

An Introduction to
**THE CONCEPT OF RISK ASSESSMENT
AND RISK MANAGEMENT**



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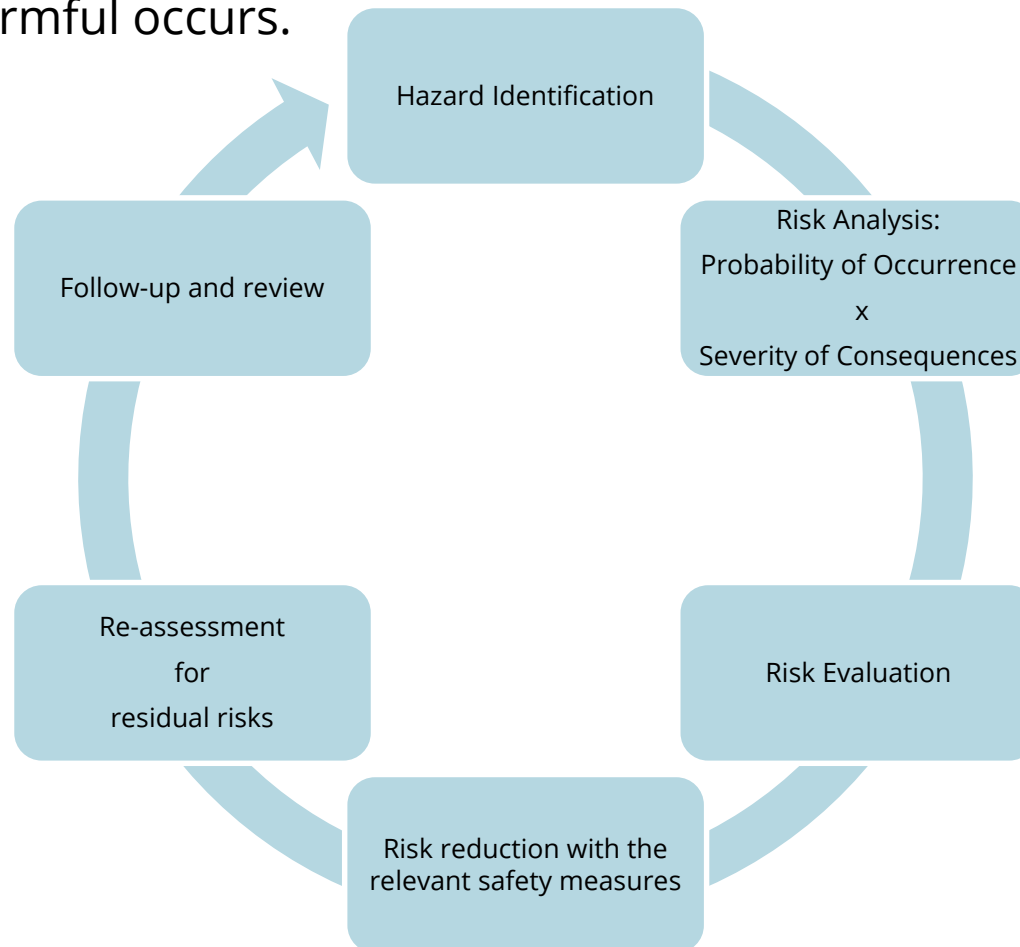
- Risk management process: what are the risks?
- Risk analysis: probability and consequences
- After the assessment



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THE RISK MANAGEMENT PROCESS

- Risk management is a continuous process, the aim of which is to identify, reduce, minimize or eliminate those factors that can cause harmful consequences (such as accidents, diseases, economical losses etc.)
- In the best case scenario, accidents and incidents are prevented before anything harmful occurs.



This model is generic and can be applied to all types of risks: health & safety, fire, property damage, cargo losses, etc.



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RISKS IN PRACTICE: ACCIDENTS AND HEALTH PROBLEMS

Some examples of work-related incidents

**A HAND INJURY
CAUSED BY
A TOOL**

Tripping

**POOR
LIFTING
POSTURE:
BACK PAIN**

**FOREIGN BODY
IN THE EYE**

Cuts

**ECZEMA,
CAUSED BY A
SUBSTANCE
AT WORK**

Accidents, incidents and near-misses (with no harmful consequences) should be considered as being equally serious. The consequences from similar events can vary significantly.



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A RISK ASSESSMENT

Why is it carried out?

Always check your national legislation and requirements concerning duty of care, risk assessments, documentation, etc.,

- An employer has a duty of care to ensure health and safety at work
 - This may also be a statutory duty in some countries
- To comply with this requirement, the employer must know what types of health and safety risks prevail in their workplace
- The risks must be eliminated or managed accordingly
- Unidentified hazards and risk factors can cause an accident, illness or a major loss
 - Only risks with identified hazards can be managed
 - Note also the human contribution: *"If there are two or more ways to do something and one of those results in a catastrophe, then someone will do it that way"*

(Captain Murphy, 1949)



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RISK ASSESSMENT

What is "risk"?

Risk is based on hazard identification

- Hazard is a factor that can cause a loss of life, health problems or an injury, or a combination of these
- Factors causing hazards can relate to
 - The operating environment / conditions, and/or
 - Management practices
 - Variations in human performance
- Safety: Non-existence of risk
- Risk: **probability** of occurrence * **severity** of consequences



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LEARNING FROM ACCIDENTS, INCIDENTS AND LOSSES

Prevent similar cases from ever happening again.



Many more less serious accidents occur per each serious accident. Similarly, the amount of hazardous conditions and risky behaviour is disproportionately greater when compared to the occurrence of less serious accidents.

Hazards can lead to a more serious accident, e.g. in the event of accumulation of different risk factors. If the safety measures are adequate, the outcome may be less serious.

Why?

- To manage risks before they cause accidents
- Hazard identification and learning from accidents and near-misses is crucial
 - Hazardous conditions also need to be identified as hazards
- All employees should identify hazards (including hazardous conditions) as an integral part of everyday routines
- This is a matter of proactive attitude and knowledge of the conditions, operations and related safety



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IMPLEMENTATION OF RISK ASSESSMENT

Proactive and reactive triggers

Check what has happened before and use your imagination: what can happen easily, what and where is the worst-case scenario? You can also consult If.

Where to start? Check e.g.:

- The previous risk assessments and safety audits
- The medical knowledge concerning the tasks and the operating conditions
- The chemicals register and operational safety bulletins
- The task and process descriptions
- The sick leave and accident/incident statistics
- The information regarding accidents and near-misses
- The insurance company's claims statistics



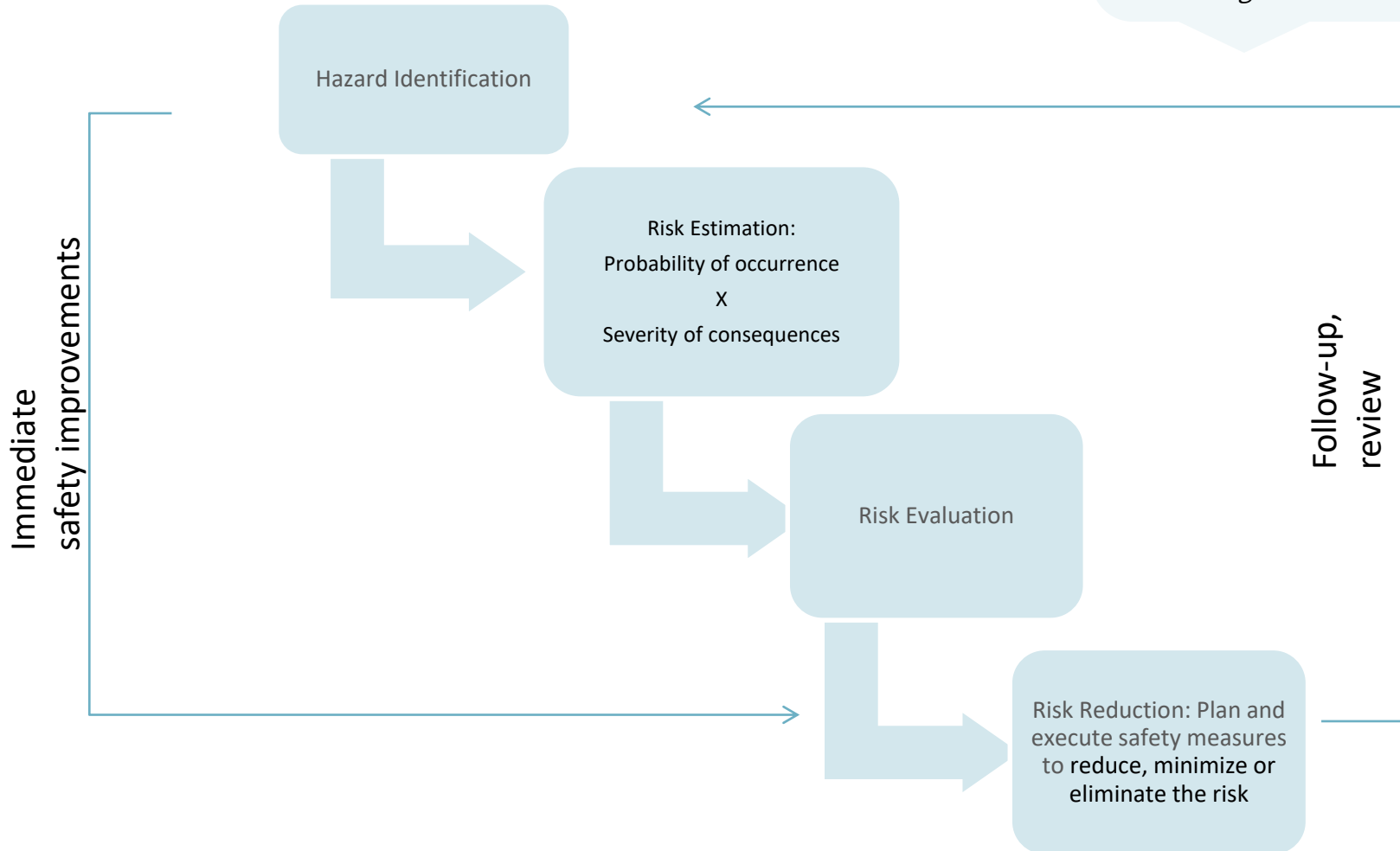
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MANAGEMENT OF RISKS: BASIC PROCESS

Start by identifying the hazards.

Look for hazards in:

- *The operating conditions and work environment*
- *The tools, machinery, processes, etc.*
- *Human performance*
- *Management and supervision*



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RISK ESTIMATION

Magnitude of risk – indicative example

- Risk assessment includes the estimation of
 - Probability of the harmful event
 - Severity of the potential consequences
- To reduce subjectivity in risk assessment, there are
 - Methods and tools for risk assessment, advising e.g. in industry- and task-specific hazard identification and risk assessment
 - Tables and matrices to assess probability and severity of harmful events

There are different versions of matrices, e.g. 3x3 (as below), 5x5 and 10x10

There are also varying criterias for defining probability and severity.

Check your company practices and definitions.

Severity of consequences	Minor	Harmful	Serious
Probability of occurrence			
Improbable	1 Insignificant risk	2 Small risk	3 Moderate risk
Possible	2 Small risk	3 Moderate risk	4 Significant risk
Very probable	3 Moderate risk	4 Significant risk	5 Intolerable risk



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AFTER THE ASSESSMENT

What to do?

1. Choose ways to reduce and/or eliminate risks:

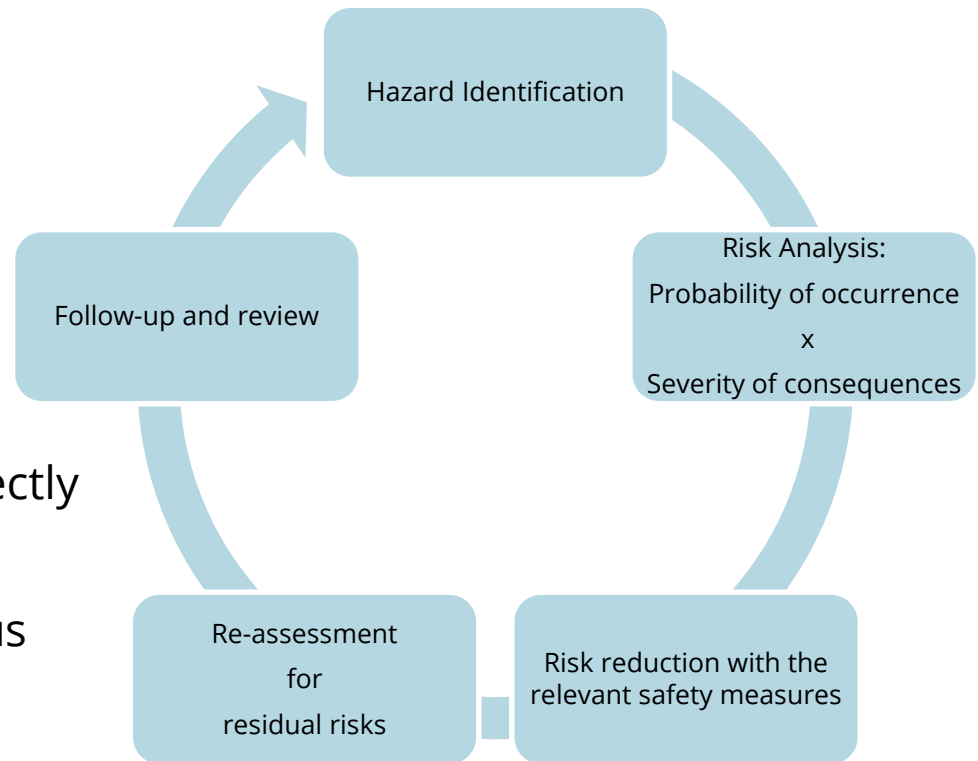
- Manage the probability and/or severity of consequences

2. Plan for risk management: when, how and who...

3. Implement the plan

4. Take a look back: is the risk small enough now? Did the preventive measures cause some new risks, directly or indirectly?

Note: Risk assessment is a continuous process!



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