Hazard and Risk

Hazard and Risk - Hazard Identification

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What is a hazard?

There are many definitions of hazard, but the most common definition when talking about workplace health and safety is “A hazard is any source of potential damage or harm to someone or something.”

The CSA Z1002 Standard "Occupational health and safety - Hazard identification and elimination and risk assessment and control" uses the following terms:

- Harm – physical injury or damage to health.
- Hazard – a potential source of harm to a worker.

Basically, a hazard is the potential for harm or an adverse effect (for example, to people as health effects, to organizations as property or equipment losses, or to the environment).

Please see the OSH Answers fact sheet on Hazard and Risk for more information.

What is hazard identification?

Hazard identification is part of the process used to evaluate if any particular situation, item, or thing may have the potential to cause harm. The term often used to describe the full process is risk assessment:

- Identify hazards and risk factors that have the potential to cause harm (hazard identification).
- Analyze and evaluate the risk associated with that hazard (risk analysis, and risk evaluation).
- Determine appropriate ways to eliminate the hazard or control the risk when the hazard cannot be eliminated (risk control).

Overall, the goal of hazard identification is to find and record possible hazards that may be present in your workplace. It may help to work as a team and include people familiar with the work area, as well as people who are not –this way, you have both experienced and fresh eyes to conduct the inspection.

When should hazard identification be done?

Hazard identification can be done:

- During design and implementation
  - Designing a new process or procedure
  - Purchasing and installing new machinery
- Before tasks are done
  - Checking equipment or following processes
  - Reviewing surroundings before each shift
- While tasks are being done
  - Be aware of changes, abnormal conditions, or sudden emissions
- During inspections
  - Formal, informal, supervisor, health and safety committee
- After incidents
  - Near misses or minor events
  - Injuries

How are hazards identified?

There are many ways a workplace can identify hazards, including:

- Workplace inspections

- Job descriptions and demands analysis
- Job safety analysis
- Incident investigations
- Documents and records
- Hazard reporting by employees
- Hazard mapping

To be sure that all hazards are found:

- Look at all aspects of the work and include non-routine activities such as maintenance, repair, or cleaning.
- Look at the physical work environment, equipment, materials, products, etc. that are used.
- Include the various steps that make up a task or activity.
- Look at injury and incident records.
- Talk to the workers: they know their job and its hazards best.
- Include all shifts and people who work off-site, either at home, on other job sites, drivers, teleworkers, or with clients.
- Look at the way the work is organized or done by different individuals (including the experience of people doing the work, systems being used, if alternate methods are being used, etc.).
- Look at foreseeable unusual conditions (for example, possible impact on hazard control procedures that may be unavailable in an emergency situation, power outage, etc.).
- Determine whether a product, machine, or equipment can be intentionally or unintentionally changed (such as a safety guard that could be removed).
- Review all of the phases of the lifecycle of processes, products, and services (such as design, transportation, construction, dismantling, and disposal).
- Examine risks to visitors or the public.
- Consider the groups of people that may have a different level of risk, such as young or inexperienced workers, persons with disabilities, or new or expectant mothers.
- Consider the psychosocial aspects of the job and the hazards that could be created.

What types of hazards are there?

A common way to classify hazards is by category:

- Biological – bacteria, viruses, fungi, insects, plants, and animals.
- Chemical – depends on the physical, chemical, and toxic properties of the product
- Ergonomic – repetitive movements, improper setup of workstations, etc.
- Physical – radiation, magnetic fields, temperature extremes, pressure extremes (high pressure or vacuum), noise, vibration, etc.
- Psychosocial – stress, violence, harassment, etc.
- Safety – slipping or tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.

How do I know what is a hazard?

Another way to look at health and safety in your workplace is to ask yourself the following questions. These are examples only. You may find other items or situations that can be a hazard. List any item that should be examined. During the risk assessment process, the level of harm will be assessed.

What materials or situations do I come into contact with? Possibilities could include:

- Electricity.
- Chemicals (liquids, gases, solids, mists, vapours, etc.).
- Temperature extremes of heat or cold (such as working outdoors, bakeries, foundries, or meat processing).
- Ionizing and non-ionizing radiation (such as x-rays, ultraviolet (sun) rays)
- Asphyxiants (oxygen deficiency)
- Working on or near water or ice-covered water.

What materials or equipment could I be struck by?

- Moving objects (such as forklifts, overhead cranes, vehicles).
- Flying objects (such as sparks or shards from grinding).
- Falling material (such as tools and equipment from above).

What objects or equipment could strike or hit my body, or that part of my body might be caught in, on, or between?

- Stationary or moving objects.
- Protruding objects.
- Sharp or jagged edges.

- Pinch points on machines (places where parts are very close together).
- Objects that stick out (protrude)
- Moving objects (conveyors, chains, belts, ropes, etc.)

What could I fall from? (falls to lower levels)

- Structures, tanks, silos.
- Ladders, overhead walkways, elevating platforms.
- Roofs.
- Trees or cliffs.
- Trenches.

What could I slip or trip on? (falls on the same level)

- Obstructions on the floor and stairs.
- Surface issues (wet, oily, icy, uneven).
- Footwear that is in poor condition.

How could I overexert myself?

- Lifting (manual material handling).
- Pulling or pushing.
- Carrying.
- Repetitive motions (work-related musculoskeletal disorders).
- Awkward and static postures.

What other situations could I come across?

- Unknown or unauthorized people in the area.
- A potentially violent situation.
- Working alone.
- Confined space.
- Missing or damaged materials.
- New equipment or procedures at the work site.
- Fire or explosion.
- Chemical spill or release.

Where can I find more information about hazards?

It may be necessary to research what could be a hazard as well as how much harm that hazard might cause. Sources of information include:

- Safety Data Sheets (SDSs).
- Manufacturer's operating instructions, manuals, etc.
- Test or monitor for exposure (occupational hygiene testing such as chemical or noise exposure).
- Results of any job safety analysis.
- Experiences of other organizations similar to yours.
- Trade or safety associations.
- Information, publications, alerts, etc., published by reputable organizations, labour unions, or government agencies.
- Subject matter experts, stakeholders, and workers.
- Physical demands analysis, job demands analysis.
- Past experiences, statistics, and incident reports.

What if I am new to the task or the workplace?

If you are new to that task or to your workplace, to learn about the hazards of your job, you can:

- Ask your supervisor.
- Ask a member of the health and safety committee or your health and safety representative.
- Ask about standard operating procedures and precautions for your job.
- Check product labels and safety data sheets.
- Pay attention to signs and other warnings in your work.
- Watch for posters or instructions at the entrance of a chemical storage room that warn of hazardous products.
- Ask about operating instructions, safe work procedures, processes, etc.
- Ask to review the risk assessment and relevant procedures before starting work.

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