



**Salahaddin University – Erbil**

**College of Science**

**Department of Environmental Science and Health**

# *Health, Safety and Environment (HSE)*

## *An Introduction to HSE*

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A **hazard** is anything that has the potential to cause harm. This could be something as specialised as a piece of complicated machinery, or as commonplace as a hot drink. If it could be harmful in any way, then it's a hazard.



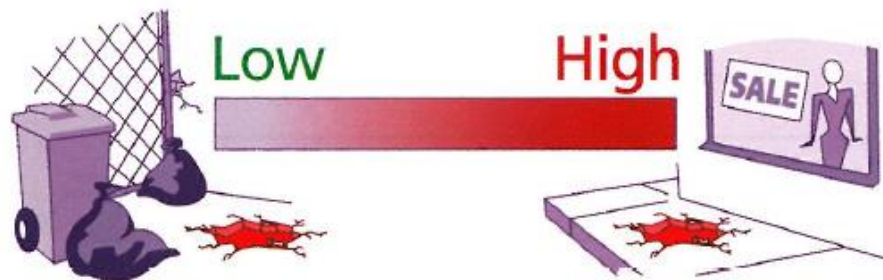
A **hazardous event** takes place when someone or something interacts with the hazard and harm results.

Suppose there's a hole in the ground. The hole (the hazard) by itself isn't causing any harm, but if someone tripped over it (the hazardous event) then it would become harmful.

Every hazardous event has likelihood and a consequence.

## Likelihood

**Likelihood** is a measure of the chance that the hazardous event will occur. If the hole is in a busy area, such as a shop entrance, it's more likely someone will trip over it. However, if it's in an area that doesn't get a lot of traffic, such as a back yard, tripping over it would be less likely.



## The Consequence

The **consequence** is the outcome of the hazardous event. If you tripped over a hole, there could be several possible outcomes: you might land on your feet with no damage at all, you might drop whatever you were carrying, or perhaps you could end up with a sprained ankle or even a fracture.



For a hazard to cause harm,  
a hazardous event must happen



For a hazard to cause harm,  
a hazardous event must happen.



**Risk** is the combination of the likelihood of a hazardous event occurring and the consequence of the event.

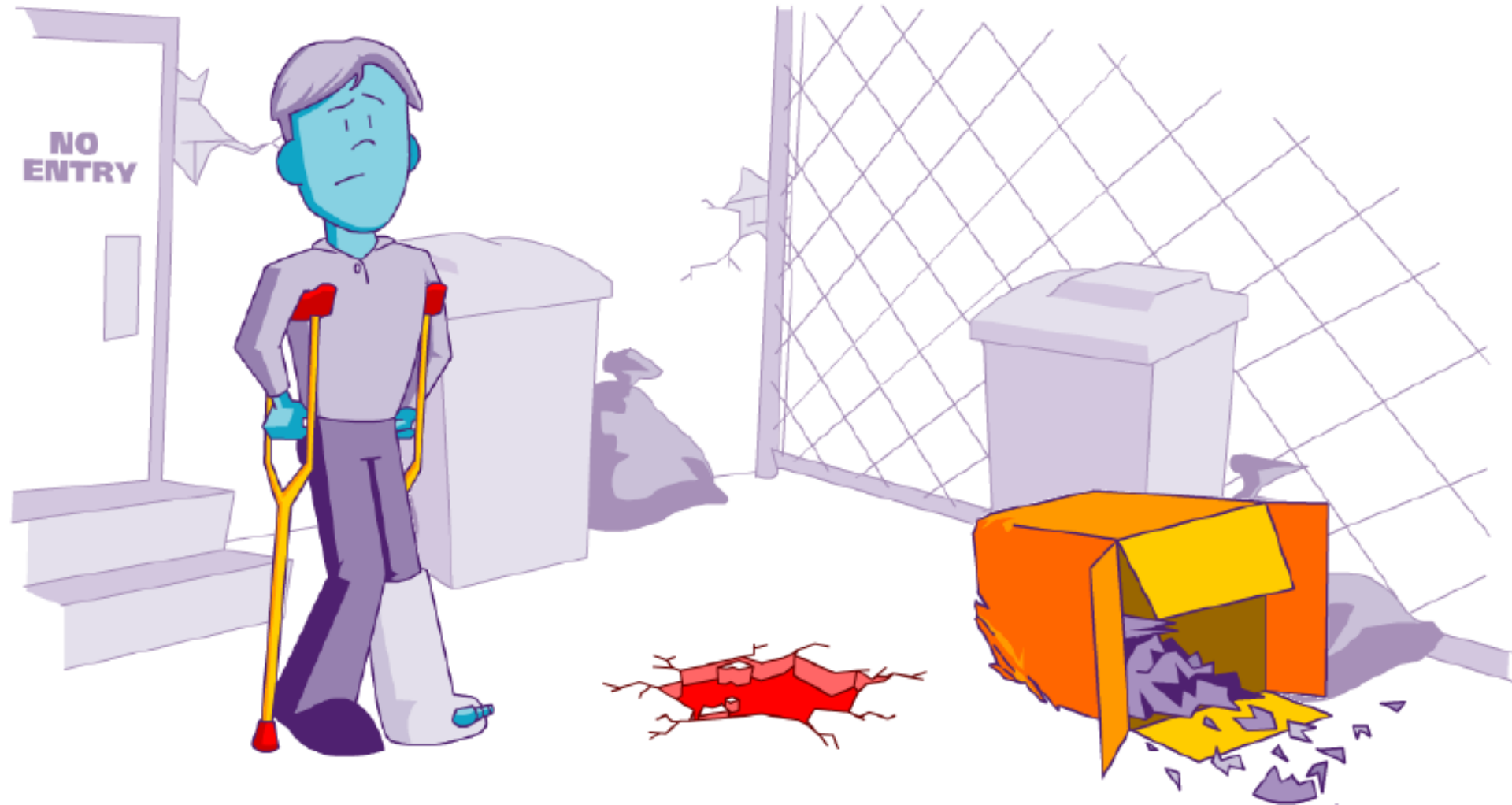
$$\text{Risk} = \text{likelihood} \times \text{consequence}$$

We'll use this definition of risk throughout this course. Consequence is also sometimes referred to as severity – these terms may be used interchangeably.

The **likelihood** is the chance that the hazardous event will occur.



**Consequence** is the outcome of the hazardous event.



Risk is the combination of the likelihood of a hazardous event occurring, and the consequence of the event. (IOSH Managing safely)

Risk = Likelihood x Consequence

