

# Job Safety Analysis Made Simple



 Human Resources  
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 **CCOHS**  Canada's National  
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# Summary

In every Canadian jurisdiction, health and safety legislation holds employers accountable for ensuring the health and safety of their employees. They are responsible for assessing the health and safety risk (chance that somebody will be harmed) of a job. Based on this assessment, they must implement safety measures to eliminate or mitigate any risks to their employees. Job safety analysis (JSA) is a proactive approach to ensuring health and safety in the workplace. The JSA process provides a way of identifying job-related hazards and determining preventive measures. This involves carefully analyzing each task of a job, identifying potential health and safety hazards at each step, and determining practical ways of preventing or mitigating such hazards. These preventive measures can then be integrated into an employer's work practices and procedures for the job.

This publication outlines the basic concept of JSA and provides a step-by-step procedure for performing a JSA according to two simple techniques: change analysis and the energy-barrier approach (see the flow chart on the next page). Examples of job safety analysis for some common jobs are presented. These examples are intended to illustrate the application of JSA and do not necessarily include a comprehensive list of all potential hazards and related preventive measures. In addition, compliance with applicable occupational health and safety regulations must be considered as a part of the overall JSA.

## Definitions

In this publication, “hazard” and “risk” are defined as follows:

**Hazard** means anything that can cause harm. Examples of hazards include toxic chemicals, moving machinery parts, high-voltage electricity, working at heights, temperature extremes, slippery work-surfaces.

**Risk** means the chance that someone will be harmed by the hazard.

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The "What if" analysis involves conducting a thorough and systematic examination of each task by asking questions that begin with "What if...?" The formulation of the exact questions is left up to those conducting the examination

### Helpful Tips for Change Analysis

For a specific task, identify the task or process parameters to be investigated for changes (normally one parameter).

Apply the guide words to this parameter in order to qualify or quantify the changes.

Identify and assess the consequences of the changes in terms of risk.

Task parameters are easy to find. Look at the task and find parameters to be controlled in order for the task to be performed normally.

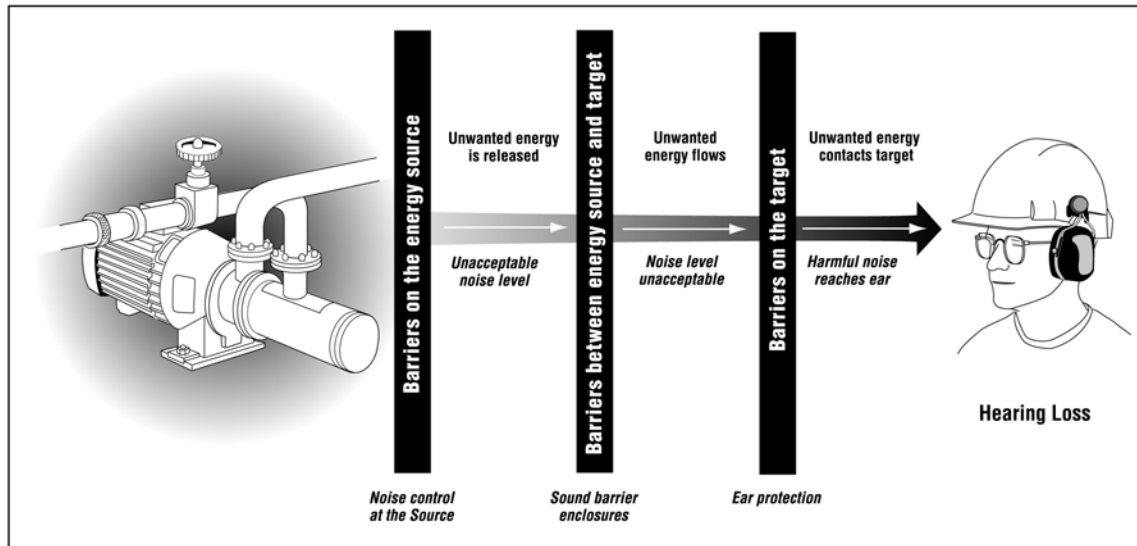
Such parameters can be:

- **a sensory signal:** e.g., colour, shape of object, emitted sound, odour, light level, position of handle, height of pedal.
- **a process specification:** e.g., pressure, temperature, concentration, flow rate.
- **a dynamic component:** e.g., motion, sequence, pace, speed change, friction.
- **a force or mass:** e.g., electrical power, chemical energy, torque, impulse, impact.
- **a geometric value and time:** e.g., location, dimensions, rate.

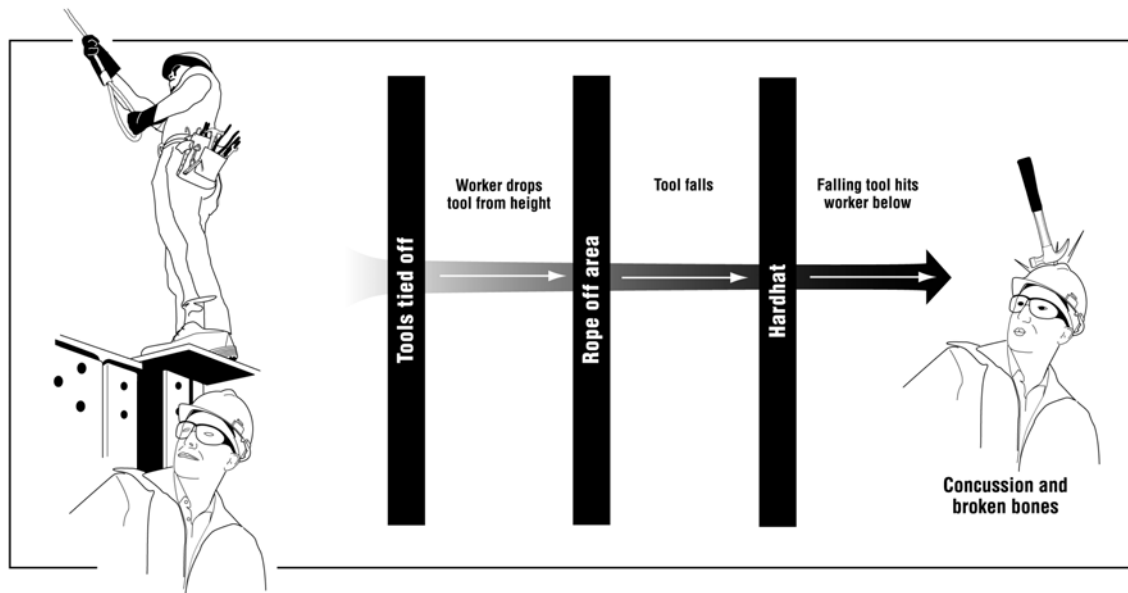
**Table 2. Guide words for "What if" questions.**

Guide Word	Meaning	Examples: What if...
No or not	- Negation of the operation	- The operation is stopped and nothing else is produced
More	- Quantitative increase - Sooner (time) - Higher (height, T, P)	- Temperature is higher than normal - Exposure time is greater than regular - Temperature and/or pressure is increased
Less	- Quantitative decrease - Later (time) - Lower (height, T, P)	- Quantity produced is less than usual - Shutdown time is greater than normal - Temperature and/or pressure is decreased
As well as	- Qualitative increase - Somewhere else - At the same time as	- An unwanted product is produced at the same time as the wanted product (contamination) - A product is transferred from one tank to another with environmental release - A product is boiling during transfer with splashes
Part of	- Qualitative decrease - Lack of	- A product is not added during production - An operation is unachieved or interrupted
Reverse	- Logical opposite of the operation	- Tank is being emptied instead of being filled
Other than	- Complete substitution of one operation by another	- A product is heated instead of being evacuated

## Energy Barrier and Unwanted Energy Flow



**Figure 1. Barriers for unwanted energy flow from an energy source to a person.**  
(Adapted from the CSA Z796-98 Standard)



**Figure 2. Illustration of energy-barrier approach to describe control measures.**  
(Adapted from the CSA Z796-98 Standard)