

# Instructions for Risk Assessments

The Swedish Work Environment Authority's general advice on chemical risks related to occupational health and safety (AFS 2011:19) requires that chemical hazards that may cause occupational injuries or accidents be investigated and assessed.

Work may not commence before an investigation and risk assessment have been conducted and necessary measures taken to prevent occupational injury and accidents.

## Definition of chemical hazard

A chemical substance or a combination of chemicals that together can lead to occupational injury or accidents because of:

- their hazardous properties,
- their properties, depending on the manner in which they are used or are present,
- their temperature,
- a reduction in the concentration of oxygen in the air, or
- the increased risk of fire, explosion or other dangerous chemical reactions.

## What is a chemical hazard?

- Chemical products with dangerous properties, for example:
  - dangerous chemical substances or products, i.e. products labelled with hazard symbols
  - hygienic or cosmetic products
  - drugs
  - foods
  - animal feed
  - chemical waste
- Other products and materials
  - plants treated with pesticides
  - impregnated wood
  - devices made of lead, for example
  - hot metal
- Substances that are formed (even unintentionally)
  - grinding dust
  - exhaust fumes and smoke
  - oxygen-deficient atmosphere
  - gas from chemical reactions

## Information to be included in a risk assessment

- The hazardous properties of the source of chemical risk
- Exposure paths, e.g., inhalation or skin contact, and the amount of exposure
- Synergistic effects with other chemicals and with other factors in the working environment
- Possible chemical reactions with substances or materials in the workplace

- Circumstances that may affect the risk, including the effect of protective measures
- Experience from previous injuries, accidents or incidents in the workplace or during contingency exercises, and the results of medical examinations

### **Risk reduction measures**

Risk reduction measures should be specified in risk assessments. Give priority to measures in the following order.

1. Product and choice of method
2. Reduction of weight and volume of chemicals
3. Choice of materials
4. Protective ventilation
5. Choice of time and place, if the risk is high
6. Protective equipment

### **Documenting a risk assessment**

The Division for Occupational Health and Safety at Lund University, provides a model for risk assessment in an Excel file (this can be found on the Division of Nuclear Physics intranet under the HMS tab). This is to be used when documenting a risk assessment.

1. Identify which chemicals, mixtures of chemicals or other chemical hazards are involved in the work. Use product safety data sheets to obtain information on hazards. Calculate or estimate the amounts of chemicals required.
2. Identify the stages in the work that may involve a risk of injury or accident.
3. Assess the risks in each stage of the work. Identify the type of risk/problem that can occur, the possible consequences, and the probability of the risk occurring. Use the table below to evaluate the risk. Specify the measures that can be taken to reduce the risk. Use the information on the product safety data sheet. The following questions must be considered for each stage of the work.
  - Have procedures associated with risk, and rules for working alone been taken into account?
  - Have the risks associated with power failures and failure of the water supply, and interruption as a result of evacuation been taken into account?
  - Have the measures to be taken in the event of an accident, e.g. first aid, cleaning up spillages, etc. been included?
4. Give references that describe the work, for example, method descriptions or instructions.
5. Sign the risk assessment and send it for review (for example, to Mattias Olsson regarding work with chemicals, and to Jan Pallon regarding work with the microbeam accelerator).
6. The reviewer decides if the risk assessment can be approved, or if it must be supplemented. After approval, the risk assessment is given to the Head of Division for approval. Work may only be started once the Head of Division has given his or her approval.

**The assessment of risk based on the probability and consequences of events**

| <b>Consequence</b> | <b>Probability of injury or accident</b> |             |               |           |
|--------------------|--|-------------|---------------|-----------|
|                    | Unlikely                                 | Less likely | Possible      | Likely    |
| Very serious       | Risk                                     | Risk        | High risk     | High risk |
| Serious            | Moderate risk                            | Risk        | Risk          | High risk |
| Mild               | Moderate risk                            | Risk        | Risk          | Risk      |
| Insignificant      | No risk                                  | No risk     | Moderate risk | Risk      |

Mattias Olsson

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