

## Probability or likelihood

**Likelihood** is a qualitative assessment that is subjective with little objective measurement. An example is: there is a high likelihood of rain tomorrow. Probability refers to the percentage of possibilities that foreseen outcomes will occur based on parameters of values.

## **Probability or likelihood**

These risks are expressed as a probability or likelihood of developing a disease or getting injured, whereas hazard refers to the agent responsible (i.e. smoking).

**For example:** the risk of developing cancer from smoking cigarettes could be expressed as:

"cigarette smokers are 12 times (for example) more likely to die of lung cancer than non-smokers", or "the number per 100,000 smokers who will develop lung cancer"

(actual number depends on factors such as their age and how many years they have been smoking).

These risks are expressed as a probability or likelihood of developing a disease or getting injured, whereas hazard refers to the agent responsible (i.e. smoking).

## Factors that influence the degree or likelihood of risk are:

- the nature of the exposure: how much a person is exposed to a hazardous thing or condition (e.g., several times a day or once a year),
- how the person is exposed (e.g., breathing in a vapour, skin contact), and
- the severity of the effect. For example, one substance may cause skin cancer, while another may cause skin irritation. Cancer is a much more serious effect than irritation.

## **Will exposure to hazards in the workplace always cause injury, illness or other adverse health effects?**

Not necessarily. To answer this question, you need to know:

what hazards are present,

how a person is exposed (route of exposure, as well as how often and how much exposure occurred),

what kind of effect could result from the specific exposure a person experienced,

the risk (or likelihood) that exposure to a hazardous thing or condition

would cause an injury, or disease or some incidence causing damage, and

how severe would the damage, injury or harm (adverse health effect) be from the exposure.

## **Will exposure to hazards in the workplace always cause injury, illness or other adverse health effects?**

The effects can be acute, meaning that the injury or harm can occur or be felt as soon as a person comes in contact with the hazardous agent (e.g., a splash of acid in a person's eyes). Some responses may be chronic (delayed).

For example, exposure to poison ivy may cause red swelling on the skin two to six hours after contact with the plant. On the other hand, longer delays are possible: mesothelioma, a kind of cancer in the lining of the lung cavity, can develop 20 years or more after exposure to asbestos. Once the hazard is removed or eliminated, the effects may be reversible or irreversible (permanent). For example, a hazard may cause an injury that can heal completely (reversible) or result in an untreatable disease (irreversible).

[https://www.ccohs.ca/oshanswers/hsprograms/hazard\\_risk.html](https://www.ccohs.ca/oshanswers/hsprograms/hazard_risk.html)

# What are examples of a hazard?

## Examples of Hazards and Their Effects

<u>Workplace Hazard</u>	<u>Example of Hazard</u>	<u>Example of Harm Caused</u>
Thing	Knife	Cut
Substance	Benzene	Leukemia
Material	Mycobacterium tuberculosis	Tuberculosis
Source of Energy	Electricity	Shock, electrocution
Condition	Wet floor	Slips, falls
Process	Welding	Metal fume fever
Practice	Hard rock mining	Silicosis
Behaviour	Bullying	Anxiety, fear, depression

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Workplace hazards also include practices or conditions that release uncontrolled energy like:

- an object that could fall from a height (potential or gravitational energy),
- a run-away chemical reaction (chemical energy),
- the release of compressed gas or steam (pressure; high temperature),
- entanglement of hair or clothing in rotating equipment (kinetic energy), or
- contact with electrodes of a battery or capacitor (electrical energy).

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**Types of workplace hazards include;**

Chemical, physical, biological, ergonomic, psychosocial\*, ergonomics and manual handling, and general workplace (safety).

Luckily, there are ways to mitigate the risks from these hazards such as through planning, training and monitoring.

*\* having both psychological and social aspects*

## Types of workplace hazards include;

A common way to classify hazards is by category:

**chemical** - depends on the physical, chemical and toxic properties of the chemical,

**biological** - bacteria, viruses, insects, plants, birds, animals, and humans, etc.,

**physical** - radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise, etc.,

**ergonomic** - repetitive movements, improper set up of workstation, etc.,

**psychosocial** - stress, violence, etc.,

**safety** - slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.

# What is a Hazard?



**Physical  
Hazards**



**Biological  
Hazards**



**NATURAL HAZARD**



**Chemical  
Hazards**



**Ergonomic  
Hazards**



**ANTHROPOGENIC HAZARD**



**Safety  
Hazards**



**Psychological  
Hazards**



**TECHNOLOGICAL HAZARD**

**Something which has the potential to cause harm.**