

# SUBSTANCES HAZARDOUS TO HEALTH



Health and Safety Guidance Note



**NFU Mutual**  
RISK MANAGEMENT SERVICES

## INTRODUCTION

The Control of Substances Hazardous to Health Regulations 2002 (COSHH) as amended [Control of Substances Hazardous to Health Regulations

(Northern Ireland) 2003] are the main pieces of legislation covering control of the risks to employees and others arising from exposure to harmful substances generated out of or in connection with any work activity under the employer's control. The main objective of the Regulations is to reduce occupational ill health by setting out a simple framework for controlling hazardous substances in the workplace.

No work that is liable to expose anyone to substances hazardous to health may be undertaken unless an assessment of the risks has been made.

The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002 relate to the risk(s) associated with dangerous substances which could, under normal atmospheric conditions, form an explosive atmosphere. This guidance note does not cover the specific requirements of these regulations.

## WHAT ARE SUBSTANCES HAZARDOUS TO HEALTH?

A substance hazardous to health is defined as:

- One that has already been classified as being very toxic, toxic, harmful, corrosive or irritant under the CLP regulations (see section on Hazard Classification);
- A substance which has been assigned a Workplace Exposure Limit (WEL) – as listed in the HSE publication EH40/2005 (see 'Further Guidance');
- A substance that is carcinogenic, mutagenic or toxic for reproduction;

- A biological agent – e.g. bacteria and other micro-organisms if they are directly connected with the work, such as with farming, sewage treatment or healthcare, or if the exposure is incidental to the work such as exposure to bacteria from an air-conditioning system that is not properly maintained;
- A dust in substantial concentration in air – e.g. wood dust, grain dust, stone dust;
- Any substance not mentioned above but which creates a hazard to health comparable to those mentioned above – e.g. gases such as nitrogen, argon and helium, which whilst not dangerous in themselves, can endanger life by reducing the amount of oxygen available to breathe, pesticides, medicines or substances produced in chemical processes.

COSHH applies to virtually all substances hazardous to health except:

- Asbestos and lead, which have their own regulations;
- Substances which are hazardous only because they are radioactive, at high pressure, at extreme temperatures, or have explosive or flammable properties. Again, other regulations apply to these risks;
- Biological agents that are outside the employer's control, e.g. catching an infection from a colleague at work.

Substances used in, or generated by, a work activity may be in any form, e.g. solid, liquid, gas, fume, vapour, dust, etc. and may present a hazard to health by a number of means, e.g. skin absorption, injection, inhalation or ingestion.

## WHAT TYPES OF OCCUPATIONAL HEALTH ISSUES CAN ARISE FROM EXPOSURE?

The use of, or exposure to, hazardous substances at work can put people's health at risk. The effects from such substances include for example:

- Skin irritation or dermatitis as a result of skin contact;
- Asthma as a result of developing an allergy to substances at work;
- Losing consciousness as a result of being overcome by toxic fumes;
- Cancer, which may appear long after the exposure;
- Infection from bacteria and other micro-organisms.

## WHAT ARE MY LEGAL RESPONSIBILITIES?

The COSHH Regulations require you to prevent or reduce risks to health and safety from exposure to hazardous substances at work. As an employer you have to:

- Carry out an assessment of the risks from hazardous substances in your workplace;
- Take action to prevent or adequately control exposure;
- Ensure that your control measures are maintained and subject to regular examination and tests, e.g. local exhaust ventilation (LEV), personal protective equipment (PPE) etc.;
- Monitor exposure to your employees, where required;
- Conduct health surveillance of your employees, where required;
- Provide information, instruction and training;
- Develop and implement arrangements to deal with accidents and emergencies.

## HOW DO I CARRY OUT A COSHH ASSESSMENT?

Following the steps below will help you to carry out your COSHH assessment.

- 1 Identify your hazardous substances and how they are used or generated**
  - The starting point in the assessment process is to establish what activities involve the use or generation of hazardous substances.

Examples include:

- Handling and application of chemicals, e.g. solvents, paints, pesticides etc.;
- Use of oil and grease when maintaining vehicles;
- Exposure to dust or fumes, e.g. woodworking, welding, grain dust, spray painting etc.;
- Exposure to zoonotic disease when working with animals;
- Use of veterinary medicines;
- Exposure from toxic gases released from landfill sites, slurry pits, anaerobic digestion plant etc.

When establishing what the activities are, it is important to remember unusual situations such as spillages or maintenance activities.










- 2 Gather information about the substances** - The next stage in the assessment process is to collect information about the substances, i.e. the harm they can do and how this can occur. Typical information required includes:
  - The form of the substance, e.g. liquid, solid, gas, vapour, aerosol, etc.;
  - The quantity of the substance used or generated at any one time or over a period of time;
  - The temperature at which the substance is used or processed;
  - How the substance is used, e.g. sprayed, pumped, poured, painted, applied with a brush, etc.;

- The hazard classification of the substance, e.g. corrosive, harmful, toxic. This information is obtainable from a variety of sources including:
  - The label on the container. (If a substance is in any way hazardous, it is a legal requirement to provide essential safety data on the label);
  - Material safety data sheets (MSDS), which must legally be provided by the manufacturer or supplier of the substance;
  - HSE Guidance notes and other publications;
  - Technical reference sources, e.g. textbooks, scientific/technical papers, trade journals, etc.;
- Professional institutions and trade associations.
- The routes of exposure or a combination of routes how exposure might occur, e.g. breathing in gases/fumes/mist or dust, contact with the skin, swallowing, contact with the eyes, skin puncture, etc.

The hazard information on safety data sheets and labels is often supplemented by Risk and Safety Phrases, which include information about routes of exposure and preventative measures.

## HAZARD PICTOGRAMS (SYMBOLS)

Hazard pictograms alert us to the presence of a hazardous chemical. The pictograms help us to know that the chemicals we are using might cause harm to people or the environment. The pictograms appear in the shape of a diamond with a distinctive red border and white background (this is the same in all countries). One or more pictograms might appear on the labelling of a single chemical.

Symbol	Meaning	Symbol	Meaning
	Explosive: May react exothermically with atmospheric oxygen, thereby quickly evolving gases, which may detonate or upon heating explode.		Hazardous to the Environment: Presents or may present an immediate or delayed exposure danger for one or more parts of the environment.
	Oxidising: Gives rise to highly exothermic reactions in contact with other substances, particularly flammable substances.		Gas under pressure: Contains gas under pressure that may explode when heated.
	Flammable: Substances may become hot and catch fire in contact with air or a source of ignition; liquids with a very low flash point; substances which in contact with damp air or water evolve flammable gases.		Health hazard/Hazardous to the ozone layer: Health hazards such as skin irritancy/sensitisation.
	Corrosive: Substances which may, on contact with living tissues, destroy them.		Serious Health Hazard: Serious longer term health hazards such as carcinogenicity and respiratory sensitisation.
	Acute Toxicity: May cause death or acute chronic damage to health when inhaled, swallowed or absorbed via the skin.		

## WHAT IS THE DIFFERENCE BETWEEN A SAFETY DATA SHEET AND A COSHH ASSESSMENT?

A safety data sheet is the substance as supplied to you. The COSHH Assessment is about what you are doing with it. An example is a hazardous concentrated cleaner, which you may dilute down to a weak solution for employees to use. The diluted mixture might no longer be considered hazardous to the employees using it. The COSHH Assessment should cover the diluting task rather than its use as a non-hazardous cleaner.

**3 Identify who is at risk of exposure**  
- When establishing who may be harmed by exposure to a hazardous substance it is necessary to consider both those directly involved with the activity, e.g. employees, cleaners, etc., as well as those indirectly involved, e.g. visitors, public, maintenance staff, etc.

Special consideration should be given to vulnerable employees, e.g. young persons, lone workers, new or expectant mothers and employees with disabilities, allergies, etc.

**4 Identify the current control measures**  
- The next stage of the assessment process is to identify the control measures that are currently in place to protect the persons exposed to the hazardous substance(s). Current control measures may include physical controls (e.g. enclosure, Local Exhaust Ventilation, closed transfer systems, PPE, etc.), procedural controls (e.g. safe working procedures, information, instruction and training) or monitoring (e.g. air monitoring, health surveillance, etc.).

When detailing the physical controls it is important to include details of any maintenance and test schedules.

**5 Assess the risk of exposure** – Having established what the current control measures are, the next stage is to decide whether they reduce the risk of harm to the persons exposed to an acceptable level. When establishing how effective the control measures are at reducing the risk, it is important to consider factors such as whether the control measures are suitable for the type of hazard, they are used by the persons at risk and they are adequately maintained.

Specific guidance on how to conduct risk assessments is also provided in a separate guidance note.

For particularly hazardous substances, e.g. those that cause cancer, heritable genetic damage or asthma, you must ensure that the exposure is reduced to as low a level as is reasonably practicable. For carcinogens (substances which may cause cancer) or mutagens (substances which may cause heritable genetic damage) special requirements apply. These are outlined by the HSE on their website.

**6 Decide on any further action that may be required** – If it is decided that the current control measures do not provide sufficient protection to the persons exposed, then further action is required. When considering what further action is required (if any) the following hierarchy of control measures should be considered:

- Elimination – the best way to reduce the risks connected with the hazardous substance(s) is to remove the need to use those substances, e.g. by changing the process or product.
- Substitution – if elimination is not possible, then the substitution (or replacement) of the hazardous substance with one that is less dangerous is the next best option.

- Control – if a substance or process cannot be eliminated or substituted, then exposure may be prevented or reduced by:
- Enclosure of the process;
- Control of the emission by better management of the processes, e.g. use pellets instead of powder;
- Technical solutions to minimise the concentration in the exposure zone, e.g. local exhaust ventilation such as dust extraction;
- Organisational measures such as minimising the number of exposed employees and the duration and intensity of the exposure;
- Use of PPE – but only as a last resort and never as a replacement for other control measures which are required.

The HSE has developed a free internet tool for identifying good control practice: [www.coshh-essentials.org.uk](http://www.coshh-essentials.org.uk). It covers a wide range of processes and activities and also produces advice for products that have safety data sheets.

**7 Record the assessment** – A COSHH Assessment form (a template of which is provided at the end of this guidance note) can be used to record the findings of the assessment and be kept on file. The records should be kept in order to be used in reviews of the assessments, to be shown to enforcement officers and to be used as evidence in any civil liability actions.

Whilst every business is required to undertake a COSHH assessment, this does not need to be in writing if there are less than five employees. However recording significant findings of the assessment, as a reference document, will help to ensure that control measures are introduced and maintained and it will also serve as proof that an assessment has been carried out.

**8 Review the assessment** – Once the additional control measures are implemented, the COSHH assessment process should be repeated to check that the risk has actually been reduced to the lowest practicable level. Further control measures will be needed if this is not the case.

COSHH assessments should be reviewed on a regular basis (e.g. annually, but there is no set frequency for carrying out a review) and a review should also take place when there have been significant changes – e.g. as a result of:

- New equipment;
- New substances;
- New procedures;
- Advances in technology;
- Incidents or a case of ill health.

Remember to amend your assessment as a result of your review.

## EXPOSURE MONITORING AND HEALTH SURVEILLANCE

The COSHH Regulations require you to conduct exposure monitoring for certain hazardous substances, e.g. where a Workplace Exposure Limit (WEL) has been assigned. Exposure monitoring means using suitable techniques to assess the extent of employees' exposure to substances hazardous to health via all routes (inhalation, ingestion and/or skin). The information gathered during exposure monitoring can help you assess whether your exposure controls are adequate.

Exposure monitoring should be conducted where:

- Your COSHH assessment shows that an initial exploratory monitoring exercise is necessary to reach an informed and valid judgement about the risks;
- There could be a serious risk to health if control measures failed or deteriorated;
- Workplace exposure limits might be exceeded;
- Control measures might not be working properly.

However, you do not need to do this if you can show by another method of evaluation that you are preventing or adequately controlling employees' exposure to hazardous substances, e.g. a system is completely enclosed, you have alarm systems that alert of any leaks, etc. The COSHH Approved Code of Practice provides examples of other alternative methods of evaluation (see 'Further Guidance').

The COSHH Regulations also require you to carry out health surveillance in the following circumstances:

- Where an employee is exposed to one of the substances listed in Schedule 6 of the Regulations and is working in one of the related processes;

- Where employees are exposed to a substance linked to a particular disease or adverse health effect and there is a reasonable likelihood of the adverse health effect occurring and it is possible to detect the disease or health effect.

Further guidance on health surveillance is provided in the Occupational Health and Stress Guidance Note.

## INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION

Where employees are likely to be exposed to hazardous substances, you need to provide them with training so that they understand the risks they may be exposed to, and their duties and responsibilities.

The information, instruction and training should at least include the following:

- Details of the substances hazardous to health to which the employee is liable to be exposed;
- The significant findings of the COSHH assessment;
- How to use control measures properly, and how to check that they are working;
- The defined methods of work;
- How to wear their PPE correctly and how to take it off again without causing exposure. (For further guidance on PPE, see the Guidance Note – Personal Protective Equipment);
- If employees need to use respirators, they also need face fit testing and training on how to use them;
- Respirators will need to be examined and maintained to ensure safe use (templates for which are provided at the end of this guidance note);
- The results of any exposure monitoring and health surveillance, without giving individual employees' names. (For further guidance on health surveillance, see the Guidance Note – Occupational Health and Stress);

- Emergency procedures which need to be followed – carry out practice drills for cleaning up spills safely. (For further guidance, see the Guidance Note - Emergency Procedures).

These requirements are vital. You must ensure your employees understand the risks from the hazardous substances they could be exposed to. Your control measures will not be fully effective if your employees do not know their purpose, how to use them properly or the importance of reporting faults.

It is important that workers are appropriately supervised. Effective supervision can help you monitor the effectiveness of the training that people have received, and whether employees have the necessary competence to do the job.

## ARRANGEMENTS TO DEAL WITH ACCIDENTS, INCIDENTS AND EMERGENCIES

The COSHH Regulations define an accident, incident or emergency as any event which causes, or threatens to cause, any employee to be exposed to one or more hazardous substances on a scale well beyond that associated with normal day-to-day activity.

Examples of this sort of event include:

- Any process fire which could give rise to a serious risk to health;
- Any serious spillage or flood of a corrosive substance where it could make contact with the skin;
- Any failure to contain biological, carcinogenic, mutagenic or sensitising substances;
- Any acute process failure that could lead to a sudden release of chemicals, e.g. a chemical reaction that results in toxic fumes being released;

- Any threatened significant exposure over a WEL, e.g. where the exposure is clearly the result of an unusual, sudden and serious failure of Local Exhaust Ventilation or other controls.

You must develop procedures to deal with any potential emergency events. The response to an emergency should be proportionate to the risk. So, you should decide what proportionate action is needed to deal with the situation, e.g. not all incidents will automatically require the evacuation of the workplace. You should ensure that regular practice drills are held so that everyone knows what to do in the event of an emergency.

Specific guidance on how to develop these types of procedures is provided in the Emergency Procedures Guidance Note.

## FURTHER GUIDANCE

- HSE website 'COSHH essentials' [www.hse.gov.uk/coshh/essentials/](http://www.hse.gov.uk/coshh/essentials/)
- INDG136 Working with substances hazardous to health - a brief guide to COSHH [www.hse.gov.uk/pubns/indg136.pdf](http://www.hse.gov.uk/pubns/indg136.pdf)
- L5 Control of substances hazardous to health – approved code of practice and guidance [www.hse.gov.uk/pubns/priced/l5.pdf](http://www.hse.gov.uk/pubns/priced/l5.pdf)
- EH40/2005 Workplace exposure limits [www.hse.gov.uk/pubns/priced/eh40.pdf](http://www.hse.gov.uk/pubns/priced/eh40.pdf)
- INDG408 Clearing the air - a simple guide to buying and using local exhaust ventilation (LEV) [www.hse.gov.uk/pubns/indg408.pdf](http://www.hse.gov.uk/pubns/indg408.pdf)

These documents are available to download free of charge from [www.hse.gov.uk/pubns/books](http://www.hse.gov.uk/pubns/books)



## RESPIRATOR EXAMINATION LOG

Users Name:	Respirator Make/Model:
Respirator ID No:	Year of Manufacture:
Examination Date:	Date of last examination:

Item of examination	Yes	No	If No, detail remedial action taken
Is the face piece free from cracks tears and dirt?			
Is the face piece seal area free from distortion and is the material pliable?			
Are the inhalation valves, including valve seats free from cracks or tearing? (Lift valve to inspect valve seats)			
Are the head straps intact and do they have good elasticity?			
Are all plastic parts free of signs of cracking or fatigue?			
Are all gaskets properly seated?			
Is exhalation valve and valve seat free from signs of dirt, distortion, cracking, or tearing? (Remove exhalation valve cover to examine)			
Is the lens free from cracks? (Full-face only)			
Is the lens free from scratches that impede vision? (Full-face only)			
Is the filter of the correct type for the task?			
Are filters within their expiry date? (Vapour/gas filters only)			
Are inhalation/exhalation valves within their expiry date? (See note 1)			
Is the respirator face piece less than 5 years old? (See note 2)			

Select applicable inspection result:	
Examination of the respirator has been completed and the respirator is judged to be in a good and safe condition.	
Examination of the respirator has been completed and respirator is judged NOT to be in a good and safe condition and has been TEMPORARILY withdrawn from service.	
Examination of the respirator has been completed and respirator is judged NOT to be in a good and safe condition and has been PERMANENTLY withdrawn from service.	

Examined by: Name: ..... Signed:.....

Notes:

1. The exhalation valve has a direct bearing on safety; its year of manufacture can be established by referring to the instructions booklet supplied with the respirator.
2. To determine the date of manufacture of the silicone face piece refer to the instructions booklet supplied with the respirator.

## RESPIRATOR MAINTENANCE PROCEDURE

The general guidance contained within this procedure should be followed for the regular maintenance of all RPE in use. Further detailed information can be found within the individual manufacturer instruction booklet supplied with the respirator and should be referenced if needed.

**Before each use:** Check the integrity of the straps and face seal. Check that the filters are in date (especially important for intermittent users) and that they are the correct filter type to protect against the hazardous substance you are about to be exposed to. After donning the respirator, carry out a positive pressure function test before entering the area where the hazardous substance is present or commencing work that will produce the hazardous substance.

**How to conduct a Positive Pressure Function Test:** Place palm of hand over exhalation valve cover and exhale GENTLY. If the face piece bulges slightly and no air leaks are detected between the face piece and the face, a proper fit has been achieved. If air leaks are detected, reposition respirator on the face and/or adjust tension of straps to eliminate leakage and repeat the test. If you cannot achieve a proper fit, do not enter the contaminated area.

**Cleaning after each short-term use:** Filters should be removed and both the interior and exterior surfaces of the face piece wiped carefully with face piece wipes, or other proprietary hard surface disinfectant wipes. When dry, the face piece should be stored in a sealed polythene bag in clean, dry conditions, away from direct sunlight, sources of high temperature petroleum and solvent vapours.

**Cleaning after long-term use and at regular intervals:** Disassemble by removing filters, cartridges, and centre adapter cover (if applicable), clean and sanitise the face piece (excluding filters/cartridges) by immersing in warm water between 40°C - 50°C (this may differ with respirator type in use), a neutral detergent can be added, scrub with a soft brush until clean. Do not use cleaners containing lanolin or other oils. Rinse in fresh, warm water and air dry in a non-contaminated atmosphere. If the lens fitted is polycarbonate it should not be subjected to abrasive cleaners or solvents. Full disassembly/assembly instructions are contained in the instructions booklet supplied with your respirator.

**Maintenance and test:** Thorough maintenance, examination and test should be carried out at least once a month, however if the respirator is used only occasionally, an examination and test should be made before use and in any case the interval between examination and test should not exceed three months. Inhalation and exhalation valves should be changed in line with the manufacturer's recommendations. The manufacturer's instructions should be checked for a list of items that can be individually replaced if required. Full disassembly/assembly instructions are contained within the individual manufacturers instruction booklet supplied with your respirator.

**Note:** Only manufacturer's proprietary replacement parts should be used if required.

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