HSA

An tÚdarás Sláinte agus Sábháilteachta
Health and Safety Authority

Chemical Agents Risk Assessment Template

2025

Supporting Information

This document is intended to provide additional information to support the Chemical Agents Risk Assessment Template available on the HSA website.

1. Introduction

The law requires all employers to assess chemical risks that can cause harm (hazards) in their workplace. This includes gases, vapours, fumes, dusts, and liquids.

Key Point: Do not forget those chemicals that might be generated during work activities, for example, welding fumes and wood dust.

These pieces of legislation include:

- Section 19 of the Safety, Health and Welfare at Work Act, 2005,
- Regulation 4 of the Safety, Health, and Welfare at Work (Chemical Agents) Regulations 2001-2021, and
- Regulation 4 of the Safety, Health and Welfare at Work (Carcinogens, Mutagens and Reprotoxic Substances) Regulations 2024.

You can use the Chemical Agents Risk Assessment Template developed by the HSA, to help you assess the risks from your chemicals.

This includes all activities where chemical agents or hazardous chemical agents are used, or are intended to be used or generated, in any process. Including:

- production,
- handling,
- storage,
- transport,
- disposal,
- treatment, and
- waste.

The chemical agents risk assessment template aims to support small and medium-sized businesses to complete chemical risk assessments. This template is **not intended for complex businesses or work activities**.

This is not an approved or statutory form, and chemical agent risk assessments may be produced in other formats. Using this template does not guarantee compliance with the requirements of the legislation; it depends on how it is completed.

Competent people carrying out chemical risk assessments can amend this template to suit their site-specific work activities. Chemical risk assessments should be included with your other risk assessments as part of your safety statement.

A chemical inventory template is also available on the HSA website. Completing your chemical inventory before conducting the risk assessment is recommended, it will help support the assessment process.

There are also legal requirements to protect the environment from chemicals. For further information on environmental management of chemicals, including measure for accidental release and disposal of content or containers refer to:

- sections 12 and 13 of the Safety Data Sheet (SDS),
- your Local Authority, and
- the Environmental Protection Agency.

Other agencies may have additional requirements for specific chemicals, for example, medicines, pesticides and cosmetics.

2. Monitor and Review Risk Assessments

The control measures you have put in place to protect your employees should be monitored to ensure that they are working, and changes need to be made if they are not. Feedback from staff, accident and near-miss events can provide useful information about whether your control measures are working.

You must review your risk assessments:

- when your work activities change,
- if your organisational structure changes,
- if you change your equipment or chemicals,
- when new technical knowledge becomes available, or
- when new legislation or standards are brought in.

3. Key terms

The following terms are commonly used when completing a chemical agent risk assessment.

Chemical Brand Name:

The manufacturer's trade name for their chemical product. Different manufacturers might sell the same chemical under different brand names. A chemical brand name could be a chemical substance or mixture.

Chemical Substance:

This is the name given to a single chemical compound, for example, Sodium Chloride, which is table salt. A chemical brand-name product can be made of only one chemical substance.

Chemical Mixture:

Is a combination of two or more chemical substances which are physically mixed but not chemically bonded. For example, paints can be made up of pigments, solvents and binders. A chemical brand-name product can also be a chemical mixture.

Safety Data Sheet (SDS):

Safety data sheets (SDS's) provide useful information on harmful (hazardous) chemicals, describing the hazards the chemical presents, and giving information on handling, storage and emergency measures in case of an accident. You must have a copy of the SDS sheet for the harmful chemicals you purchase. You can get a copy from your chemical supplier.

Not all hazardous chemicals are legally required to have an SDS, although some suppliers may still provide them. These include:

- medicinal products (for humans and animals),
- cosmetic products, and
- food products.

You must still carry out a risk assessment of your hazardous chemicals even if they do not require an SDS sheet.

Hazard Pictograms:

Are symbols that warn users about the harm that a chemical can do. They are shown in a diamond shape with a red border.

Hazard Statements:

Are a short warning that tells you what kind of harm a chemical can cause. Each statement has its own code in the format H***, for example, H315: May cause skin irritation. Chemicals can have several hazard statements. You can find these on the chemical label or in the SDS.

ATEX:

Generally refers to the hazard of explosive atmospheres occurring in the workplace due to the presence of flammable gases or combustible dust mixed in air, which can give rise to the risk of explosion.

When there's a possibility of an explosive atmosphere in a workplace from flammable chemicals, you must carry out a separate risk assessment to reduce this risk. Further information is available from the ATEX section of the HSA website.

Chemical hazard: Poorly controlled welding fume

Carcinogenic, Mutagenic and Reprotoxic (CMRs) Chemicals:

- Carcinogenic chemicals can lead to or increase the risk of cancer.
- Mutagenic chemicals can cause changes in genes.
- Reprotoxic chemicals can harm human reproduction.

CMRs are categorised into three categories: 1A, 1B and 2. Additional legal duties apply to categories (cat.) 1A and 1B.

You can find out if the CMR is cat. 1A or 1B by checking if section 2 of the SDS says any of the following:

- Carc. 1A or 1B.
- Muta. 1A or 1B.
- Repr. 1A or B.

For CMRs that don't have an SDS, refer to the Carcinogens, Mutagens and Reprotoxic Substances section of the hsa website.

CMRs should only be used in the workplace as a last resort, if safer alternatives are not available or suitable for the work activity.

Technically Possible:

The law requires that the risk from CMRs (cat. 1A or 1B) is reduced as far as possible using available technology.

There is no single definition of 'Technically Possible'. In general, it means that if there is a way to reduce the risk using an existing method or technology, it must be used. This applies regardless of the cost, time, or effort required to put the measures in place.

Routes of Exposure:

Refers to how a chemical can enter the body. There are four main routes:

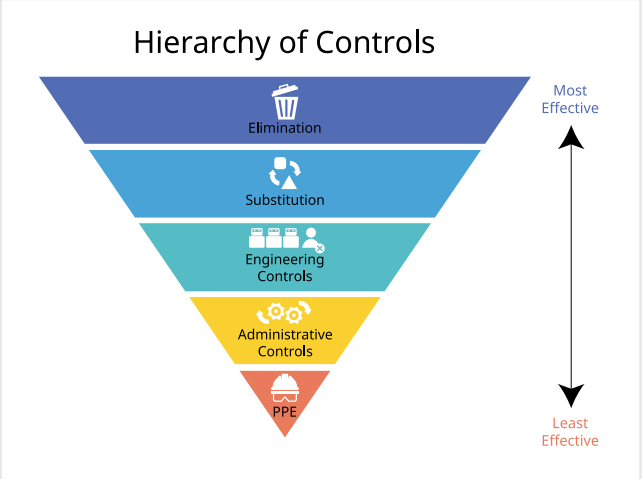
1. Inhalation- breathing in for example, gases, vapours or mists.
2. Dermal- chemicals are absorbed through the skin or eyes.
3. Ingestion- swallowing chemicals.
4. Injection- chemicals enter the body through puncture wounds or needles.

Understanding the route of exposure is important when choosing control measures, including Personal Protective Equipment (PPE).

Hierarchy of Controls

Under health and safety legislation in Ireland, the nine "General Principles of Prevention" must be considered when selecting your control measures to minimise harm.

The goal of these Principles is to eliminate a hazard, if possible, or reduce the risk using a hierarchy of controls. The diagram below shows the order of the Principles, ranked from most effective to least effective. Different versions of the hierarchy exist. Below is one example that includes the 9 principles organised into 5 levels.



1. **Elimination:** remove the hazard by stopping the use of a hazardous chemical.
2. **Substitution:** swap a harmful chemical with a less harmful one, or a less harmful form, for example, pellets instead of powder.
3. **Engineering Controls:** physical changes to the workplace or work equipment. This might include a fume hood, enclosure, or H-class vacuum.
4. **Administrative Controls:** change how people work, such as training, work schedules to limit the time workers are exposed, and safety signage.
5. **PPE:** wearing protective equipment, for example, respiratory protection, gloves, and goggles.

Extraction Methods

These are engineering controls designed to remove harmful substances from the workplace, such as dust, fumes, gases, or vapours. It includes:

- Local Exhaust Ventilation (LEV) captures harmful substances near their source before spreading around the work environment. This includes fume hoods, on-tool extractors, spray booths;
- Mechanical ventilation brings fresh air into a room or removes contaminated air using fans; and
- Natural ventilation, which dilutes indoor contaminants with outdoor air without the use of a fan. For example, using wall or window vents.

The type of extraction will depend on your risk assessment and could include a combination of different forms of extraction methods.

Personal Protective Equipment (PPE)

PPE means any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards.

Respiratory Protective Equipment (RPE) is a specific type of Personal Protective Equipment used to protect the individual wearer against the inhalation of hazardous substances in the workplace air.

PPE and RPE should be suitable for the specific workplace activity, the chemicals involved and the employee wearing it. When multiple chemicals are used in the same activity, you must ensure that the PPE and RPE selected are appropriate and suitable to protect the wearer against all chemical hazards collectively.

For example, in a work activity that involves hazardous dusts and vapours, the filters or canisters on the RPE must be suitable to protect against both of these hazards. More information is available on the Personal Protective Equipment and Respiratory Protective Equipment HSA webpage.

Health Surveillance

When a risk to health remains, after additional control measures are put in place, further steps may be required, such as health surveillance.

The aim is to identify and protect employees at increased risk of developing occupational diseases. It also helps to check the effectiveness of the control measures you have in place to protect employee health.

There are some situations where health surveillance is mandatory for employees, for example lead and its inorganic compounds. For further information, please see the Health Surveillance section of the HSA website.

4. Risk rating

There is no single way to determine the level of risk. Ranking hazards requires:

- knowledge of workplace activities,
- up-to-date Irish SDS sheet (if legally required, see SDS section for exemptions),
- the urgency of situations, and
- workplace consultation.

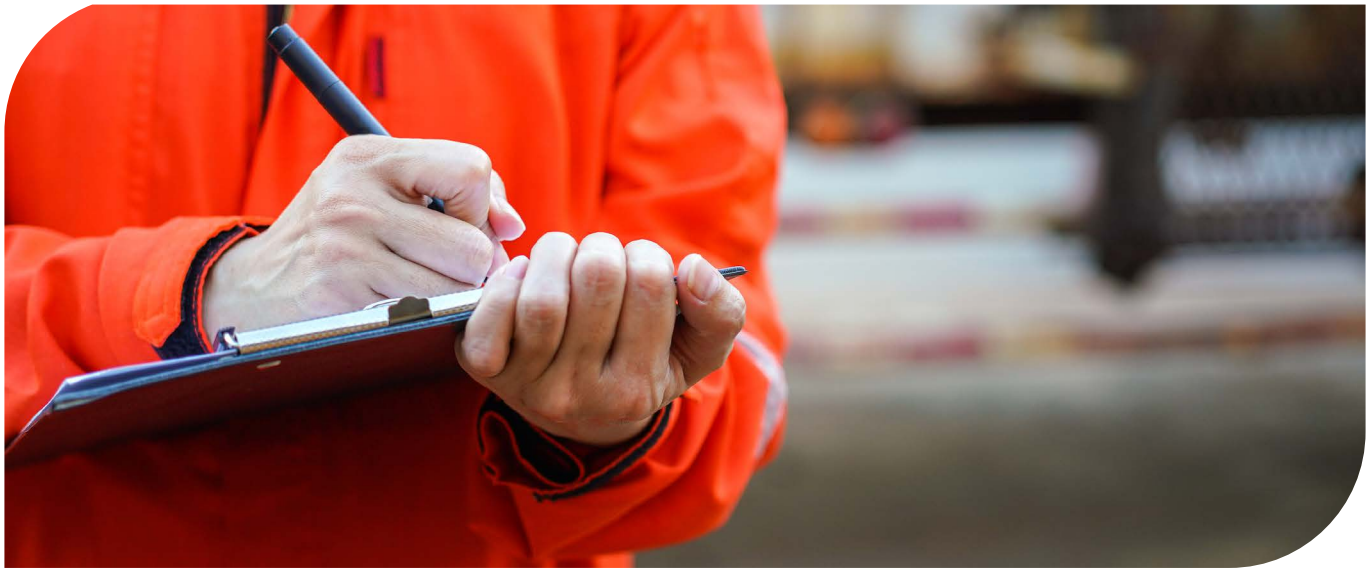
One option is to rate risks using a table like the one below. Definitions of each category can be found in the appendix at the end of this document.

	Severity of Harm		
Likelihood of Harm	Slight harm	Moderate harm	Extreme harm
Very unlikely	Very low risk	Very low risk	High risk
Unlikely	Very low risk	Medium risk	Very high risk
Likely	Low risk	High risk	Very high risk
Very likely	Low risk	Very high risk	Very high risk

Note: This matrix provides examples of harm and likelihood. Organisations should adjust the design and size of the matrix to suit their needs.

Example:

Likelihood	Severity	Risk Rating
Unlikely	Moderate harm	Medium risk



5. Risk Matrix Definitions

Below are examples of the different likelihood, harm, and risk levels. These definitions can be amended to suit your business needs.

Definitions for Likelihood of Harm

1. **Very unlikely:** Less than 1% chance of being experienced by an individual during their working lifetime.
2. **Unlikely:** Experienced once during an individual's working lifetime.
3. **Likely:** Experienced once every five years by an individual.
4. **Very Likely:** Experienced at least once every six months by an individual.

Definitions for Severity of Harm

When identifying the severity of harm, consider information relevant to the work activity, and:

- chemical nature (for example, liquid, powder, pellet, gas or vapour, reactivity, volatility);
- hazards associated with the chemical (for example, CMR, corrosive, flammable);
- how often and how long the chemicals are used; and
- parts of the body that might be affected.

1. **Slight harm**, for example, superficial injuries, minor cuts and bruises, eye irritation from dust, nuisance irritation, and temporary discomfort.
2. **Moderate harm** for example; deep cuts; burns; concussion; serious sprains; minor fractures; deafness; dermatitis; asthma; and work-related upper limb disorders.
3. **Extreme harm** for example amputations; major fractures; poisonings; multiple injuries; fatal injuries; occupational cancer; life-shortening diseases; and acute fatal diseases.

Definition for Risk Level

1. **Very low:** These risks are considered acceptable. No further action is necessary other than to ensure that the controls are maintained.
2. **Low:** No additional controls are required unless they can be implemented at a very low cost (in terms of time, money, and effort). Actions to further reduce these risks are assigned low priority. Control measures are maintained.
3. **Medium:** Consider if the risks can be lowered to a tolerable or acceptable level. The costs of additional control measures should be taken into account. Control measures should be put in place within a specific time frame. Control measures are maintained.
4. **High:** Major efforts should be made to reduce the risk. Control measures should be put in place urgently within a specific time frame. You might need to stop or restrict the activity or put temporary control measures in place. Significant resources might have to be used for additional control measures. Control measures are maintained.
5. **Very high:** These risks are unacceptable. Major improvements in control measures are necessary to reduce the risk to a tolerable or acceptable level. Stop the work until safety measures are implemented to lower the risk. If it is not possible to reduce the risk, the work should remain prohibited.

6. Further Information

Additional resources to support chemical agent risk assessments are available on the HSA website, including:

- A Short Guide to Health Surveillance in the Workplace
- Chemical Agents Code of Practice
- Free chemical elearning courses at hsalearning.ie
- HSA ATEX Webpage
- HSA Chemical Risk Assessment Webpage
- HSA Safety Statement and Risk Assessment Webpage
- Local Exhaust Ventilation (LEV) Guidance
- Personal Protective Equipment Webpage and Guidance
- Risk Assessment of Chemical Hazards Guidance
- Safety Data Sheets for Hazardous Chemicals Information Sheet

Contact our HelpDesk:

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