The OHS Program: How to Perform a Job Hazard Analysis

What's At Stake

When you cut through all the jargon and legalese, the OHS laws require you to do 4 basic things to protect workers' health and safety:

- **R**ecognize the hazards lurking in your workplace;
- **A**ssess the hazards you identify to determine how to manage them;
- **C**ontrol the hazards by implementing appropriate measures based on your assessment; and
- **E**valuate the effectiveness of control measures.

While not expressly required in most provinces, job hazard analysis (JHA) is one of the most effective methods of implementing the RACE principles.

What a JHA Is

The JHA (aka, 'job safety analysis' or 'task hazard analysis') is an RACE-based technique for assessing hazards associated with particular jobs performed at the workplace. If you can't do a JHA for all jobs, consult your joint health and safety committee (JHSC) or safety representative in selecting which jobs to target. In general, give priority to jobs that:

- Have high rates of injury, illness, incidents and/or near misses;

- Involve operations for which you've received OHS penalties or warnings;
- That don't have a history of but still have the potential to cause injury, illness, incident or OHS liability;
- Have generated work refusals, JHSC recommendations and/or worker complaints.

How to Perform a JHA

Although there's no one way to do it, the typical JHA has 6 basic steps.

Step 1: Break Job into Discrete Tasks

Break down each job or task into steps and list the steps in the order the worker performs them. Example:

Grinding Iron Castings in Metal Shop

	Task
1	Worker reaches into metal box next to machine
2	Worker grasps a 6.8-kilogram casting and lifts it out of box
3	Worker carries casting to grinding wheel
4	Worker presses casting against wheel to grind off burr
5	Worker puts finished casting in box next to machine
6	Worker repeats process 20 to 30 times per hour

Step 2: List Hazards Associated with Each Task

As OHS coordinator, you need to ensure that the person who performs the JHA understand that a hazard is anything with the potential to harm a worker's health or safety. The person also needs to be capable of applying the 5 basic risk factors of hazard identification, described by the acronym PEMEP:

- **P for People:** The acts and omissions of workers, supervisors and others that may create hazards (and

impact how you address them). **Example:** Safety devices on nail gun triggers won't prevent nail gun injuries if workers regularly disable the devices so they can work faster.

- **E for Equipment:** Hazards stemming from the tools and machines used at the workplace, such as nail guns without safety devices on trigger mechanisms or machinery with rotating parts that may ensnare workers by the hair or clothing.
- **M for Materials:** Raw materials, products and hazardous chemicals used in the workplace that can harm health and safety, e.g., radioactive chemicals handled by nurses in a radiology lab or asbestos at construction projects.
- **E for Environment:** Hazards posed by the physical surroundings where the work is done, such as wet cluttered or poorly lit walkways or isolated workplaces in which there's no prospect of immediate help or rescue.
- **P for Process:** Hazards created by the methods used to perform work. **Example:** An otherwise routine maintenance procedure like cleaning a tank may become very hazardous if it's carried out inside a tank that's a confined space.

Before proceeding to Step 3, let's see where we are with our JHA so far:

Grinding Iron Castings in Metal Shop

	Task	Hazard(s)
1	Worker reaches into metal box next to machine	*Worker may hit hand on box *Sharp edges of box may cause lacerations

2	Worker grasps a 6.8-kilogram casting and lifts it out of box	*Sharp edges or burr of castings may cause lacerations *Reaching, twisting and lifting castings may cause muscle strain to lower back
3	Worker carries casting to grinding wheel	*Weight of castings may cause injury if dropped on toe or foot *Boxes and other obstructions may cause trips *Wet floor may cause slips or trips
4	Worker presses casting against grinding wheel to grind off burr	*Worker may hit hand on wheel *Sparks or dust may get into worker's eyes or face *Worker's sleeve or jewelry may get entangled in wheel *Wheel may break
5	Worker puts finished casting in box next to machine	*Worker may hit hand on box *Sharp edges of box may cause lacerations *Reaching, twisting and lifting castings may cause muscle strain to lower back
6	Worker repeats process 20 to 30 times per hour	*Each repetition renews worker's exposure to above risk factors *Repetition may cause repetitive strain injuries

Step 3: Assess Each Identified Hazard

Once you identify a hazard, you must decide how to deal with it. The starting point is to assess the hazard's urgency and how it compares to other safety priorities. One effective method you can use is to assign hazards a number value based on 3 factors:

>Factor 1: Frequency

Assign a frequency score on a scale of 1 to 3 based on how often the worker is exposed to the hazard on a regular work

day:

- 1: Low: less than 10% of day;
- 2: Medium: between 10% to 50% of day;
- 3: High: more than 50% of day.

>Factor 2: Probability

Rate the hazard on a scale of 1 to 5 based on how probable it is to cause an illness, injury or incident:

- 1: Improbable: unlikely to occur (or recur);
- 2: Remote: possible but unlikely;
- 3: Occasional: likely to occur (or recur) once or twice per year;
- 4: Probable: likely to occur (or recur) 3 to 5 times per year;
- 5: Frequent: likely to occur (or recur) more than 5 times per year.

>Factor 3: Severity

Rate the hazard on a scale of 1 to 5 based on how bad the consequences would likely be if it did cause an injury, illness or incident:

- 1: Minor: potential to cause injury requiring first aid;
- 2: Moderate: potential to cause minor injury and/or property damage;
- 3: Serious: potential to cause lost-time, medical aid and/or recurring injury;
- 4: Critical: potential to cause serious injury, loss of limb, impairment and/or major property damage;
- 5: Catastrophic: potential to cause one or more fatalities.

Add up all of the above scores and use the following grading method to assign a risk rating:

- 1 to 4: LOW: Minor hazard;

- 5 to 8: MEDIUM: Moderate hazard;
- 9 to 13: HIGH: Serious/Significant hazard.

Step 4: Select Appropriate Controls for Each Listed Hazard

Use your assessment to decide what, if any, steps to take to control the hazard. The first thing you need to determine is whether there are specific measures you *must* take under OHS regulations. More often than not, though, OHS laws give employers discretion to implement solutions appropriate to their own circumstances based on the so called 'hierarchy of controls,' which includes (in order of preference based on what's 'practicable'):

- Total elimination;
- Substitution;
- Engineering controls;
- Administrative/Work controls; and

Strategic Pointer: In selecting controls, you also need to implement measures called for by the manufacturers of affected machinery or equipment as well as any voluntary standards you're trying to comply with such as COR, ISO, NFPA, CSA, etc.

Here's how our JHA might look after Step 4.

Grinding Iron Castings in Metal Shop

	Task	**Hazard(s)**	**Recommended Control(s)**
1	Worker reaches into metal box next to machine	*Worker may hit hand on box *Sharp edges of box may cause lacerations	*Use of protective gloves *Use of device to lift castings

2	Worker grasps a 6.8-kilogram casting and lifts it out of box	*Sharp edges or burr of castings may cause lacerations *Reaching, twisting and lifting castings may cause muscle strain to lower back	*Use of protective gloves *Use of lifting device *Put castings on table or elevated platform to eliminate reaching and twisting *Train workers in safe lifting
3	Worker carries casting to grinding wheel	*Weight of castings may cause injury if dropped on toe or foot *Boxes and other obstructions may cause trips *Wet floor may cause slips or trips	*Use of steel toed shoes with arch protection *Move castings box next to wheel to eliminate need to transport manually * Train workers in proper housekeeping
4	Worker presses casting against grinding wheel to grind off burr	*Worker may hit hand on wheel *Sparks or dust may get into worker’s eyes or face *Worker’s sleeve or jewelry may get entangled in wheel *Wheel may break	*Use of protective gloves *Provide goggles *Provide face protection *Provide larger guard for wheel *Install exhaust system *Require short sleeve, tight-fitting shirts *Ban wearing of potentially entangling jewelry

5	Worker puts finished casting in box next to machine	*Worker may hit hand on box *Sharp edges of box may cause lacerations *Reaching, twisting and lifting castings may cause muscle strain to lower back	*Use of protective gloves *Use of lifting device *Put castings on table or elevated platform to eliminate reaching and twisting *Train workers in safe lifting
6	Worker repeats process 20 to 30 times per hour	*Each repetition renews worker's exposure to above risk factors *Repetition may cause repetitive strain injuries	*Provide frequent rest breaks *Train workers on causes, signs and symptoms of repetitive stress injuries

Job: Grinding Iron Castings **Location:** Metal shop

Task Description: Worker reaches into metal box near the machine, grasps a 6.8-kilogram (15 lb.) casting and carries it to grinding wheel to grind off burr and places completed casting into box near wheel. Worker grinds 20 to 30 castings per hour.

Step 5: Verify Effectiveness of Controls

Moving from the 'C' to the 'E' part of RACE, go back and observe how the job is performed once the controls are in place. If you can't verify that they're actually effective in controlling the identified hazards, you'll need to implement corrective actions.

Step 6: Monitoring & Re-evaluation

Remember that like any other hazard assessment, the JHA is just a snapshot in time that must be reviewed after injuries,

illnesses, incidents, changes to equipment or procedures and any other developments for which the previous JHA may have failed to account.

For More Help

- Model Hazard Assessment Policy
- Model JHA Form