Control of Substances Hazardous to Health Regulations

Introduction
INTRODUCTION TO THE COSHH REGULATIONS

Control of Substances Hazardous to Health Regulations 2002

GUIDANCE FOR STOREKEEPERS & EMPLOYERS

Distributors should be well aware of the requirements of the Regulations for companies to assess the risk to health of their storekeepers and others when there could be exposure to hazardous substances.

Hazardous substances used in your workplace can harm employees’ health if exposures aren’t properly controlled.

Products may be classified as:

- VERY TOXIC
- TOXIC
- CORROSIVE
- HARMFUL
- IRRITANT

If an employer fails to prevent exposure or to properly control any exposure that does occur, there are a number of consequences:

- It adds to the unnecessary and preventable burden of ill health (see below);
- It is an offence under the Control of Substances Hazardous to Health Regulations 2002 (COSHH);
- Business performance can be damaged through lost time for sick leave and through product waste; and
- There can be civil claims for damages.
- There can be prosecutions for breach of statutory duty.
- Increased insurance premiums

COSHH – A SUMMARY OF REQUIREMENTS

COSHH applies when people may be at risk from exposure to substances hazardous to health (mainly chemicals including pesticides) at work. Employers will use the information on safety data sheets when, as part of their duties under COSHH, they assess the risks and take steps to prevent or control the exposure.

HSE has published guidance to help firms using chemicals to control the health risks to their employees better and comply with COSHH. The new ‘Control of Substances Hazardous to Health 2002’ approved Code of Practice (ACOP) has placed greater emphasis on employers to assess risks in the workplace and to implement the results of that assessment.
The ‘final’ supplier

You may be supplying to members of the public. You should make similar checks on your supplier to ensure that the classification and labelling are right, and that the goods are suitable for retail sale. If you are supplying through retail premises, you do not have to give safety data sheets to your customers unless they ask for them and, only if they are going to use your chemicals at work. For example, farmers using pesticides on the farm, or contractors spraying for other people.

Before attempting your COSHH assessment you should ask yourself the following questions:

1. Is the product hazardous? Refer to label and the Safety Data Sheet

2. If Yes – COSHH ASSESSMENT REQUIRED

3. Risk assessment is to enable the employer to make a valid decision about the measures necessary to prevent, or adequately control, exposure of their employees to substances hazardous to health arising from the work.

Risk phases (R – phases) from the label may help

4. Who is exposed to the risk?
   a) NSK
   b) Office Staff
   c) Drivers
   d) Visitors
   e) People off site

5. Assess the level of exposure
   - When people are exposed e.g. handling, loading/unloading pesticides?
   - How might they be exposed?

   Employers must consider all routes of entry into the body e.g. liquid splash on skin, inhalation of airborne dust.
   - How often are they exposed?
   - What are the levels of exposure to hazardous substances?

6. Judge the level of risk to each group of people.

7. What are appropriate controls?

8. Decide on controls to be implemented.

9. Inform staff
   Instruct staff
   Train staff

10. Monitor where necessary – not an issue in store but may be for contractors on-site.
11. Health Surveillance – also more applicable to contractors using pesticides (especially anti-cholinesterase compounds).

12. Maintaining control – This may include cleaning of equipment, clothing, PPE; provision of spare equipment, PPE.

13. Emergency procedures – They must be in place for all eventualities and must be practised so staff know what to do.

Control of Substances Hazardous to Health Regulations 2002

The Control of Substances Hazardous to Health Regulations (CoSHH) 2002 have been amended in 2003 and 2004 to clarify the legal position of mutagens and asthmagens, as well as to establish workplace exposure limits (WELS). Furthermore, the sixth edition of CoSHH 2002 as amended in 2013 updated the requirements for prevention or control of exposure to substances hazardous to health, the maintenance, examination and testing of control measures, monitoring of exposure at the workplace and health surveillance.

CoSHH sets out requirements for the control of a wide range of substances, including carcinogens, mutagens, asthmagens and biological agents. CoSHH establishes a system of WELs that is set out in the HSE publication “EH40 Workplace Exposure Limits”, which is updated from time to time.

The Approved Code of Practice (ACOP) to the Control of Substances Hazardous to Health Regulations (CoSHH) 2002 (as amended) gives practical advice on how to comply with the law. The ACOP is accompanied by guidance, which does not form part of the ACOP. The guidance is not compulsory and employers and the self-employed may take an alternative approach, however following the guidance will normally ensure compliance with the legal requirements of CoSHH.

The practical guidance contained within the ACOP is aimed at management and supervisory staff, safety representatives and technical specialists such as occupational hygienists and consultants.

Recognising Dangerous Substances

The objective of the Regulations is to prevent workplace disease resulting from exposure to hazardous substances. It requires an adequate assessment of risk, adequate control measures, maintenance and monitoring of the effectiveness of the measures.

Regulation 2 interpretation – substances hazardous to health include:

- Substances which under the Chemical (hazard information and packaging) Regulations 2009 (chip4) are in categories of danger, carcinogenic (category 1) or carcinogenic (category 2) and mutagens.
- Asthmagens
- Substances which under the CLP Regulations
- A substance listed in EH40 and assigned an Workplace Exposure Limit (WEL)
- A Biological Agent.
- Any kind of dust when present in substantial concentration.
- Any other substances which create a health hazard comparable with the hazards of the substance in the categories above.
Regulation 3

An employer’s duties are to protect:
- Employees
- Any other person who may be affected except;

Duties for health surveillance do not extend to non-employees. 
Duties to give information may extend to non-employees if they work on the premises.

Application 6 - 12 are not relevant if the following Regulations already apply:
- Control of Lead Regulations 2002
- Control of Asbestos Regulations 2002

The hazard arises from one of the following properties of the substance:
- Radioactivity
- Explosive
- Flammable
- High or low temperature
- High pressure
- Exposure is for medical treatment
- Exposure is in a mine

Regulation 6

Requires a suitable and sufficient assessment which should look at storage, handling, use, transportation and disposal of the hazardous substance. The assessment should be carried out by a competent person and should be written down and revised every 5 years.

Regulation 7

Employers must ensure that exposure of employees to hazardous substances is either prevented or adequately controlled, so far as is reasonably practicable. This applies to whether the substance is inhaled, absorbed or ingested. (Remember ERICPD)

Regulation 8

Employers providing control measures must ensure that they are properly used, and employees must comply with the measures.

Regulation 9

Requires maintenance in good working order of the control measures.

Regulation 10

Covers the need to monitor exposure to ensure adequate control.

Regulation 11

Requires that health surveillance and training is to be provided. 
Records to be kept for 40 years.
Regulation 12

Employers shall provide suitable and sufficient information on risks to health, precautions to be taken, results of exposure monitoring, results of collective health surveillance etc.

Categories of Substances

**Corrosive** – substances which may on contact with living tissue or materials destroy them e.g. hydrochloric acid.

**Harmful** – substances which, if inhaled, ingested or absorbed may involve limited risk to health e.g. chromates and chlorates.

**Irritant – Non Corrosive** substance which through immediate, prolonged or repeated contact with the skin or mucous membrane can cause inflammation e.g. ammonium hydroxide.

**Explosive** - a substance which can explode under the effects of flames e.g. peroxides or dichromates.

**Flammable** – a substance which may become hot or catch fire at its’ flash point/fire point e.g. cyanide, magnesium powder.

**Carcinogenic** – a substance which can cause cancer or increases it’s incidence e.g. asbestos, benzene or smoking.

**Toxic** - a substance which, if inhaled, ingested or absorbed or may cause serious, acute or chronic risk to health or even death e.g. phosgene or hydrofluoric acid.

**Dermatitis** – a substance which causes dermatitis e.g. oil or cement.

**Sensitizing** - a substance which causes an allergic reaction after repeated exposure e.g. nickel or dichromates.

**Toxic for Reproduction** – damages foetuses e.g. thalidomide or alcohol.

**Mutagenic** – damages cells and affects future generations.

**Asthmagens** – produces the biological change known as hypersensitive state in the airways; and Triggers a subsequent reaction within those airways.
UN Globally Harmonised System of Classification and Labelling of Chemicals

The UN has established a non-legally binding international agreement called Globally Harmonised System of Classification and Labelling of Chemicals. It has been widely accepted globally and is being established in National legislation of the countries adopting it. Within the Globally Harmonised System of Classification and Labelling of Chemicals is a classification of chemicals based on their effect on human health. Criteria for classifying chemicals have been developed for the following health hazards classes;

- Acute toxicity
- Serious eye damage/ eye irritation
- Germ cell mutagenicity
- Reproduction toxicity
- Specific target organ toxicity- repeated exposure
- Skin corrosion/ irritation
- Respiratory or skin sensitization
- Carcinogenicity
- Specific target organ toxicity – single exposure
- Aspiration hazard

A substance may be classified under more than one classification, although those with specific target organ toxicity only apply if other classes do not.

The new symbols, called pictograms, show similar images just a slightly different shape and colour.

New CLP symbols

![Pictograms](image)

You’ll see that the harmful symbol is missing. This has been replaced by the exclamation mark pictogram:

![Exclamation Mark Pictogram](image)

This pictogram will refer to less serious health hazards such as skin irritancy / sensitisation.

A couple of new pictograms have also been introduced:
This pictogram reflects serious longer term health hazards such as carcinogenicity and respiratory sensitisation.

This pictogram means “Contains gas under pressure”

Regulation 2(1) includes a definition of ‘The CLP Regulation’. This is a European Regulation on Classification, Labelling and Packaging of Substances and Mixtures. It entered into legal effect in all EU member states on 20 January 2009, subject to a lengthy transitional period. Its provisions will be phased in until 1 June 2015, when the CLP Regulation will be fully in force.

The existing framework of risk and safety phrases will be replaced, and new harmonised warning and precautionary statements for labels will be introduced. The risk phrases R42, R42/43, R45, R46 and R49 listed in regulation 7(7) will gradually be replaced with the following hazard statements:

- H350 – may cause cancer;
- H340 – may cause genetic defects;
- H350i – may cause cancer by inhalation;
- H334 – may cause allergy or asthma symptoms or breathing difficulties if inhaled;
- H317 – may cause an allergic skin reaction.

The Un’s international agreement called Globally Harmonised System of Classification and Labelling of Chemicals (GHS) establishes a requirement to prepare safety data sheets for chemicals that constitute a health hazard. This requirement has been globally adopted by many countries. In the EU the regulation known as REACH (Registration, Evaluation, Authorisation and restriction of Chemicals is the system for controlling chemicals in EU member states, including the preparation of safety data sheets.

Safety data sheets established in accordance with Globally Harmonised System of Classification and Labelling of Chemicals require a safety data sheet to have **16 headings**.

**Effects that a chemical can have on the body**

The effect of a substance on the body depends not only on the substance, but also on the dose, and the susceptibility of the individual. No substance can be considered non-toxic; there are only differences in degree of affect.

**Acute effect**

An acute effect is an immediate or rapidly produced, adverse effect, following a single or short term exposure to an offending agent, which is usually reversible (the obvious exception being death). Examples of acute effects are those from exposure to solvents, which affects the central nervous system causing dizziness and lack of co-ordination or carbon, which affects the level of oxygen in the blood causing fainting.
Chronic effect

A chronic effect is an adverse health effect produced as a result of prolonged or repeated exposure to an agent. The gradual or latent effect develops over time and is often irreversible. The effect may go unrecognised for a number of years. Examples of chronic effects are lead or mercury poisoning, cancer and asthma.

The risk assessment framework as it applies to chemicals

Identify the hazards

The first step in conducting a CoSHH risk assessment is to determine the nature, quantities and the use of substances at the location or in the activity. The manufacturers and suppliers of chemicals will provide safety data sheets that will illustrate the hazards of their products.

The hazards information associated with some chemicals in use may be limited, for example, items available domestically such as bleach and numerous cleaning materials. Here the information provided is usually retracted to the hazard label and simple advice, such as use of gloves and what to do if the material is accidentally ingested, comes in contact with the eyes or skin. Particular care will need to be taken with contractors to ensure any substance they propose to introduce to the workplace is known and assessed.

Chemicals may be used in a process, such as in paints, glues and lubricants. They may also arise from a process, such as in the form of dusts or fumes. The hazards they create need to be identified; they may be respiratory sensitizers, carcinogenic, corrosive or some other hazard.

Decide who might be harmed and how

A suitable and sufficient risk assessment will identify all groups of people at risk. When considering the people who might be affected, it is important to remember certain groups of workers who may work unusual hours, for example security staff and cleaners. Similarly, maintenance staff need to be considered and, where relevant, the fact that they may be contracted workers, identified.

Members of the public, visitors, students and work experience people, even trespassers, should be considered in the risk assessment process. In addition, special risk groups include those with disabilities, young people, pregnant women or nursing mothers, atopic people and those that have become sensitised.

Specific groups at risk

Goods received, stores and internal transport personnel

The first point of risk is at the receipt the substances. It is necessary to consider such issues as steel will often be coated with oil to protect it in transport and storage, packages of chemical may have been damaged in transit or the wrong substance may have been delivered. Good control of chemicals at receipt is essential. Similarly those involved in the transfer to and from storage, for example, fork lift truck drivers and stores personnel may be at risk.

Operators

Typically, operators are individuals engaged in production type activities where they have little control over their environment or work routine. Consideration of the task and issues of fatigue and loss of concentration, which can lead to exposure to chemicals, are usually significant.
Maintenance workers

Maintenance may require access to locations and equipment in a condition where the controls are shut down or not functioning, and this places maintenance workers at special risk. They will often find themselves in contact with contaminated plant or equipment. Sometimes maintenance work is carried out in frequently, which can cause a lack of familiarity that can lead to serious mistakes and unnecessary exposure to chemicals. In addition, maintenance work may introduce chemicals that would not normally be in the general workplace.

Cleaners

Cleaners may be at risk from the chemicals that they use or from the chemicals in the workplace that they may clean. Often, the turnover of cleaners is high and their health and safety competency, such as the correct use and health effects of chemicals they use or remove, may be low.

Contractors

Contractors may be involved in work that has particularly high health risks due to its unusual nature or complexity. They are an important group to identify, as they may not be as familiar with the workplace as other workers. They may not understand the hazards of chemicals and may not be as equipped as other workers to deal with them. Arrangements for contractors need to be clearly established; the work to be done and limitations must be understood by all involved and only controlled deviation allowed. Typical issues may include control on substances brought into the workplace, consideration of location of where they are working and likely exposures, welfare and first aid arrangements.

Visitors/public

Visitors and the public are particular groups of people that need to be identified because they may not perceive or understand chemical hazards and may behave in a different way to workers. They are often considered to be a vulnerable group because of their lack of awareness and ability to protect themselves from hazards.

Evaluate the risks and decide on precautions

After the chemical hazards and people that might be harmed have been identified it is necessary to evaluate the risk. The risk assessment process requires a judgement for each hazard to decide, realistically, what is the most likely outcome and how likely is this to occur. It may be a matter of a simple subjective judgement or it may require a more complex technique depending on the complexity of the situation. In order to do this, at least two factors must be considered- the likelihood and the severity (consequence) of harm.

Likelihood- when conducting a risk assessment we take account of the circumstances in which the hazard may be encountered and the current controls in place as these can greatly influence the likelihood of a person being harmed by the hazard.

The circumstances may relate to environmental factors that can mask or make a hazard more obvious, for example, a pleasant smelling chemical may hide the toxic effect it may have. The person encountering the hazard is another factor affecting the likelihood. Someone that does not perceive the hazard, because of lack of knowledge or reduced senses, makes it more likely that they will contact the hazard.
The effectiveness of the hazard controls also influences the likelihood, that they may have only a limited effect, may fail, be defeated or become inactive at various times. Reliance on a control like personal protective equipment would normally increase the likelihood of failure of the control, compared to controls that put the hazard behind a protective barrier.

Other factors to consider include:

- Competency of workers
- Levels and quality of supervision
- Attitudes of workers and supervisors
- Environmental conditions e.g. adverse weather
- Frequency and duration of exposure
- Work pressures

**Severity (Consequence)** - this considers the probable outcome (harm) of contact with the hazard, which may include the risk of death, major injury, minor injury, damage to plant/ equipment/ product, or damage to the environment. It is important that this is the most probable outcome, not possible outcome, as it may be possible to think of extreme circumstances that all hazards may have such a major injury or death.

Again, it is important to take into account the nature of the hazard and the circumstances in which the hazard is encountered. In considering the harm that may arise from contact with the chemicals it is important to take into account the nature of the hazard: it may be an irritant, toxic or cause cancer.

Similarly, consideration has to be made of the short and long term effects of exposure to the chemical. These effects may be altered, possibly increased, by the effect of mixing the chemical with another, such as the additive and synergistic effects.

**Record the findings and implement them**

**Record the findings**

Employers with 5 or more employees are required to record the significant findings of their risk assessments in writing or electronically (so long as it can be retrieved).

It should be noted that there are many forms and systems designed for recording risk assessments and while these may offer different design, the methodology broadly remains the same.

The task/ pant/ process/ activity together with the hazards involved, their associated risks and persons affected by them, together with existing control measures, should be recorded. The necessary actions required to reduce the risk are then dealt with and are usually recorded separately.

Some items, particularly those with a high risk rating, may require a more detailed explanation or there may be a series of alternative actions. Information on risk assessments and any controls must be brought to the attention of those assigned the task of work.

Risk assessment information should be included in lesson plans to ensure items are not missed when staff are trained or are receiving refresher training.
Implementing additional controls

After evaluating the risk, which includes consideration of current controls, we have to consider the need for additional controls. We establish if the current controls are effectively controlling the risk. In doing so, we consider a hierarchy of controls to determine the highest level of control to remove or reduce the risk to the lowest level.

A common hierarchy of controls is;

**Eliminate**- the substance or work process.

**Reduce**- the use or frequency or substitute for a lesser hazard or change the physical form (dust to pellets).

**Isolation**- glove box for handling hazardous biological agents.

**Control**- at source e.g. fume/ dust extraction, totally enclosed.

**PPE**- a physical barrier between the worker and the risk.

**Discipline**- rules, signs and instructions

The application of the hierarchy encourages the use of the highest level of control for those risks with the highest rating. Only when it is found that it is not possible to use the control should the next highest control be considered / used. Often a combination of measures is used to control the risk adequately.

It should be noted that, when choosing to deal with biological hazards, elimination and reduction may not be an option and the emphasis will often be on other controls. For example, this will involve the use of personal discipline, appropriate PPE (including its disposal) and ventilation controls.

Review and update as necessary

The risk assessment should be periodically reviewed and updated, in addition, a review of risk assessments should be carried out following any significant changes to the workplace. Examples of circumstances that would require the review of risks assessments are;

- When the results of monitoring (accidents, ill health effects, environmental) are adverse and are not as expected.
- A change in process, work methods or materials.
- Changes in personnel.
- Changes in legislation.
- The introduction of new plant or technology.
- New information becoming available.
- As time passes- the risk assessment should be periodically reviewed and updated. A common approach would be no longer than 5 years.

Main routes of entry

The main route of entry into the body by substances (including toxic, corrosive and dermatitic substances, dusts and fibres) and agents are;
• Eyes and ears
• Inhalation
• Skin pervasion
• Injection
• Ingestion via the digestive tract (mouth)

Entry through the eyes

Some substances are water soluble i.e. they dissolve in water, for example ammonia gas. The mucous membrane (conjunctiva) of the eye will absorb ammonia forming ammonium hydroxide, an alkali, which will irritate and eventually destroy the tissue. Some substances will be absorbed by the mucous membrane and allow the substance to pass into the eye and then gain a route into the body through the blood capillaries. Some viruses and bacteria can gain access this way, for example, the Brucella bacterium, which causes Brucellosis, the Leptospira bacterium, which causes Leptospirosis (well’s disease) and Hepatitis B virus. The tear ducts that remove tears from the eye also provide a possible route of entry.

Inhalation

The most significant route of entry for harmful substances is via inhalation. It has been estimated that about 90% of industrial poisons are absorbed through the lungs.

The size of the particles that may enter the lungs by inhalation is important, they are measured in microns – a micron is one-millionth of a metre. The larger particles inhaled (in the region of 10 microns) tend to only travel as far as the nose, while smaller particles make their way past this point and enter the bronchi and bronchioles (between 5 & 10 microns). Particles smaller than this size (approx. 5 microns or less) are capable of reaching as far as the alveoli. The smallest particles (approximately 0.3 microns or less) are exhaled without settling in the alveoli.

Inhalation and the subsequent absorption of harmful substances in the lungs involves the harmful substances presented to the alveoli crossing the thin membrane between the alveoli and the capillary network surrounding them. This allows harmful substances to get into the circulatory system.

Ingestion

Ingestion takes place through the digestive tract, which leads from the mouth to the anus. Chemicals can enter the digestive tract by actions such as eating, drinking or smoking in contaminated areas. Actions such as a person habitually touching their mouth or licking their lips or similar activities can cause chemicals to pass into the mouth and be ingested.

Chemicals entering the mouth can be ejected by spitting them out, but they may be swallowed and pass on to the stomach. In some cases, the chemicals may be ejected by the body’s immediate response to them, through vomiting. Some absorption of chemicals take place through the stomach lining. The ability of the stomach to absorb certain substances means that the toxic amounts may be absorbed accidentally, very quickly.

Once in the small intestine, substances pass over the villi that line the small intestine and are absorbed into the blood capillaries and lymphatic capillaries of the villi. The villi provide a huge surface area available for absorption of substances. Substances absorbed into blood capillaries pass through veins to the liver, which will attempt to deal with the toxins. Those substances that enter the lymphatic capillaries will pass via the thoracic duct into the blood system. Hazardous substances reaching as far as the small intestines may therefore be readily absorbed, taken away by the blood and carried around the body.
The passage of chemicals through the biological membranes of the small intestine can place by various mechanisms such as passive and facilitated diffusion, active transport, filtration through the membrane pores, and by phagocytosis (white cells, phagocytes engulfing and ingesting foreign particles or waste matter).

What is left at the end of the passage of material through the small intestine is transferred into the large intestine (colon) where absorption of water into the bloodstream takes place by osmosis. This is another part of the digestive tract where hazardous substances may be absorbed into the body, along with the water.

Particles of lead, for example, can be absorbed after accidental ingestion, while bacteria may be absorbed into the blood stream when ingested with contaminated food.

**Skin pervasion**

Substances can be absorbed through the intact skin, which is a semi-permeable membrane (by percutaneous absorption), or they may enter via cuts/abrasions, through the thin membranes of the eye or ear. Substances that pass through the skin can be transferred by the blood to target organ(s) or system(s). The amount absorbed through the skin adds to the dose that has entered by other routes, for example, inhalation.

Solvents such as toluene and trichloroethylene can enter either through accidental contact or when used for washing hands. These substances may have a local effect, such as de-fatting of the skin, or pass through into the blood stream. Organic based chemical compounds like benzene, toluene, trichloroethylene and organic lead (lead alkyls) readily pervade through the undamaged epidermis by percutaneous absorption. The direct effect on the skin results in a class of conditions known as dermatoses.

**Injection**

The outer layer of skin, when intact, will keep out most substances. However, if something sharp pushes through the external layer and into the blood stream, a substance hazardous to health could be carried with it and then carried around the body. This is injection. Needles are usually associated with injection, but it could be anything sharp; broken glass, metal, wood splinters, all having the capability of pushing through the skin and carrying contaminants into the body.
Guidance on completing a CoSHH Assessment.

Site, department, directorate, date of assessment and assessor –
All these areas to be completed in full. This identifies where and by whom the assessment was carried out and to what it applies.

Process and Activity - a full description of the task, the product and who is involved is required within this area. Any one picking up the document should be able to understand the process from the introduction/description.

Section 1;
The full substance name is too inserted within this area of the form. This will be found on the front of the Safety Data Sheet (SDS) or within the composition section of the SDS.

Composition substance is the full breakdown of the product. All information and percentages will be found on the SDS.

Routes of entry - This is how the substance/product could potentially enter the users’ body during the operation. Highlight the areas that you consider are appropriate; remember you can highlight more than one area.

Nature of the material – material formulations have their own hazards and appear in many different forms this area of the assessment form is for you to highlight the type of formulation that the assessment refers to.

Hazard category - This is the symbol identified on the product label or on the SDS. Highlight the appropriate symbol that relates to the product.

Workplace Exposure Limits (WEL) or Occupational Exposure Limit (OEL)- identified within the SDS within the exposure controls/personal protection area of the SDS. This is an important piece of information as it identifies if the product will have chronic or acute affects following the exceeding of the WELS or OES.

Section 2;
Potential exposure; within this area of the assessment we must consider how the product is to be used, what is involved, how are we using, transporting, carrying etc the product. We also need to consider who is carrying out the task, who else could be affected by what we are doing. How often and for how long, are we or other people exposed to the substance and how much are we using, storing, transporting etc.

Section 3;
Assessment of risk; existing control measure; what are we already doing to protect ourselves and anyone likely to be affected by what we are doing. How do we protect the environment, have we got a recorded spillage procedure or emergency contingency plan in place. If we are using equipment i.e. LEV when was it last serviced, has it been part of a pre use inspection regime, are we trained to use it.

Risk score rating;
Using the risk score rating chart select the consequence of the effects of an incident that could occur whilst using the product.
Select the likelihood of this happening multiply the 2 figures and this is your risk rating score. e.g. minor injury or effect according to the risk rating chart = 2 and the possible likelihood of this occurring = 3 therefore $2 \times 3 = 6$

Enter this score into the risk score box.

Section 4;

**Monitoring:** In this area we have to insert whether health surveillance is require. This will be identified from the SDS. We have to identify if the health surveillance is selective i.e. only the users who may be exposed to the product or to all that may be exposed to the product.

We identify who carries out the health surveillance and how. What frequency is it required and is the process appropriate and up to date? Who managers the health surveillance and responsibility should be recorded to ensure it is always carried out and in date. If we are using equipment i.e. LEV when was it last serviced by a competent person and has it been part of a pre use inspection regime, are we trained to use it. Is air quality monitoring required, if so who carries it out and when using what.

Section 5;

**Storage & Disposal:** how do we store the product, where do we store the product, is it concentration form or dilute, is the area secured and bunded. Are there any other environmental issues that should be considered? Any storage issues that is required. This information will be on the SDS in the section handling and storage. What warning signs are required for the storage area? Have we got a safe disposal procedure in place, is it recorded, can we prove what we have done with the empty containers, what we do about spillages, how do we dispose of spillage equipment.

What Personal Protective Equipment is required, is it adequate, does it fit, how do we check PPE, how do we dispose of contaminated PPE. Where do we store PPE, is the product flammable?

Section 6;

**Emergency arrangements:** within this area of the assessment we must document our procedures for what we do if things go wrong. What is our spillage procedure, emergency contingency plan in place? Have we practiced? Is the product flammable, what do we do in the event of fire. What are our first aid arrangements, Have staff been trained to deal with emergencies? Have we got appropriate spillage kits available?

THE EMERGENCY CONTINGENCY PLAN AND SPILLAGE PROCEDURE SHOULD FOLLOW THE ENVIRONMENT AGENCY GUIDENCE PPG 21 & 22

Section 7;

**Additional controls required:** Consider what else we can do, what else is needed to protect our staff. Is further training required, do we need to use the substance, equipment or is there another way of carrying out the task using a different method or substance/product. Review and carry out risk rating calculation again using all new control measures as consideration.
Section 8;

Action plan; This area is to ensure that any issues highlighted are dealt with. It is important to identify responsibilities to ensure ownership of the problems found and that the issues are dealt with in a timely fashion and efficiently.

Assessors name, signature and review date; This area of the assessment to be completed in full to identify who carried out the assessment and when. The review date should be managed to ensure that the assessment is still current and fits the procedure/ use of the product at all times. The review is a legal requirement under the CoSHH regulations every 5 years although it is good practice to review it annually in case staff may have changed roles, the process has changed, the workplace may have changed etc.
CoSHH RISK ASSESSMENT TOOL

Site:  
Department:  
Directorate:  
Date of Assessment:  
Assessor(s):  

**Process/Activity:**  
Please attach Safety Data Sheet (SDS) to assessment.

<table>
<thead>
<tr>
<th>1. Hazardous Substance(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance Name:</td>
</tr>
<tr>
<td>Composition of substance:</td>
</tr>
<tr>
<td>Route of entry into the body: (Circle those that apply)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Nature of the material:</td>
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<td></td>
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<tr>
<td>Hazard Category:</td>
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</tr>
</tbody>
</table>
|                         | EXPLOSIVE  | OTHER: _______________________

Is there a Workplace Exposure Limit (WEL) or Occupational Exposure limit (OEL)?
2. Potential for Exposure
What is the substance used for?
Numbers/Groups of people exposed:

How often are they exposed?

Duration of exposure:

How much is used?

3. Assessment of risk:
Existing Control Measures:

Risk Score: (take into account existing control measures above)
Likelihood x Consequence = Risk Score

<table>
<thead>
<tr>
<th>LIKELIHOOD</th>
<th>INSENSIGNIFICANT 1</th>
<th>MINOR 2</th>
<th>MODERATE 3</th>
<th>MAJOR 4</th>
<th>CATASTROPHIC 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Rare</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 Unlikely</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>3 Possible</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>4 Likely</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>5 Almost Certain</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>
### 4. Monitoring

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is health surveillance required?</td>
<td></td>
</tr>
<tr>
<td>How is this done?</td>
<td></td>
</tr>
<tr>
<td>Who carries out the surveillance?</td>
<td></td>
</tr>
<tr>
<td>Frequency?</td>
<td></td>
</tr>
<tr>
<td>Is it up to date?</td>
<td></td>
</tr>
<tr>
<td>Is air quality monitoring required?</td>
<td></td>
</tr>
<tr>
<td>Who carried it out? And how?</td>
<td></td>
</tr>
<tr>
<td>Frequency?</td>
<td></td>
</tr>
<tr>
<td>Is it up to date?</td>
<td></td>
</tr>
<tr>
<td>Mechanical controls: e.g. LEV</td>
<td></td>
</tr>
<tr>
<td>Is it maintained?</td>
<td></td>
</tr>
</tbody>
</table>

### 5. Storage & Disposal

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of storage area (room number/name):</td>
<td></td>
</tr>
<tr>
<td>System of segregation:</td>
<td></td>
</tr>
<tr>
<td>Quantity stored:</td>
<td></td>
</tr>
<tr>
<td>Is excessive stock stored?</td>
<td></td>
</tr>
<tr>
<td>Is area bunded:</td>
<td></td>
</tr>
<tr>
<td>What are the procedures for disposal of the substance and the PPE?</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Emergency Arrangements

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure for dealing with emergency spillages:</td>
<td></td>
</tr>
<tr>
<td>Have staff been trained:</td>
<td></td>
</tr>
<tr>
<td>Are approved spillage kits available:</td>
<td></td>
</tr>
<tr>
<td>First Aid arrangements: Skin:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. Additional Controls Required
(To reduce risk to an acceptable level)

Risk Score: (once additional controls have been implemented):

8. Action Plan

<table>
<thead>
<tr>
<th>Action</th>
<th>By Whom</th>
<th>Date to be completed</th>
</tr>
</thead>
</table>

Assessor Name:

Department Manager Signature:

Review Date:
Sometimes your supplier may say on the safety data sheet to which hazard group(s) the chemical belongs. From 31 July 2004 all pesticides must be classified under the CHIP Regulations 2009 (CHIP4). Risk phrases are listed in Part V of the Approved Supply List.

The risk of exposure to pesticides should be minimal. However, accidents do occur from time to time and therefore there is a need for emergency procedures.

Where stores are not fitted with extractor fans, distributors need to plan for the possibility of leakage occurring in the store which has been closed over the weekend, or even overnight, and take steps to cope with any risk from these circumstances.

Many measures taken have been standard practice for BASIS registered distributors over the years. What you must do now is commit these measures to paper and satisfy the requirements of law.

Giving this information to staff and ensuring that they are trained to carry out the emergency procedure are further requirements.

Written assessments will help to convince the enforcing authorities that you have tried to meet your legal duties under COSHH.

Finally, if you follow this standard approach it must be related to your store’s particular circumstances.

**CHIP 4**

CHIP is our short name for the Chemicals (Hazard Information and Packaging for Supply) Regulations. CHIP has been around for a number of years and has been changed quite a few times to keep up to date with developing science and technology.


The most recent version of CHIP is known as CHIP 4.

CHIP 4 is the name for the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. CHIP 4 became law on 6 April 2009.

There have also been quite a few changes to European law on chemicals recently which you will need to know about. So, this guide also provides a short introduction to the new European Regulation on the Classification, Labelling and Packaging of Substances and Mixtures – known as the CLP Regulation – and the REACH Regulation. Both these European Regulations are direct-acting on the UK. This means there will not be any national laws to implement them and you must comply with them directly.

**What’s CHIP for?**

CHIP helps protect people and the environment from the ill effects of chemicals by requiring suppliers to:

- identify the hazards (dangers) of the chemicals they supply;
- give information about the chemicals’ hazards to their customers; and
- package the chemicals safely.
CHIP applies to the **supply** of chemicals. There are different laws for controlling them in the workplace and on the transport of dangerous chemicals. By supply we mean sell, offer for sale, provide commercial samples, import, or transfer chemicals from workplace to workplace.

**Are all chemicals covered by CHIP?**

No. Some special chemicals, for example medicines and cosmetics, are not covered because other more specific laws apply. These, and the other exceptions are described in the CHIP Regulations.

**BUT the vast majority of chemicals are covered by CHIP.**

**What are the basic requirements of CHIP?**

The basic requirement of CHIP is for you to decide whether the chemical you supply is dangerous. CHIP, with its Approved Classification and Labelling Guide (ACLG), sets out the rules for this. They tell you how to:

- decide what kind of hazard the chemical has; and
- explain the hazard by assigning a simple sentence that describes it (known as a ‘risk phrase’ or ‘R-phrase’ for short).

This process is known as classification.

**In CHIP, you have to classify before you do anything else. If you classify the chemical wrongly then everything else you do under CHIP may be wrong.**

**Harmonised classifications**

If you are selling a substance, some of the work may have been done for you. Many commonly used substances have already been classified and agreed at European level. You must use these classifications.

These agreed, or ‘harmonised’ classifications used to be published in the Approved Supply List (ASL). But, because the law has changed, the ASL is no longer printed.

**Providing hazard information**

After deciding what the classification is, you have to:

- tell your customers about the hazards; and
- tell them, as far as you can, how they can use your chemicals safely.

You have to do this by:

- a label; and
- a safety data sheet (a must if your customer uses the chemical at work, but other equally good measures may be used for consumers).

**Labelling**

If you supply a dangerous chemical in a package, the package must be labelled. If the chemical is not supplied in a package (eg if the chemical is supplied from a tanker or down a pipeline), then you don’t have to provide a label - it wouldn’t be practical!
The aim of the label is to:

- tell anyone handling the package or using the chemicals about its hazards; and
- give brief advice on what precautions are needed.

**Safety data sheets**

- Safety data sheets are important in helping you, or anyone you supply, make the workplace safe and to protect the environment. More specifically, a safety data sheet contains information to help you make a risk assessment as required by the Control of Substances Hazardous to Health Regulations (COSHH).
- The safety data sheet itself is not an assessment. However, it will describe the hazards, helping you to assess the probability of those hazards (i.e., the risk) arising in the workplace.
- Safety data sheets used to be required by CHIP. This requirement now appears in the REACH Regulation.
- Safety data sheets are a MUST if your chemical is dangerous and supplied for use at work, whether in packages or not. Safety data sheets are also needed if your chemical is not classified as dangerous but contains small amounts of a dangerous substance(s).
- More information on safety data sheets can be found on the HSE website, and in Article 31 and Annex II of the REACH Regulation.
## Glossary of Terms

**SOME WORDS EXPLAINED**  You will find the meanings of some of the terms we use in this guide

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard</td>
<td>An inherently dangerous property of a chemical.</td>
</tr>
<tr>
<td>Risk</td>
<td>The likelihood of the dangerous properties of a chemical causing harm (to people or to the environment).</td>
</tr>
<tr>
<td>Category of danger</td>
<td>A description of hazard type.</td>
</tr>
<tr>
<td>Classification</td>
<td>Precise identification of the hazard of a chemical by assigning a category of danger and a risk phrase using set criteria.</td>
</tr>
<tr>
<td>Risk phrase (R)*</td>
<td>A standard phrase which gives simple information about the hazards of a chemical in normal use.</td>
</tr>
<tr>
<td>Safety phrase (S)*</td>
<td>A standard phrase which gives advice on safety precautions which may be appropriate when using the chemical.</td>
</tr>
<tr>
<td>Substance</td>
<td>A chemical element or one of its compounds, including any impurities.</td>
</tr>
<tr>
<td>Preparation</td>
<td>A mixture of substances.</td>
</tr>
<tr>
<td>Chemical</td>
<td>A common term for substances and preparations.</td>
</tr>
<tr>
<td>Tactile danger warning</td>
<td>Normally a small raised triangle intended to alert the blind and visually impaired to the fact that they are handling a chemical container of a dangerous chemical.</td>
</tr>
<tr>
<td>Child-resistant closure</td>
<td>A special closure which meets certain standards, in order to protect young children.</td>
</tr>
<tr>
<td>Chain of supply</td>
<td>The successive ownership of a chemical as it passes from manufacturer to ultimate user.</td>
</tr>
<tr>
<td>Approved Code of Practice (ACOP)</td>
<td>A guidance publication based on regulations which, if followed, helps compliance with the law.</td>
</tr>
</tbody>
</table>

*The full working of Risk (R) and safety (S) phrases can be found in part V of the Approved Supply List*
RISK PHRASES UNDER CHIP

UK PESTICIDE GUIDE

Very toxic
R27 Very toxic: In contact with skin
R26 Very toxic: By inhalation
R28 Very toxic: If swallowed
Toxic
R24 Toxic: In contact with skin
R23 Toxic: By inhalation
R25 Toxic: If swallowed
Harmful
R21 Harmful: In contact with skin
R20 Harmful: By inhalation
R22 Harmful: If swallowed
Irritant
R36 Irritating to eyes
R38 Irritating to skin
R37 Irritating to respiratory system
R41 Risk of serious to eyes
R43 May cause sensitisation by skin contact
R42 May cause sensitisation by inhalation
May cause lung damage if swallowed
Corrosive
R35 Causes severe burns
R34 Causes burns
R48 Danger of serious damage to health by prolonged exposure
R50 Very toxic to aquatic organisms
R51 Toxic to aquatic organisms
R53 May cause long-term adverse effects in the aquatic environment

A full list of Risk phrases used in the classification, packaging, labelling and provision of information on dangerous substances is given in appendix 1 of this document.
### Categories of danger

<table>
<thead>
<tr>
<th>Category of danger</th>
<th>Symbol letter</th>
<th>Indication of danger</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physico-Chemical Explosive</td>
<td>E</td>
<td>Explosive</td>
<td>![Explosive]</td>
</tr>
<tr>
<td>Oxidising</td>
<td>O</td>
<td>Oxidising</td>
<td>![Oxidising]</td>
</tr>
<tr>
<td>Extremely Flammable</td>
<td>F+</td>
<td>Extremely flammable</td>
<td>![Extremely flammable]</td>
</tr>
<tr>
<td>Highly flammable</td>
<td>F</td>
<td>Highly flammable</td>
<td>![Highly flammable]</td>
</tr>
<tr>
<td>Flammable</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Health Very toxic</td>
<td>T+</td>
<td>Very toxic</td>
<td>![Very Toxic]</td>
</tr>
<tr>
<td>Toxic</td>
<td>T</td>
<td>Toxic</td>
<td>![Toxic]</td>
</tr>
<tr>
<td>Harmful</td>
<td>Xn</td>
<td>Harmful</td>
<td>![Harmful]</td>
</tr>
<tr>
<td>Corrosive</td>
<td>C</td>
<td>Corrosive</td>
<td>![Corrosive]</td>
</tr>
<tr>
<td>Irritant</td>
<td>Xi</td>
<td>Irritant</td>
<td>![Irritant]</td>
</tr>
</tbody>
</table>
### Health

<table>
<thead>
<tr>
<th>Category of danger</th>
<th>Symbol letter</th>
<th>Indication of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitising</td>
<td>Xn</td>
<td>Harmful</td>
</tr>
<tr>
<td></td>
<td>Xi</td>
<td>Irritant</td>
</tr>
</tbody>
</table>

#### Carcinogenic

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol letter</th>
<th>Indication of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories 1 and 2</td>
<td>T</td>
<td>Toxic</td>
</tr>
<tr>
<td>Category 3</td>
<td>Xn</td>
<td>Harmful</td>
</tr>
</tbody>
</table>

#### Mutagenic

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol letter</th>
<th>Indication of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories 1 and 2</td>
<td>T</td>
<td>Toxic</td>
</tr>
<tr>
<td>Category 3</td>
<td>Xn</td>
<td>Harmful</td>
</tr>
</tbody>
</table>

#### Toxic for reproduction

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol letter</th>
<th>Indication of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories 1 and 2</td>
<td>T</td>
<td>Toxic</td>
</tr>
<tr>
<td>Category 3</td>
<td>Xn</td>
<td>Harmful</td>
</tr>
</tbody>
</table>

#### Environmental

<table>
<thead>
<tr>
<th>Indication for the environment</th>
<th>Symbol letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dangerous for the environment</td>
<td>N</td>
</tr>
</tbody>
</table>
When making a COSHH assessment it is therefore essential that the product label is consulted for information on the particular use that is being assessed.

A - Suitable protective gloves (the product label should be consulted for any specific requirements about the material of which the gloves should be made)
B - Rubber gauntlet gloves
C - Face-shield
D - Approved respiratory protective equipment
E - Goggles
F - Dust mask
G - Full face-piece respirator
H - Coverall
J - Hood
K - Rubber apron
L - Waterproof coat
M - Rubber boots
N - Waterproof jacket and trousers
P - Suitable protective clothing

Plan implementation

ACTION

- Look at the range of chemicals and decide how best to implement action across the board.
- Think about the suitability of the control approach you have selected for your situation. Having to change old working practices or spend money on new controls doesn’t make the control approach unsuitable!
- You may already have the right control in place.

MONITORING

- Although monitoring is important it is not generally required in a storage situation but if spills occur, ventilation is important. (Regulation 10 ACOP)

See the further reading list for publications on exposure limits and monitoring.

- Have you given your employees all the training and information they need?

HEALTH SURVEILLANCE

This is important where continuous exposure would be expected. In a storage situation there should be very little exposure in normal circumstances.

However this may be appropriate for contractors, who may be exposed when filling the sprayer and during the spraying operation (Regulation 11 ACOP).

TRAINING

Ensure that employees are properly informed, trained and supervised.

Training and information should be provided to all employees and, so far as is reasonably practicable, to other people on the premises too (Regulation 12 ACOP).
COSHH requires you to provide your employees with suitable information, instruction and training about:

- the nature of the substances they work with or are exposed to and the risks created by exposure to those substances;
- the precautions they should take.

You should give them sufficient information and instruction on:

- control measures, their purpose and how to use them;
- how to use personal protective equipment and clothing provided;
- results of any exposure monitoring and health surveillance (without giving people’s names);
- emergency procedures.

**This last step is vital.** You must ensure your employees understand the risks from the hazardous substances to which they could be exposed. Your control measures won’t be fully effective if your employees do not know how to use them properly, or the importance of reporting faults.

**EMERGENCY CONTINGENCY PLAN**

Arrangements to deal with accidents, incidents and emergencies should be made for the protection of employees and, where reasonably practicable, for other people on the premises (Regulation 13 ACOP).

You should also consider having spare, clean equipment, clothing and PPE on spray rigs etc so that contaminated items can be changed regularly to avoid contamination of the operative.

**THE EMERGENCY CONTINGENCY PLAN AND SPILLAGE PROCEDURE SHOULD FOLLOW THE ENVIRONMENT AGENCY GUIDENCE PPG 21 & 22**

**PRECAUTIONS**

Personal protective equipment (PPE) is not required to be worn when pesticide containers are being handled unless contaminated. However, working overalls, boots and industrial gloves should be provided.

The storeman must examine goods for damage and ensure that pallets are serviceable before unloading.

**PROTECTION**

Where there is spillage/leaking containers and therefore risk of exposure, PPE should be provided to protect the storeman following a suitable and sufficient assessment of risk based on the worse case scenario.
CONTINGENCY PLAN FOR SPILLAGE

- call out and inform a colleague
- ventilate the store
- put on basic levels of protective clothing
- identify the brand name and hazard symbol
- refer to the classified list to confirm the hazard grouping or refer to COSHH assessment specific to the spilt product
- put on extra protective equipment if required
- prevent further spillage from the damaged container
- contain a wet spillage with a ring of inert absorbent material (or sand)
- using a flat shovel put the contaminated material into a heavy duty polythene bag (IC)
- add more absorbent and repeat the previous actions
- continue until the spillage is scraped up
- using a small amount of water and detergent, mop up the floor with paper towels
- if at any stage an old soft brush has been used during the cleaning up process, dispose of it in the poly bag
- seal the poly bag containing the contaminated material
- label the poly bag with the name of the contaminant
- put the poly bag in a sand pit/container in the corner of the store
- adjust the stock records
- inform the management that the waste is ready for disposal

NB Where a dry spillage is involved, ensure that dust particles are not inhaled by wearing the recommended dust mask or respirator.

It may be possible in certain circumstances to use damp absorbent or sand to confine the dust from dry spillages.

The contents of a leaking container may be transferred to an identical container with the identical labelling, but otherwise the damaged container should be placed in a heavy duty polythene bag ready for disposal.
Where individual COSHH assessments have not been conducted, full PPE should be worn when attempting to clear spillages. All PPE should be ergonomically sound for each employee and must be compatible with any other PPE or protective device being worn. PPE to be worn should be identified following a suitable and sufficient assessment of risk based on the worst case scenario.

- Disposable chemical resistant coveralls (eg. TYVEK - F, TYVEK PRO-TECH)
- Rubber boots – PVC/Nitrile or synthetic rubber
- Chemical resistant apron - Lightweight & disposable or PVC coated nylon
- Chemical resistant gauntlet type gloves 0.40 – 0.55mm thickness, 300mm long
- Faceshield and browguard chemical and metal resistant
- A half face respirator marked CE/HSE approved conforming to standard EN143 : 2000 fitted with twin filter cartridges to give protection against organic gases/vapours and liquid particulates. The cartridges should be coded A1/P3 or ABEK/P3 and be in date.
Further reading and advice

**COSHH publications**

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

Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Codes of Practice L5 (sixth edition published 2013)

The technical basis for COSHH essentials: easy steps to control chemicals
HSE Books 1999 ISBN 0 7176 2434 X

COSHH: a brief guide to the Regulations
INDG136

**Hazardous substances publications**

Occupational exposure limits
EH40 /2005

The Idiot’s guide to CHIP

7 steps to successful substitution of hazardous substances
HSG110 HSE Books 1994 ISBN 0 7176 0695 3

Maintenance, examination and testing of local exhaust ventilation

The selection, use and maintenance of respiratory protective equipment: a practical guide

**Related publications**

5 steps to risk assessment
INDG163 HSE Books 1998 ISBN 0 7176 1565 0

Chemical (hazard Information and Packaging for supply) Regulations 2009 – CHIP 4

Biological monitoring in the workplace: a guide to its practical application to chemical exposure
HSG167 HSE Books 1997 ISBN 0 7176 1279 1

Biological monitoring in the workplace: information for employees on its application to chemical exposure
INDG245 HSE Books 1997 ISBN 0 7176 1450 6

**Further advice**

The Environment Agency (England and Wales) has a general enquiry line on 0845 333111. For Scotland, the Public Affairs Department of the Scottish Environment Protection Agency, on 01786 457700, handles general enquiries.

For enquiries on chemical safety publications, you can contact the HSE InfoLine on 08701 545500.

Health and Safety Executive – www.hse.gov.uk

BASIS would like to acknowledge the contribution from HSE in the production of this document.
APPENDIX 1

RISK PHRASES USED IN THE CLASSIFICATION, PACKAGING, LABELLING AND PROVISION OF INFORMATION ON DANGEROUS SUBSTANCES:

R1: Explosive when dry
R2: Risk of explosion by shock, friction, fire or other source of ignition
R3: Extreme risk of explosion by shock, friction, fire or other source of ignition
R4: Forms very sensitive explosive metallic compounds
R5: Heating may cause an explosion
R6: Explosive with or without contact with air
R7: May cause fire
R8: Contact with combustible material may cause fire
R9: Explosive when mixed with combustible material
R10: Flammable
R11: Highly flammable
R12: Extremely flammable
R13: Extremely flammable liquefied gas
R14: Reacts violently with water
R15: Contact with water liberates highly flammable gasses
R16: Explosive when mixed with oxidising substances
R17: Spontaneously flammable in air
R18: In use, may form flammable / explosive vapour-air mixture
R19: May form explosive peroxides
R20: Harmful by inhalation
R21: Harmful in contact with skin
R22: Harmful if swallowed
R23: Toxic by inhalation
R24: Toxic in contact with skin
R25: Toxic if swallowed
R26: Very toxic by inhalation
R27: Very toxic in contact with skin
R28: Very toxic if swallowed
R29: Contact with water liberates toxic gas
R30: Can become highly flammable in use
R31: Contact with acid liberates toxic gas
R32: Contact with acid liberates very toxic gas
R33: Danger of cumulative effects
R34: Causes burns
R35: Causes severe burns
R36: Irritating to eyes
R37: Irritating to respiratory system
R38: Irritating to skin
R39: Danger of very serious irreversible effects
R40: Limited evidence of a carcinogenic effect
R41: Risk of serious damage to eyes
R42: May cause sensitisation by inhalation
R43: May cause sensitisation by skin contact
R44: Risk of explosion if heated under confinement
R45: May cause cancer
R46: May cause heritable genetic damage
R47: May cause birth defects
R48: Danger of serious damage to health by prolonged exposure
R49: May cause cancer by inhalation
R50: Very toxic to aquatic organisms
R51: Toxic to aquatic organisms
R52: Harmful to aquatic organisms
R53: May cause long-term adverse effects in the aquatic environment
R54: Toxic to flora
R55: Toxic to fauna
R56: Toxic to soil organisms
R57: Toxic to bees
R58: May cause long-term adverse effects in the environment
R59: Dangerous to the ozone layer
R60: May impair fertility
R61: May cause harm to the unborn child
R62: Possible risk of impaired fertility
R63: Possible risk to the unborn child
R64: May cause harm to breast-fed babies
R65: Harmful; may cause lung damage if swallowed
R66: Repeated exposure may cause skin dryness or cracking
R67: Vapours may cause drowsiness and dizziness
R68: Possible risk of irreversible effects

COMBINATION OF RISKS

R14/15: Reacts violently with water liberating highly flammable gasses
R15/29: Contact with water liberates toxic, highly flammable gas
R20/21: Harmful by inhalation and in contact with the skin
R20/21/22: Harmful by inhalation, in contact with the skin and if swallowed
R20/22: Harmful by inhalation and if swallowed
R21/22: Harmful in contact with the skin and if swallowed
R23/24: Toxic by inhalation and in contact with the skin
R23/24/25: Toxic by inhalation, in contact with the skin and if swallowed
R23/25: Toxic by inhalation and if swallowed
R24/25: Toxic in contact with the skin and if swallowed
R26/27: Very toxic by inhalation and in contact with the skin
R26/27/28: Very toxic by inhalation, in contact with the skin and if swallowed
R26/28: Very toxic by inhalation and if swallowed
R27/28: Very toxic in contact with the skin and if swallowed
R39/23: Toxic: danger of very serious irreversible effects through inhalation
R39/23/24: Toxic: danger of very serious irreversible effects through inhalation and in contact with the skin
R39/23/24/25: Toxic: danger of very serious irreversible effects through inhalation, in contact with skin
R39/23/25: Toxic: danger of very serious irreversible effects through inhalation and if swallowed
R39/24: Toxic: danger of very serious irreversible effects in contact with skin
R39/24/25: Toxic: danger of very serious irreversible effects in contact with skin and if swallowed
R39/25: Toxic: danger of very serious irreversible effects if swallowed
R39/26: Very Toxic: danger of very serious irreversible effects through inhalation
R39/26/27: Very Toxic: danger of very serious irreversible effects through inhalation and in contact with skin
R39/26/27/28: Very Toxic: danger of very serious irreversible effects through inhalation and in contact with skin and if swallowed
R39/26/28: Very Toxic: danger of very serious irreversible effects through inhalation and if swallowed
R39/27: Very Toxic: danger of very serious irreversible effects in contact with skin  
R39/27/28: Very Toxic: danger of very serious irreversible effects in contact with skin and if swallowed  
R39/28: Very Toxic: danger of very serious irreversible effects if swallowed  
R40/20: Harmful: possible risk of irreversible effects through inhalation  
R40/20/21: Harmful: possible risk of irreversible effects through inhalation and in contact with skin  
R40/20/21/22: Harmful: possible risk of irreversible effects through inhalation and in contact with skin and if swallowed  
R40/20/22: Harmful: possible risk of irreversible effects through inhalation and if swallowed  
R40/21: Harmful: possible risk of irreversible effects in contact with skin  
R40/21/22: Harmful: possible risk of irreversible effects in contact with skin and if swallowed  
R40/22: Harmful: possible risk of irreversible effects if swallowed  
R36/37: Irritating to eyes and respiratory system  
R36/37/38: Irritating to eyes, respiratory system and skin  
R36/38: Irritating to eyes and skin  
R37/38: Irritating to respiratory system and skin  
R42/43: May cause sensitisation by inhalation and skin contact  
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation  
R48/20/21: Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with the skin  
R48/20/21/22: Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with the skin and if swallowed  
R48/20/22: Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed  
R48/21: Harmful: danger of serious damage to health by prolonged exposure in contact with skin  
R48/21/22: Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed  
R48/22: Harmful: danger of serious damage to health by prolonged exposure if swallowed  
R48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation  
R48/23/24: Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with the skin  
R48/23/24/25: Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with the skin and if swallowed  
R48/23/25: Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed  
R48/24: Toxic: danger of serious damage to health by prolonged exposure in contact with skin  
R48/24/25: Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed  
R48/25: Toxic: danger of serious damage to health by prolonged exposure if swallowed  
R50/53: Very toxic to aquatic organisms, may cause long term effects in the aquatic environment  
R51/53: Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment  
R52/53: Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment