

Health and Safety Programs

Job Safety Analysis

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What is a Job Safety Analysis?

A job safety analysis (JSA) is a process which helps assess a job to identify hazards and necessary control measures. In a job safety analysis, each basic step of the job is broken down into steps to identify potential hazards and to recommend the safest way to do the job. Other terms used to describe this procedure are job hazard analysis (JHA) and job hazard breakdown.

Some individuals prefer to expand the analysis into all aspects of the job, not just safety. This approach is known as total job analysis. Methodology is based on the idea that safety is an integral part of every job, not a separate entity. In this document, only health and safety aspects will be considered.

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." Generally, a job or task can be further divided into many smaller steps. Job safety analyses are not suitable for jobs defined too broadly, for example, "overhauling an engine," or too narrowly, for example, "positioning car jack."

What are the benefits of doing a job safety analysis?

The initial benefits of developing a job safety analysis will become clear in the preparation stage. The analysis process may identify previously undetected hazards and increase the job knowledge of those participating. Safety and health awareness is raised, communication between workers and supervisors is improved, and acceptance of safe work procedures is promoted.

A job safety analysis, or a written work procedure based on it, can form the basis for regular contact between supervisors and workers. It can serve as a teaching aid for initial job training and as a briefing guide for infrequent jobs. It may be used as a health and safety inspection or observation standard. In particular, a job safety analysis will assist in completing comprehensive incident investigations.

A job safety analysis is a good opportunity to observe a worker actually perform the job. The major advantage of observing the task is that it does not rely on individual memory and that observing or performing the process prompts the recognition of hazards. For infrequently performed or new jobs, observation may not be practical.

Another approach is to have a group of experienced workers and supervisors complete the analysis through discussion. An advantage of this method is that more people are involved in a wider base of experience and promoting a more ready acceptance of the resulting work procedure. Members of the health and safety committee should also participate in this process.

Who should conduct a job safety analysis?

A job safety analysis can be conducted by a supervisor, health and safety specialist, or health and safety committee member. Generally, a small team which includes experienced workers and supervisors can analyze a job together through observation and discussion. By collaborating with the workers who are performing the job, there will be an increased acceptance of the resulting procedure and controls. In addition, the workers have the knowledge and experience required to identify actual and potential hazards associated with each step.

Health and safety committee members or representatives play an important role in the job safety analysis and often have a legal obligation to participate in the process. They also provide practical work experience related to the risk evaluation and the feasibility of appropriate controls.

Health and safety specialists may also participate in the job safety analysis to eliminate any oversight in accounting for potential hazards and related preventive measures.

What are the basic steps?

The basic steps in conducting a job safety analysis are:

- Select the job to be analyzed
 - Break the job down into a sequence of steps
 - Identify potential hazards
 - Determine preventive measures to control these hazards
 - Communicate the results
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What is important to know when "selecting the job"?

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

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

- Incident frequency and severity: jobs where incidents occur frequently or where they occur infrequently but result in serious injuries.
 - Potential for severe injuries or illnesses: the consequences of an incident, hazardous condition, or exposure to harmful products 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 JSA provides a means of reviewing hazards.
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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.

Care must be taken not to make the steps too general. Missing specific steps may make it difficult to identify potential hazards. On the other hand, if the steps are too detailed, the job safety analysis will be too long. A rule of thumb is that most jobs can be described in less than ten steps. If more steps are required, you might want to divide the job into two segments, each with its separate job safety analysis, or combine steps where appropriate. As an example, the job of changing a flat tire will be used throughout this document.

An important point to remember is to keep the steps in their correct sequence. Any step that is out of order may cause a team to miss potential hazards or introduce hazards which do not actually exist. Make notes about what is done rather than how it is done. Start each item with an action verb. Appendix A (below) illustrates a format that can be used as a worksheet to prepare a job safety analysis. Job steps are recorded in the left-hand column, as shown here:

Sequence of Events (Steps)	Potential Incidents or Hazards	Preventive Measures
1. Park vehicle		
2. Remove the spare tire and tool kit		
3. Pry off the hub cap and loosen lug bolts (nuts)		
And so on.....		

This part of the analysis is usually prepared by knowing the basic steps of a job or watching a worker do the job. The observer is normally the immediate supervisor. However, a more thorough analysis often happens by having another person, preferably a member of the health and safety committee, participate in the observation. Key points are less likely to be missed in this way.

The job observer should have experience with the task and be capable in all parts of the job. The reason for the exercise must be clearly explained to increase cooperation and participation. It should be emphasized that the focus of job safety analysis is to examine the job and not the person who is doing the job, with the goal of making the task safer by identifying and controlling hazards. The worker's experience contributes to making the job safer.

The job should be observed during normal times and situations. For example, if a job is routinely done only at night, the job safety analysis should also be done at night. Similarly, only regular tools and equipment should be used. The only difference from normal operations is the fact that the worker is being observed.

When completed, the breakdown of steps should be reviewed and discussed by all the participants (always including the worker) to make sure all basic steps have been noted and are in the correct order.

How do I "identify potential hazards"?

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

A second observation of the job being performed may be needed. Since the basic steps have already been recorded, more attention can now be focused on each hazard. At this stage, no attempt is made to solve any problems or correct any hazards which may have been detected.

To help identify potential hazards, the job analyst may use questions such as these (this is not a complete list):

- 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 moving 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 products?
- Are there dusts, fumes, mists, or vapours in the air?

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

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

Again, all participants should jointly review this part of the analysis.

How do I "determine preventive measures?"

The next step in a job safety analysis is to determine ways to eliminate the hazards or control the risks identified. Hazards should be controlled using the hierarchy of controls. The hierarchy of controls is a step-by-step approach to eliminating or reducing workplace hazards. For more information, please see the OSH Answers on [Hierarchy of Controls](#).

Following the same principles as the hierarchy of controls, you would implement preventive measures in the following order of preference:

1. Eliminate the hazard

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

- Choose a different process
- Modify an existing process
- Substitute with less hazardous product
- Improve environment (e.g., ventilation)
- Modify or change equipment or tools

In the hierarchy of controls, these would be elimination or substitution controls.

2. Contain the hazard

If the hazard cannot be eliminated, contact might be prevented by using enclosures, machine guards, worker booths or similar devices. These are generally engineering controls.

3. Revise work procedures

Consideration might be given to modifying steps which are hazardous, changing the sequence of steps, or adding additional steps (such as locking out energy sources). Work procedures and training fall under administrative controls.

4. Reduce the 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 incident, emergency facilities, such as eyewash stations, may need to be provided. This preventive measure is also an administrative control.

Reducing the exposure may include using personal protective equipment. It is important to note that personal protective equipment can limit exposure to the harmful effects of a hazard, but only if the personal protective equipment is worn and used correctly.

In listing the preventive measures, do not use general statements such as "be careful" or "use caution." 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. For example:

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

How should I communicate the information to everyone?

A job safety analysis is a useful technique for identifying hazards so that workers and supervisors can take measures to eliminate or control hazards. The job safety analysis breaks down the job into steps that can be understood clearly; however, the table format may not always be the best way to communicate the information.

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 JSA worksheets is not ideal for instructional purposes. Better results can be achieved by using a narrative-style communication format. For example, the work procedure based on the partial job safety analysis developed as an example in this document might start out like this:

1. Park vehicle

a) Drive the vehicle off the road to an area clear of traffic, even if it requires rolling on a flat tire. Turn on the emergency flashers to alert passing drivers so they will not hit you.

b) Choose a firm and level area for parking. You can jack up the vehicle to prevent rolling.

c) Apply the parking brake, leave the transmission in PARK, and place blocks in the front and back of the wheel diagonally opposite the flat. These actions will also help prevent the vehicle from rolling.

2. Remove the spare tire and tool kit

a) To avoid back strain, turn the spare tire up into an upright position in its well. Stand as close to the trunk as possible and slide the spare tire close to your body. Lift out the spare tire and roll to the flat tire.

3. Pry off the hub cap, loosen lug bolts (nuts)

a) Pry off the hub cap slowly with steady pressure to prevent it from popping off and striking you.

b) Using the proper lug wrench, apply steady pressure slowly to loosen the lug bolts (nuts) so that the wrench will not slip, get lost or hurt your knuckles.

4. And so on

Appendix A: Sample Form for Job Safety Analysis Worksheet

Job Safety Analysis Worksheet		
Job:		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Sequence of Steps	Potential Incidents or Hazards	Preventative Measures

Appendix B: Sample Forms for Tasks and Job Inventory

Tasks with Potential Exposure to Hazardous Products or Physical Agents

Analysis By:

Reviewed By:

Approved By:

Date:

Date:

Date:

Tasks

Name of Product or Physical Agent

Location

Job Inventory of Hazardous Products		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Name of Product	Route of Entry and Physical State	Controls

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