, the next stage is to break the job into steps. A job step is defined as a segment of the operation necessary to advance the work. When determining a job's basic steps, keep in mind the following:

- Do not make the steps too general, thereby missing specific steps and their hazards.
- Avoid too many steps.
- A rule of thumb is that most jobs can be described in less than ten steps.
- If more than ten steps are required, divide the job into two segments.
- Keep the steps in their correct sequence.
- Make notes about what is done rather than how it is done.
- Begin each step with an action verb.

Example

The job of changing a flat tire will be used as an example throughout the remainder of this section.

| Sequence of Events | Potential Accidents or Hazards | Preventative Measures |
|--|--------------------------------|-----------------------|
| 1. Park vehicle. | | |
| 2. Remove spare tire and tool kit. | | |
| 3. Pry off hubcap and loosen lug bolts (nuts). | | |
| 4. And so on. | | |

Employee involvement

This part of the analysis is usually prepared by watching the worker do the job. The observer is normally the immediate supervisor. These are the guidelines:

- The worker to be observed should be experienced and capable in all parts of the job.
- To strengthen full co-operation and participation, the reason for the exercise must be clearly explained. The job, not the individual, is being studied.
- The job should be observed during normal times and situations.
- When completed, the breakdown of steps should be discussed by all the participants (always including the worker) to make sure that all basic steps have been noted and are in the correct order.

Stage 3—Identify Potential Hazards

How do I identify potential hazards?

Once the basic steps have been recorded, potential hazards must be identified at each step. Based on observations of the job, knowledge of accident and injury causes, and personal experience, list the things that could go wrong at each step.

To help identify potential hazards, the job analyst may use questions such as these:

- Can any body part get caught in or between objects?
- Do tools, machines, or equipment present any hazards?
- Can the worker make harmful contact with objects?
- Can the worker slip, trip, or fall?
- Can the worker suffer strain from lifting, pushing, or pulling?
- Is the worker exposed to extreme heat or cold?
- Is excessive noise or vibration a problem?
- Is there a danger from falling objects?
- Is lighting a problem?
- Can weather conditions affect safety?
- Is harmful radiation a possibility?
- Can contact be made with hot, toxic, or caustic substances?
- Are there dusts, fumes, mists, or vapors in the air?

Example

Potential hazards are listed in the middle column of the worksheet, listed to match the corresponding job step. For example:

| Sequence of Events | Potential Accidents or Hazards | Preventative Measures |
|---|--|-----------------------|
| 1. Park vehicle. | a) Vehicle too close to passing traffic. b) Vehicle on uneven or soft ground. c) Vehicle may roll. | |
| 2. Remove spare tire and tool kit. | a) Strain from lifting spare. | |
| 3. Pry off hubcap and loosen lug bolts. | a) Hub cap may pop off and hit you. b) Lug wrench may slip. | |
| 4. And so on. | a) . . . | |

All participants should jointly review this part of the analysis.

Stage 4—Determine Preventive Measures

How do I determine preventive measures?

The final stage in a JHA is to determine ways to eliminate or control the hazards identified. The generally accepted measures include these, in order of preference:

1. Eliminate the hazard.
2. Contain the hazard.
3. Revise work procedures.
4. Reduce exposure.

Eliminate the hazard

This is the most effective measure. These techniques should be used to eliminate the hazards:

- Choose a different process.
- Modify an existing process.
- Substitute with a less hazardous substance.
- Improve the environment (ventilation).
- Modify or change equipment or tools.

Contain the hazard

If the hazard cannot be eliminated, using enclosures, machine guards, worker booths, or similar devices might prevent contact.

Revise work procedures

Consideration might be given to modifying steps that are hazardous, changing the sequence of steps, or adding additional steps (such as locking out energy sources).

Reduce exposure

These measures are the least effective and should only be used if no other solutions are possible. One way of minimizing exposure is to reduce the number of times the hazard is encountered. An example would be modifying machinery so that less maintenance is necessary. The use of appropriate personal protective equipment may be required. To reduce the severity of an accident, emergency facilities, such as eyewash stations, may need to be provided.

Stage 4—Determine Preventive Measures, Continued

Example

In listing the preventive measures, use of general statements such as "be careful" or "use caution" should be avoided. Specific statements, which describe both what action is to be taken and how it is to be performed, are preferable. The recommended measures are listed in the right hand column of the worksheet, numbered to match the hazard in question.

| Sequence of Events | Potential Accidents or Hazards | Preventative Measures |
|---|--|---|
| 1. Park vehicle. | a) Vehicle too close to passing traffic. b) Vehicle on uneven or soft ground. c) Vehicle may roll. | a) Drive to area well clear of traffic. Turn on emergency flashers. b) Choose a firm, level area. c) Apply the parking brake; leave transmission in gear or in PARK; place blocks in front and back of the wheel diagonally opposite to the flat. |
| 2. Remove spare tire and tool kit. | Strain from lifting spare. | Turn spare into upright position in the wheel well. Using your legs and standing as close as possible, lift spare out of truck and roll it to flat tire. |
| 3. Pry off hubcap and loosen lug bolts. | a) Hub cap may pop off and hit you. b) Lug wrench may slip. | a) Pry off hub cap using steady pressure. b) Use proper lug wrench; apply steady pressure slowly. |
| 4. And so on. | a) . . . | a) . . . |

Post Analysis

How should I make the information available to everyone else?

JHA is a useful technique for identifying hazards so that measures can be taken to eliminate or control them. Once the analysis is completed, the results must be communicated to all workers who are, or will be, performing that job. The side-by-side format used in JHA worksheets is not an ideal one for instructional purposes. Better results can be achieved by using a narrative-style format. For example, the work procedure based on the partial JHA developed as an example in this document might start out like this:

| Step | Action |
|-------------|---|
| 1. | Park vehicle. <ol style="list-style-type: none">Drive vehicle off the road to an area well clear of traffic, even if it requires rolling on a flat tire. Turn on the emergency flashers to alert passing drivers so that they will not hit you.Choose a firm, level area so that you can jack up the vehicle without it rolling.Apply the parking brake; leave the transmission in gear or PARK; place blocks in front and back of the wheel diagonally opposite the flat. These actions will also help prevent the vehicle from rolling. |
| 2. | Remove spare tire and tool kit. <p>To avoid back strain, turn the spare into an upright position in its well. Stand as close to the trunk as possible and slide the spare close to your body. Lift out and roll it to flat tire.</p> |
| 3. | Pry off hub cap, and loosen lug bolts (nuts). <ol style="list-style-type: none">Pry off hubcap slowly with steady pressure to prevent it from popping off and striking you.Using the proper lug wrench, apply steady pressure slowly to loosen the lug bolts (nuts) so that the wrench will not slip and hurt your knuckles. |
| 4. | And so on. |