Chemicals

Introduction

This information sheet gives employers and employees practical advice on how to assess the risks from the chemicals in their workplace and how to manage chemicals safely.

Almost all workplaces use chemicals which mean employees can be routinely exposed to paints, sprays, inks, toners and adhesives not to mention a wide range of materials used in cleaning and maintenance such as detergents and oils.

Chemicals can be solids (e.g. dusts, fibres), liquids or mists (e.g. bleach) or gases / vapours (e.g. carbon monoxide, chlorine or ammonia). They can be individual substances like petrol or mixtures / products (e.g. paints, degreasers, ink and toners).

Any chemical, in either gas, liquid or solid form, that has the potential to cause harm is referred to as a hazardous chemical. Chemicals include those that are brought into the workplace and used for processing (e.g. solvents and cleaning agents) and those that are generated by a process or work activity (such as fumes from welding / soldering) or generated as waste or residue (such as carbon monoxide from engine or exhausts).

How can chemicals cause harm to health?

Chemicals can cause harm to health ranging from mild skin irritation to cancer when they come in contact with the human body. The effects of hazardous chemicals may be seen immediately after contact e.g. chemical burn, or many years after contact e.g. lung cancer following exposure to asbestos. Harm can also occur following a single short exposure such as the use of a chemical for a couple of hours or longer-term exposures from the daily use of a chemical.

Chemicals can come in contact with or enter the human body through inhalation (breathing in contaminated air), skin contact, ingestion (swallowed accidentally e.g. hand-to-mouth contact) or injection (from sharp objects such as needles).

Examples of the effects of hazardous chemicals include:

- Skin irritation, dermatitis or skin cancer from frequent contact with oils
- Injuries to hands and eyes from contact with corrosive liquids such as acids / bases
- Asthma due to sensitisation to isocyanates in paints and adhesives
- Lung diseases following exposure to dusty environments such as wood or flour dust
- Death or injury from exposure to toxic fumes, for example chlorine, ammonia, carbon monoxide

Some chemicals also present physical hazards such as the potential to ignite or support combustion of other chemical substances (an oxidiser) and others have the potential to explode (flammable solvents).

Assessing the risk of chemicals

1. Make a list (inventory)

Walk around your workplace and make a list of all the chemicals you bring in and those generated by work activities (dust, residues, waste).

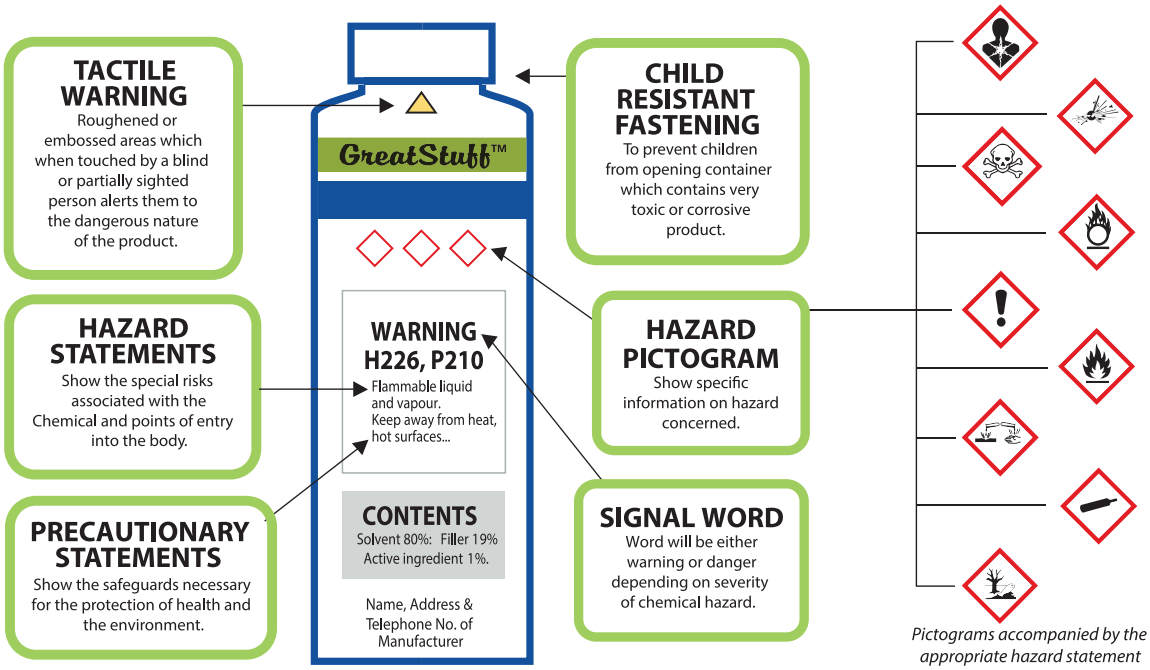
The following shows an example of a simple inventory:

Name of Chemical	How much? Where is it stored?	What is it used for?	Hazard information	Supplier details	SDS available?
Best Cleaner	5 x 1 Litre containers Stored in cleaning cabinet in kitchen	Cleaning kitchen area	Eye and skin irritation 	Acme Cleaning Ltd., 1 Acme Lane, Ind. Estate, Dublin 123	Yes
Unknown	Approx. 1L On top shelf of garage	Not currently used	No information	No information	No. Arrange for chemical to be safely removed

2. Identify chemical hazards

The most important sources of information on the hazards of the chemicals brought into your workplace are the **label** and **safety data sheet (SDS)**.

All chemical containers should be supplied with a label which clearly identifies the chemical and its hazards. Where a chemical is hazardous, the label should contain a signal word (danger or warning) and may include an associated pictogram and a hazard statement giving more detailed information on the hazard (e.g. causes serious eye irritation, causes skin irritation). It should also contain precautionary statements giving advice on safety precautions to be taken (e.g. keep out of reach of children, wear protective gloves / protective clothing / eye protection / face protection). Additional precautionary information may be provided in the safety data sheet.



DANGER	Life threatening even in small amounts and brief exposure.	Handle with care.
	Causes very serious long-term health effects.	Never swallow or inhale.
	Causes skin and eye burns.	Avoid contact with skin.
WARNING	Destruction of metals.	Handle with care.
	Skin and eye irritation. Adverse health effects.	Don't swallow, touch or inhale.
	Damage to ozone layer.	Avoid release.

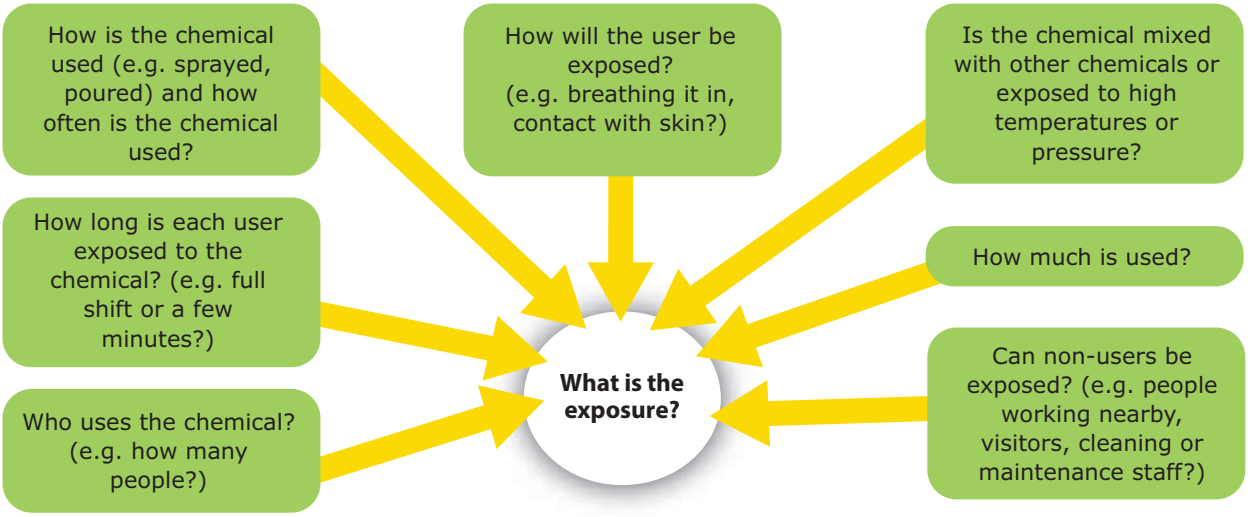
DANGER	Explosive- sensitive to fire, heat, vibration and friction.	Keep your distance.
	Highly flammable- serious fires if exposed to sparks, flames, heat.	Handle with care.
	Causes or intensifies fire, increases fire risk.	No ignition sources. Wear protective clothing.
WARNING	Container explodes if heated. Very cold liquid burns when touched.	Do not heat.
	Toxic to aquatic environment.	Do not pour down drain.

A safety data sheet is a document that should be provided by the supplier with all hazardous chemicals.The safety data sheet is a key tool for risk assessment as it includes detailed hazard information, advice on safe handling, use and storage, and the emergency measures to be followed in case of an accident.

3. Assess exposure

Once you have identified your chemical hazards you then need to assess what the potential exposure is to your employees.

This involves looking at each chemical which you have identified as hazardous and considering the following questions:



4. Control your chemical risks

Once you have assessed the risk associated with your chemicals, control measures must be put in place in order to keep your employees, your workplace, and the environment safe.

You should first consider if you can eliminate the hazard by changing the process or removing the hazardous chemical. If you cannot eliminate the chemical(s) can you substitute the hazardous chemical with another, non-hazardous or less hazardous chemical? For example, you could replace isocyanate based paints with water based paints or you could use a less hazardous form of the same chemical (e.g. using a pellet rather than a powder form of the chemical could have a significant effect on reducing inhalable dust levels).

Where the above options are not possible, exposure to hazardous chemicals should be minimised and additional control measures must be put in place to remove or reduce the risks to employees:

- Engineering controls e.g. local exhaust ventilation (LEV), isolation / containment hoods or booths
- Review of current work practices or procedures to reduce the frequency and length of exposure
- Appropriate personal protective equipment (PPE), e.g. eye protection, gloves, masks and respiratory masks (RPE). As these are the last line of defence, they should not be used without first considering the other controls above. (Information on the correct PPE and RPE is provided in section 6 of the SDS, but contact the supplier if unclear)
- Training for employees on the chemicals currently used in the workplace, what the chemical hazards are and the potential risks to their health, and how to handle chemicals safely
- Hygiene arrangements e.g. separate meal and wash facilities, designated smoking areas or a no smoking policy
- Storage arrangements so that chemicals are stored correctly, safely and securely. (Information on storage is available in section 7 of the SDS)
- A good level of housekeeping
- Correct disposal of waste in line with the information provided in section 13 of the SDS
- Emergency procedures in case of an accident, incident or spillage, e.g. eyewashes, showers, spill kits