Health and Safety Executive

CHIP for everyone

Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP)

HSG228 (Second edition)
Published 2013

If you supply chemicals (in any volume or amount) you will need to know about the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 – known as the CHIP Regulations.

This book gives you a basic introduction to CHIP. It explains how the Regulations work. It will help you decide what you should do about CHIP and whether you should get help.

Important – changes to the law

The laws covering chemicals are changing. The CHIP Regulations are being replaced by the new European Regulation on classification, labelling and packaging of substances and mixtures, known as the CLP Regulation.

The CLP Regulation already applies to chemical substances when they are placed on the market. This means, if you supply any chemical substance(s) (but not a preparation) you should already be classifying, labelling and packaging that substance according to the CLP Regulation.

If you supply a preparation (the CLP Regulation uses the term ‘mixture’) you do not have to apply the CLP Regulation until June 2015, but you can choose to do so earlier if you wish. From 1 June 2015 the CLP Regulation takes over and most of CHIP will be revoked.

This second edition of CHIP for everyone explains your duties and obligations under the CHIP Regulations and is not intended as a detailed guide to the CLP Regulation. Part 8 of this guide provides links to guidance on the CLP Regulation.

First published 2002
Second edition 2013

ISBN 978 0 7176 6420 7

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

Contents

Introduction

1 This guide replaces the earlier CHIP for everyone.

2 If you supply chemicals, in any volume or amount, you will need to know about the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 – the 'CHIP' Regulations. The type of chemicals you supply may vary from commodity chemicals in bulk to household cleaning products in small packages. You may be a major manufacturer or a retailer selling products. If you are a small employer, your company may not have laboratories or chemical testing facilities. It may have some technical expertise, but not much. Whatever your business is like, if you supply chemicals then this guide is for you.

3 This book gives you a basic introduction to CHIP. It explains how the Regulations work. It will help you decide what you should do about CHIP and whether you should get help.

Important information before you start – changes to the law

4 The laws covering chemicals are changing. The CHIP Regulations are being replaced by the new **European Regulation on classification, labelling and packaging of substances and mixtures** known as the **CLP Regulation**.[1]

5 The CLP Regulation already applies to chemical substances when they are placed on the market. This means that, if you supply any chemical substance(s) (but not a preparation) you should already be classifying, labelling and packaging that substance according to the CLP Regulation.

6 If you supply a preparation (the CLP Regulation uses the term 'mixture') you do not have to apply the CLP Regulation until June 2015, but you can choose to do so earlier if you wish. From 1 June 2015 the CLP Regulation takes over and most of CHIP will be revoked.

7 Moving from one classification system to another will require a good deal of preparation and management. To help you, the CLP Regulation allows for a transition period. This does mean though that the two systems are running in parallel until 1 June 2015. Under the CLP Regulation transitional arrangements you must classify chemical substances according to both systems until 1 June 2015. So you still need to know how to classify a substance under CHIP.

8 This guide only explains your duties and obligations under the CHIP Regulations and is not intended as a detailed guide to the CLP Regulation. Part 8 of this guide provides links to guidance on the CLP Regulation.

9 We have included a few reminders throughout this guide to prompt you to think about the CLP Regulation when necessary.

Part one: Understanding CHIP

10 This guide is intended to help businesses understand the basic requirements of the Chemicals (Hazard Information and Packaging for Supply) Regulations, often known as CHIP. It tells you what you have to do and what you do not have to do.

11 CHIP changed when the Chemicals (Hazard and Packaging for Supply) Regulations 2009[2] came into force on 6 April 2009. These regulations are known as CHIP 4. CHIP 4 applies in Great Britain and to certain activities outside Great Britain (see regulation 16). The Regulations do not apply in Northern Ireland which has its own implementing regulations. **CHIP 4** does **not** introduce any new duties on chemical suppliers, so you will probably continue to apply these Regulations in the same way as you did for CHIP 3. However, there are some more significant changes ahead which already affect substances. More information about these changes can be found in Part 8.

What is CHIP?

12 CHIP implements two European Directives – the Dangerous Substances Directive (No. 67/548/EEC)[3] and the Dangerous Preparations Directive (No. 1999/45/EC).[4] These Directives apply to all European Union member states plus Norway, Iceland and Liechtenstein (part of the European Economic Area – the EEA). The Directives are intended to create the same standards in the supply of dangerous chemicals by ensuring that suppliers in each country are subject to the same requirements. They protect people and the environment from the effects of these chemicals by requiring suppliers to give information and to package them safely. The idea is that if people know about the dangers of a chemical, and what they can do to avoid them, they will be less likely to harm themselves, others or the environment.

13 CHIP has been around for almost 30 years in one form or another. CHIP has been updated over the years to reflect the changes made to the European directives, and scientific and technical developments.

14 CHIP had to change in 2009 to make sure that our national law kept up to date with the changes to European law – especially the CLP Regulation (see paragraphs 4–7).

15 In this guide we use the word ‘CHIP’ to mean the CHIP 4 Regulations.

What does CHIP do?

16 Put simply, CHIP requires the supplier of a dangerous chemical to:

- **identify the hazards (dangers)** of the chemical (this is known as 'classification');
- **give information about the hazards** to their customers (usually by means of information on the package (eg a **label**) and, if supplied for use at work, a safety data sheet); and
- **package the chemical safely**.

17 These are known as supply requirements. 'Supply' is defined as making a chemical available to another person. Manufacturers, importers, distributors, wholesalers and retailers are examples of suppliers.

What is a 'chemical'?

18 CHIP divides chemicals into two types: **substances** and **preparations**. These are mutually exclusive, so every chemical will be one or the other.

What is a substance?

19 Put simply a substance is a **single chemical** (for example, an element such as chlorine or a compound such as sodium chloride). For exceptions to this definition see paragraph 21.

What is a preparation?

20 A preparation is a **mixture of substances** (for example, a paint). By a 'mixture' we mean the result of intentionally combining two or more substances, which do not react with each other to any appreciable extent, but simply coexist. Usually such a mixture will combine the properties (both desirable and undesirable) of the constituents, although each is diluted by virtue of the others.

Mixtures which count as substances

21 Most mixtures are preparations but CHIP considers the following mixtures to be substances:

- those which consist of a main substance, together with an additive necessary to preserve stability or any impurity deriving from the production process (but not any solvent which may be removed without affecting the stability or composition of the main substance);
- many naturally occurring chemicals, for example, plant-derived oils and petroleum or coal-derived chemicals which, in reality, are highly complex mixtures;
- chemicals which appear in the list of harmonised classifications (see paragraphs 54–56) described as a 'mixture of substance A and substance B' or some defined solutions, eg sulphuric acid. (All chemicals in this list are considered to be substances.)

An overview of CHIP

22 We'll begin by making a general survey of CHIP and then look at particular aspects in greater detail in other parts of this guide. For now we will:

- specify the documents which make up the CHIP package;
- see which chemicals CHIP applies to;
- describe briefly how CHIP works;
- consider the simplest case of supply;
- give definitions of commonly used terms;
- list CHIP categories of danger; and
- mention some other areas of chemical legislation which are related to CHIP.

The CHIP 'package'

23 The CHIP Regulations provide a lot of information about how to classify, label and package your chemicals. But there are also a couple of additional associated documents which contain supporting detail or explanatory material. As a supplier you will need to access both of these documents. See The References section and paragraphs 25 and 32.

CHIP Regulations

24 The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 set out the legal duties of the CHIP regime.

Approved documents

25 Much of the technical detail that supports CHIP is in the two documents defined in the Regulations:

- Table 3.2 in Part 3 of Annex VI of the CLP Regulation,[5] referred to throughout this guide as Table 3.2; and
- the Approved Classification and Labelling Guide (ACLG).[6]

Withdrawal of the Approved Supply List (ASL)

26 Table 3.2 in Part 3 of Annex VI of the CLP Regulation lists obligatory harmonised classifications and labelling requirements, agreed at European level, for approximately 8000 of the most commonly supplied substances. This list used to appear in Annex I of the Dangerous Substances Directive.

27 The Approved Supply List (ASL) published in Great Britain all the harmonised substance classifications and labelling requirements that were listed in Annex I. Annex I was repealed in full by the CLP Regulation on 20 January 2009 but the detail was immediately transferred to Table 3.2 in Part 3 of Annex VI of the CLP Regulation. This allowed all the existing agreed classifications to stay in place.

28 Table 3.2 works in exactly the same way as the former ASL. If you supply a substance that appears in Table 3.2, you **must** use the classification and labelling requirements listed there.

29 **As a consequence, the ASL has been withdrawn from publication. You should NOT refer to it for up-to-date harmonised classification and labelling information.**

Approved Classification and Labelling Guide

30 The *Approved Classification and Labelling Guide* (ACLG) gives rules for classifying and labelling chemicals not listed in Table 3.2. Anyone creating or checking classifications and labels should have access to these documents.

31 The *Approved Classification and Labelling Guide* can be found at www.hse.gov.uk/pubns/books/L131.htm.

Other short guides

32 In addition to this guide there are the leaflets *An introduction to CHIP 4*[7] and *Read the label*.[8]

Which chemicals does CHIP apply to?

33 CHIP applies to most chemicals. The exceptions, which are identified in regulation 3, are specialised chemicals such as cosmetics, medicines, wastes, foodstuffs and several others – all of which are covered by other more specific regulations. If, after reading regulation 3, you are not sure whether CHIP applies to your chemical, you can contact HSE's CHIP enquiry point for further help: chip@hse.gsi.gov.uk.

Related areas of chemical law

34 It is important to look briefly at some of the other areas of chemical legislation that might refer to CHIP or rely on the Regulations to prompt additional control and protection measures or restrictions. Depending on what you do with chemicals, you may need to think about these areas too.

Chemicals at work (COSHH)

35 CHIP is not about the use, storage, disposal etc of chemicals. However, the laws governing these matters often need to take into account how dangerous a chemical is and to do this they may use their CHIP classifications. As a result, they may be affected by changes to CHIP.

36 For example, a change in the CHIP classification of a substance may alter the measures needed under the Control of Substances Hazardous to Health Regulations 2002 (COSHH), as amended, to control the risks arising from the use of that substance in the workplace.

- www.hse.gov.uk/coshh/

37 HSE has published guidance to help firms using chemicals to control the health risks to their employees better and comply with the law. The starting point for the assessment is your safety data sheet (required by the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals – the REACH Regulation).[9] You can use this guidance to help the firms you supply find the control measures they need to protect health. You may also find it helpful yourself.

REACH Regulation

38 REACH is a European Union Regulation concerning the Registration, Evaluation, Authorisation and restriction of CHemicals. It came into force on 1 June 2007 and replaced a number of European directives and regulations with a single system.

39 REACH has several aims:

- To provide a high level of protection of human health and the environment from the use of chemicals.
- To make the people who place chemicals on the market (manufacturers and importers) responsible for understanding and managing the risks associated with their use.
- To allow the free movement of substances on the European Union (EU) market.
- To enhance innovation in, and the competitiveness of, the EU chemicals industry.
- To promote the use of alternative methods for the assessment of the hazardous properties of substances.

40 Under REACH, most substances that are manufactured in – or imported into – the EU in quantities over 1 tonne per year have to be 'registered' with the European Chemicals Agency (ECHA). As part of this registration, manufacturers and importers will need to determine the classification of a substance. If this is relevant to you, you should check REACH and the supporting guidance to ensure that you are meeting all the necessary obligations.

- www.hse.gov.uk/reach/

41 If you have to register a substance under REACH, you will have to include its classification in the registration dossier. CHIP obliges suppliers to use the classification from a REACH registration made by the manufacturer or importer of a chemical substance they supply (see regulation 4(3)).

42 Some substances will not have to be registered under REACH because they are only manufactured or imported in quantities below one tonne per year, or because they are exempt for other reasons. However, you must still determine the classification under CHIP (and the CLP Regulation) and label and package accordingly.

Major accident hazards (COMAH)

43 The Control of Major Accident Hazards Regulations (COMAH) deal with the control of onshore major accident hazards involving dangerous substances. COMAH applies mainly to the chemical industry but also to some storage activities, explosives and nuclear sites, and other industries where threshold quantities of dangerous substances identified in the COMAH Regulations are kept or used.

44 Certain CHIP classifications are used as one of the qualifying criteria for COMAH to apply.

- www.hse.gov.uk/comah/index

CHIP and carriage (transport) regulations

45 Carriage of dangerous chemicals is not the same thing as supply ('carriage' means the way a chemical is transported, for example, by road or by rail). There are extensive regulations dealing with carriage, which have their own scheme of classification, packaging and labelling/marking. In some cases a transport label may be used instead of the label required by CHIP, and vice versa (see CHIP regulations 8 and 9). If you want to know about the law on carriage you should look at the guidance and information available on the HSE and Department for Transport (DFT) websites:

- HSE: Carriage of dangerous goods
  www.hse.gov.uk/cdg/
- DFT: Dangerous goods
  www.gov.uk/government/policies/providing-effective-regulation-of-freight-transport/supporting-pages/safe-carriage-of-dangerous-goods

Exported chemicals

46 **Remember!** CHIP does not apply to exports to other countries in the EU although the Directives on which it is based do. Although other member states' law is based on the same EU legislation it is sometimes interpreted in slightly different ways, so if you are supplying a chemical to another EU member state then you need to check the law in that member state (see the References section).

47 CHIP does not apply to substances or preparations which are intended for export to countries outside the EU (regulation 3(3)). Such chemicals are subject to European Regulation (EC) No 689/2008 on Prior Informed Consent (known as PIC).[10]

How CHIP works

48 CHIP is basically a set of dos and don'ts which apply to people who supply chemicals. Its fundamental requirement is for you (the supplier) to decide, using a set of rules, whether a chemical is dangerous or not. If you decide the chemical is dangerous (ie 'classified') then a number of further requirements will be triggered. If you decide the chemical is not dangerous then nothing further is required, unless the chemical falls into one of the special cases in the Regulations. For example, Part II of Schedule 4 sets out special provisions relating to (a) dangerous preparations, and (b) any preparation (see regulation 9).

49 While reading what follows it may be helpful to refer to Table 1, Table 2 and Figure 1.

Table 1 Categories of danger

	Category of danger	*Symbol letter*	*Indication of danger*	*Symbol (orange background)*
Physico-chemical	Explosive	E	Explosive	
	Oxidising	O	Oxidising	
	Extremely flammable	F+	Extremely flammable	
	Highly flammable	F	Highly flammable	
	Flammable	none	none	none
Health	Very toxic	T+	Very toxic	
	Toxic	T	Toxic	
	Harmful	Xn	Harmful	
	Corrosive	C	Corrosive	
	Irritant	Xi	Irritant	
	Sensitising (by inhalation)	Xn	Harmful	
	Sensitising (by skin contact)	Xi	Irritant	
	Carcinogenic Categories 1 and 2	T	Toxic	
	Carcinogenic Category 3	Xn	Harmful	
	Mutagenic Categories 1 and 2	T	Toxic	
	Mutagenic Category 3	Xn	Harmful	
	Toxic to reproduction Categories 1 and 2	T	Toxic	
	Toxic to reproduction Category 3	Xn	Harmful	
Environmental	Dangerous for the environment	N	Dangerous for the environment	
	Dangerous for the environment*	none	none	none

* Where the only environmental R-phrases assigned are R52 (harmful to the aquatic environment) or R53 (may cause long-term adverse effects in the aquatic environment) or R52, 53 (harmful to the aquatic environment, may cause long-term adverse effects in the aquatic environment).

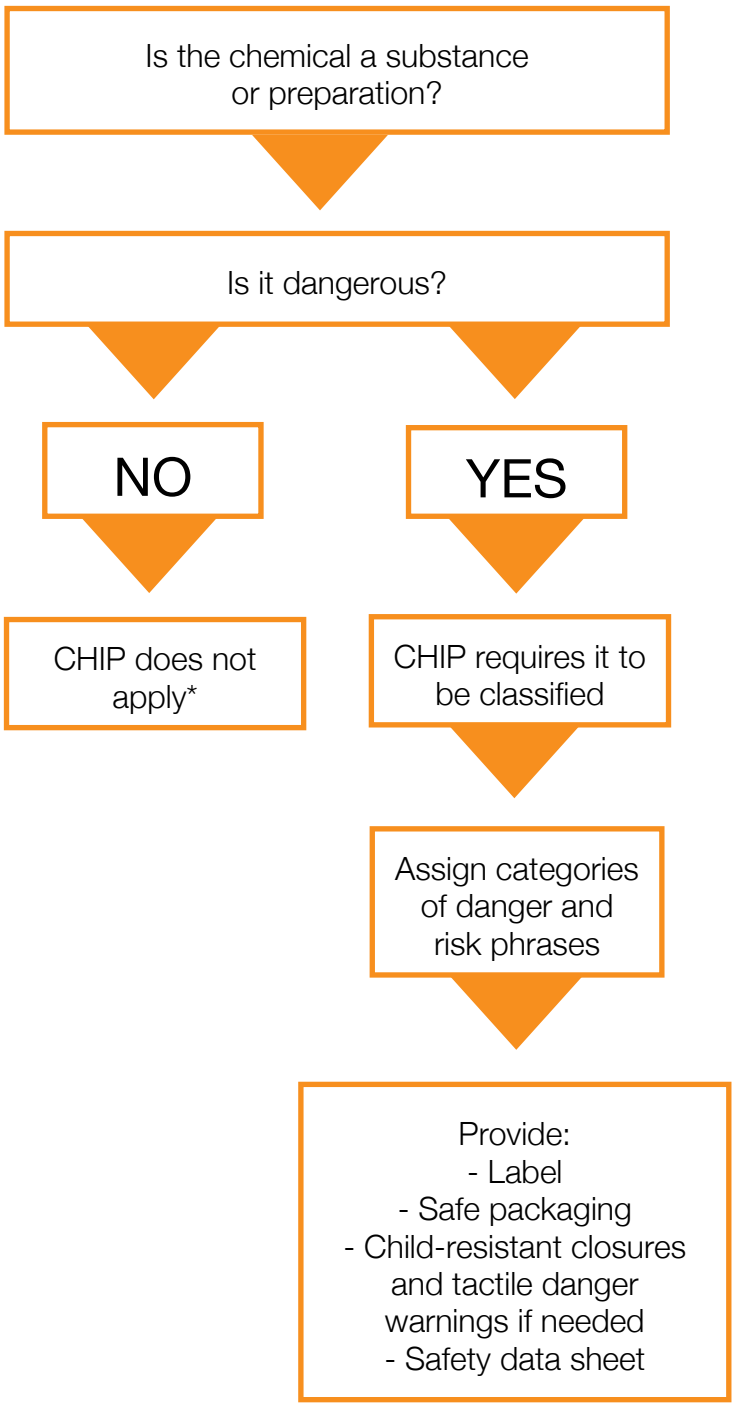
Commonly used terms

50 Let's take a look at some of the most commonly used terms in CHIP. Being familiar with these now will make the rest of this guide easier to understand.

Table 2 Commonly used terms

Term	*Meaning*
Hazard	The inherent dangerous properties of a chemical
Risk	The likelihood of the hazardous properties of a chemical causing harm (to people or the environment). Unlike the hazard, which is a fixed property of the chemical, the risk depends on the circumstances of use etc and is controllable
Category of danger	A description of hazard type
Classification	Precise identification of the hazard of a chemical by assigning a category of danger and a risk phrase using set criteria
Risk phrase (R-phrase)	A standard phrase which gives simple information about the hazards of a chemical in normal use
Safety phrase (S-phrase)	A standard phrase which gives advice on safety precautions which may be appropriate when using a chemical
Substance	A chemical element or one of its compounds, including any impurities
Preparation	A mixture of two or more substances
Chemical	A generic term for substances and preparations
Tactile warning devices (TWDs)	A small raised triangle applied to a package intended to alert the visually impaired to the fact that they are handling a container of a dangerous chemical
Child-resistant fastenings or child-resistant closures (CRFs or CRCs)	A closure which meets certain standards intended to protect young children from accessing the hazardous contents of a package
Chain of supply	The successive ownership of a chemical as it passes from manufacturer to its ultimate user

Figure 1 How CHIP works



* But see regulations 9 and 11 of CHIP for preparations which are special cases

Classification

51 If you have decided that a chemical is dangerous then you will need to:

- place the chemical into one or more categories of danger; and
- qualify the category of danger by assigning a risk phrase (R-phrase).

52 The standardised description of a dangerous chemical's hazards (dangers) by means of categories of danger and associated risk phrases is known as its classification (see Figure 2 'How classification works'). Some examples of CHIP classifications are shown in Table 3.

Table 3 Examples of CHIP classifications

Substance	Category of danger	Risk phrase	Classification is:
1-aminopropan-2-ol	Corrosive	Causes burns	Corrosive: causes burns (abbreviated as **C: R34**)
Nitric acid	Oxidising	Contact with combustible material may cause fire	Oxidising: Contact with combustible material may cause fire
	Corrosive	Causes severe burns	Corrosive: Causes severe burns (abbreviated as **O: R8 C: R35**)

53 The classification is the basis for the chemical's label, packaging and safety data sheet. If it is wrong then all of these will probably be wrong as well. CHIP makes it an offence to supply a dangerous chemical before it has been properly classified.

Harmonised classifications listed in Table 3.2

54 Many commonly supplied dangerous substances have already been classified for you by experts across the European Union, and are listed in the CLP Regulation with their labelling requirements and other information (see paragraph 25–29). These are known as harmonised classifications – they are listed in Table 3.2 in Part III of Annex VI of the CLP Regulation.

55 If you supply any substance with a harmonised classification 2 you **must** use the classification and labelling information provided.

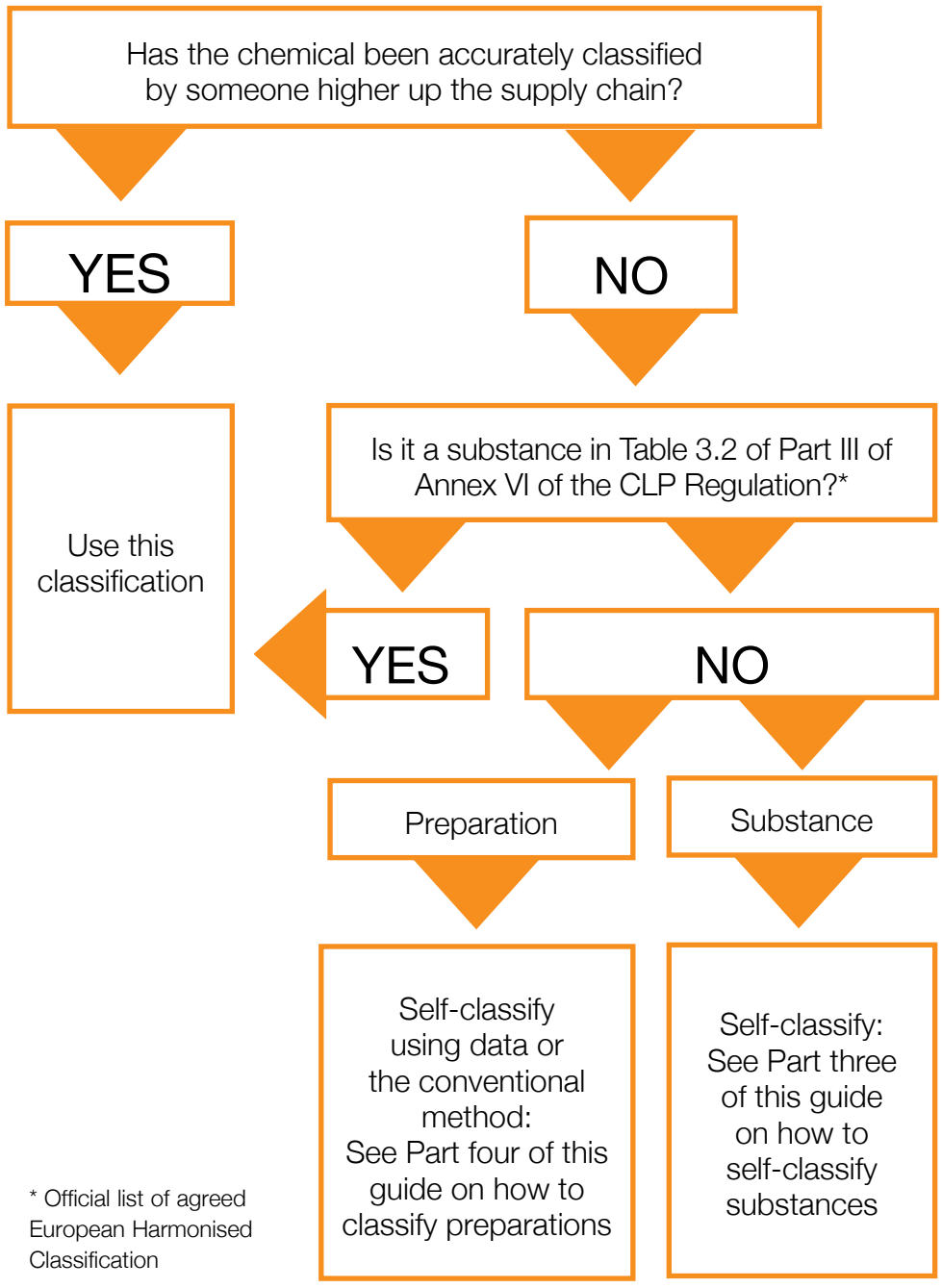
56 **Remember, if you supply a chemical substance now you should classify, label and package it according to the CLP Regulation. You must ALSO classify substances according to CHIP until 1 June 2015**. For more information about the transition to CLP, see paragraphs 169–172.

If a chemical is not listed in Table 3.2

57 If the chemical is a substance which is not listed in Table 3.2, or if it is a preparation, then you must classify it yourself. We'll look at this in more detail later in the guide but for now we can say that it involves:

- **in the case of a substance**, gathering available data on its dangerous properties (there is generally no requirement to carry out tests – see paragraphs 79–82) and then classifying it by comparing that data with criteria in the ACLG; or
- **in the case of a preparation**, using either one or both of the following:
  - working out the classification of the preparation from the classifications of its constituent substances (this procedure is known as the **conventional method**); or
  - testing the preparation to obtain data on it and then proceeding as above using the ACLG.

Figure 2 How classifaction works



The simplest case of supply

58 Say you buy a chemical and supply it to others but you do not do anything with the chemical – you do not mix, react, process or reformulate it. The chemical should have been properly classified before it reached you and if this is the case you can use that classification when you come to supply it on. This is an easy and usually reliable way of classifying a chemical, particularly if the chemical is a common one and you know the supplier is competent.

59 However, you should be aware that CHIP makes you, the supplier, responsible for the classification you use even if it is the work of someone else. In such cases you need to carry out some checks to confirm the classification.

60 If you want to use a classification given by your supplier, you should make appropriate enquiries about the classification. If you know your suppliers and have confidence in their ability, only simple checks may be needed. Some of the checks you could carry out are:

- use your common sense and experience about the classification (an extreme – but not unknown – example would be if an acid commonly known to cause burns had wrongly not been classified as 'corrosive');
- compare it to the classification of similar chemicals;
- find out from your supplier what information they used to classify it or ask other people competent in this area who you trust; and
- check the classification with other published information.

61 You should make similar checks if you use another supplier's safety data sheet or label information.

Summary of key points

- CHIP applies to suppliers of most chemicals.
- It obliges the supplier of a chemical to:
  - identify the hazards;
  - provide information on the hazards (labels). Remember, if a chemical is supplied for use at work, a safety data sheet is also required under the REACH Regulation; and
  - provide safe packaging.
- A supplier may use others' classifications etc, provided common-sense care is taken to check their validity.
- Substances are single chemicals; preparations are a mixture of substances.
- If you supply a substance(s) you should already be classifying, labelling and packaging that substance(s) according to the CLP Regulation.

Part two: Classifying substances which are in Table 3.2

62 **Remember, if you supply a substance now you should classify, label and package it according to the CLP Regulation. You must ALSO classify substances according to CHIP until 1 June 2015**. For more information about the transition to CLP, see paragraphs 169–172 of this guide.

63 If the substances you supply are reasonably common they may be in Table 3.2 which will provide information on their classification and labels.

How to find a substance in Table 3.2

64 First, make sure that you have access to Table 3.2. The detailed entries that appear in Table 3.2 can be accessed through the European Commission's Joint Research Centre (formerly the European Chemicals Bureau) website as part of an electronic, searchable database of Part 3 of Annex VI of the CLP Regulation:

- European Commission's Joint Research Centre: CLP/GHS: http://esis.jrc.ec.europa.eu/index.php?PGM=cla

65 This database is the official reference source for harmonised European classifications. It also reflects the updates made through routine adaptations to technical progress (ATPs) which include new and revised harmonised classifications.

66 If the substance you are searching for has a harmonised classification, the database will provide two sets of results: firstly the substance entry in Table 3.2; secondly the substance entry in Table 3.1. (Table 3.1 provides the same list of harmonised classifications as Table 3.2 but expressed using CLP classification criteria and terminology.) For CHIP purposes, you should focus only on Table 3.2.

67 Where Table 3.2 recognises more than one name for a substance it will be listed under each name. Note, however, that some complex substances (eg coal tar products) appear together in groups. Having found the substance, read off the classification and labelling information, referring to Annex III and Annex IV of the Dangerous Substances Directive[2] for full texts of the R- and S-phrases. For example:

EXAMPLE 1

Classifying sodium carbonate using Table 3.2

The classification in sodium carbonate's entry is given as:

Xi: R36

Here 'Xi' stands for 'irritant' (the category of danger) and 'R36' for 'irritating to eyes' (the R-phrase). Together these define the hazardous nature of the substance.

EXAMPLE 2

Classifying glutaraldehyde using Table 3.2

Glutaraldehyde is also known as glutaral and as 1,5-pentanedial. You may use any of these names, but not others, on the package label.

The classification is given as:

T: R23/25 C: R34 R42/43 N: R50

Glutaraldehyde has many more dangerous properties than sodium carbonate and so its classification is more complex. It has been placed into four categories of danger. These (with their abbreviations) are:

- Toxic (T)
- Corrosive (C)
- Sensitising (Xn and Xi)
- Dangerous for the environment (N)

The respective R-phrases (with their abbreviations) are:

- Toxic by inhalation and if swallowed (R23/25)
- Causes burns (R34)
- May cause sensitisation by inhalation and skin contact (R42/43)
- Very toxic to aquatic organisms (R50)

Additional information

68 The Table 3.2 entry for glutaraldehyde, under the heading 'Concentration Limits', gives specific concentration limits for that substance. This information is relevant to the classification of preparations containing glutaraldehyde as a constituent. Its use is explained in Part four of this guide.

69 Many substance entries have annotations such as 'Note E' or 'Note 4'. These notes are very important and should always be considered. Their individual meanings are explained in the introduction to Annex VI of the CLP Regulation.[5]

Summary of key points

- Table 3.2 gives obligatory harmonised classification and labelling requirements and other information for approximately 8000 commonly supplied chemical substances.
- If you supply a substance(s) now you should classify, label and package that substance(s) according to the CLP Regulation. However, under the transitional arrangements in the CLP Regulation, you must classify substances according to both systems until 1 June 2015. So you still need to know how to classify a substance under CHIP.
- The information given includes the classification, the label and, in some cases, specific concentration limit information.
- Full texts of the R- and S-phrases are given in Annex III and Annex VI respectively of the Dangerous Substances Directive, together with other important information, or on the HSE website.

Part three: Classifying substances which are NOT in Table 3.2

70 **Remember, if you supply a substance now you should classify, label and package it according to the CLP Regulation. You must ALSO classify substances according to CHIP until 1 June 2015**.

71 Part three explains where more detailed information can be found and will help you identify the point at which you will need specialist help.

What you have to do

72 If you have been reading this guide from the beginning you will know that CHIP obliges suppliers to classify dangerous chemicals before they supply them. You will also know that Table 3.2 contains mandatory classifications agreed at European level for a large number of commonly supplied substances. But what do you do if the chemical you wish to supply is not covered by Table 3.2? The answer is that you must come up with a classification for it yourself. This is known as **self-classification.**

73 In this part of the guide we shall look at the self-classification of substances and in Part 4 part consider how to classify preparations.

Self-classification

74 If you need to self-classify, you will need to search for relevant and accessible data on the substance and then classify it on the basis of that data using, among other things, the criteria set out in the ACLG.

Collecting relevant and accessible data

75 The ACLG indicates that data for classification may come from:

- the results of previous tests (carried out by you or by others);
- information required by international rules on the transport of dangerous goods (for example, the substance may be listed in the Dangerous Goods List (DLG) issued in connection with the Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations 2007. Many of the properties have similar criteria and inclusion in the DGL would suggest the substance was probably also dangerous for supply);
- reference works (this would include technical reference sources, such as textbooks, scientific/technical papers, trade journals etc);
- practical experience (for example, if you have had experience of the hazards posed by the substance being classified).

76 In addition, the results of validated structure–activity relationships (that is, scientifically inferring the dangers of a substance by comparing it with structurally similar substances whose dangers are known) and expert judgement may also be taken into account where appropriate.

77 Other sources which may be useful include HSE guidance such as EH40 Workplace exposure limits.[11] Professional institutions, trade associations, trades unions and specialist consultancies may all be sources of data.

After you have collected the data

78 The next step is to compare the data with the hazard classification criteria in the ACLG. The classification criteria fall into three groups:

- physicochemical properties (physical effects, eg explosive, oxidising etc);
- health effects;
- environmental effects.

Do I need to test the chemicals I supply?

79 The requirement in CHIP regulation 4(5) is to search for data – **there is generally no direct requirement to generate data by doing tests. However, in respect of physicochemical properties (physical effects), if you have no available data on the substance or preparation you intend to supply, you will need to test for these properties**. If you do undertake testing, or arrange for tests to be carried out (if you cannot do so yourself), the tests should be conducted according to the laboratory test methods described in the European Commission Regulation (EC) No 440/2008 on Test Methods[12] The ACLG provides more information on testing.

80 For health and environmental effects, if, after making a full search, you find that you have no information on a particular dangerous effect then you do not have to get a test done to see if the substance has that effect.

81 Because a substance can meet more than one of the criteria it is important to consider all of them. If the data on the substance satisfy any of the criteria then the substance is placed into the corresponding category of danger and the appropriate R-phrase is assigned. The criteria in the ACLG apply directly to data obtained by means of the test methods described in the European Commission Regulation (EC) No. 440/2008 on Test Methods. In other cases, expert judgement should be used to evaluate data.

82 If new testing is being carried out for REACH purposes then it should be done in line with the methods specified in the above Regulation. However, REACH registrants should first look to existing information and explore the possibility of using non-testing approaches (eg read-across, computer modelling) and/or non-animal tests. The European Commission can recognise methods not specified in this Regulation but only on a case-by case basis.

Selecting categories of danger and assigning risk phrases

83 The ACLG itself contains all the relevant information. However, to illustrate the principle let's say that in the course of your search for data on a substance you find the result of an acute toxicity test:

LD_{50} oral, rat 75 mg/kg

The paragraph headed 'Toxic' in the ACLG's section on health effects indicates that a substance with a rat oral LD_{50} value between 25 and 200 mg/kg should be placed into the category of danger 'Toxic' and assigned the risk phrase 'Toxic if swallowed'. Expressed in words, the classification is:

Toxic: Toxic if swallowed

in short it is: **T: R25**

Additional risk phrases

84 After working through the three groups of dangerous effects, and only if the substance has been classified into at least one category of danger (it doesn't matter which), you should consider whether to assign any of the ACLG's additional risk phrases. These phrases and their criteria are found in the sections of the ACLG entitled 'Other physicochemical properties' and 'Other health effects'.

Summary of key points

- If you supply a substance(s) now you should classify, label and package that substance(s) according to the CLP Regulation. However, under the transitional arrangements in the CLP Regulation, you must classify substances according to both systems until 1 June 2015. So you still need to know how to classify a substance under CHIP.
- CHIP does not make a distinction between new and existing substances where classification is concerned.
- The supplier classifies an existing substance by:
  - collecting data (no need to carry out any tests for health and environmental effects. Testing may be required where there are no available data for physical effects);
  - comparing data with classification criteria in the ACLG to place the substance into any relevant categories of danger and assign appropriate R-phrases and S-phrases.

Part four: Classifying preparations

85 **The transitional arrangements in the CLP Regulation mean that you do not have to apply CLP to any of the preparations (ie mixtures) you supply until 1 June 2015. To continue classifying your preparation under CHIP, you may still need to know the CHIP classification of the constituent substances. The CLP Regulation therefore requires suppliers to classify substances according to both the existing (CHIP) system and the CLP Regulation until 1 June 2015**. For more information about the transition to CLP, see paragraphs 169–172.

86 This part of the guide explains how to classify preparations. For the meaning of 'preparation' see paragraph 20 in Part one. We use the terms 'constituent' and 'ingredient' interchangeably to mean any component of a preparation. Such components may be substances or preparations.

87 Preparations are the most common kind of chemical product. There is no limit to their number as, quite apart from the formulation of entirely new products, it is always possible to add another constituent to an existing product or to vary the proportions of the constituents. CHIP obliges anyone who supplies a dangerous preparation to classify it before it is supplied.

Overview

88 There are no preparations in Table 3.2 so you must classify them yourself unless someone higher up the supply chain has done it for you. Remember, however, that you need to do quality checks before relying on another's classifications.

Methods of classification

89 You must classify a preparation for its dangerous physicochemical properties and its health and environmental effects. In general, there are two ways of doing this:

- using an arithmetical procedure known as the **conventional method**, described in Schedule 3 to the CHIP Regulations; or
- using the **classification criteria** in the ACLG.

90 The first method resembles self-classification of substances (see Part three of this guide) in that you need data on the preparation's dangerous properties, eg its flashpoint temperature, LD_{50} values etc. Usually there are no available data on a preparation so laboratory tests would be necessary if you intend to use this approach.

91 The second method is based on the idea that a preparation can be expected to have the same dangerous effect as a constituent if it contains enough of the constituent. To use this method you will need to know the classification of each constituent and use other information described later.

92 If you use both methods and the results differ you should use the result based on test data **except for carcinogenic, mutagenic and toxic to reproduction effects where classification must always be by the conventional method**.

93 We'll look first at classification on the basis of physicochemical properties and then health and environmental effects together. The detailed rules are in the ACLG (and Schedule 3 to the CHIP Regulations) so it will be helpful to have those documents to hand.

Classification on the basis of physicochemical properties

94 The aim is to decide whether the preparation should be placed into any of the categories of danger: explosive, oxidising, extremely flammable, highly flammable or flammable, and assigned the relevant symbol and R-phrases. **The conventional method does not apply** so, unless you assign the classification on the basis of adequate available data, you must get tests done (see paragraphs 98–99 for exceptions to testing).

Basic procedure

95 The preparation should be:

- tested in accordance with the methods described in the European Commission Regulation on Test Methods;[12] and
- the test results compared to the classification criteria set out in the part of the ACLG entitled 'Classification on the basis of physicochemical properties'.

96 If you are unable to perform the tests yourself you should employ someone with the necessary facilities and expertise, eg a contract testing house. There are a number of methods for determining flashpoint and these can give widely differing results. Advice on the correct test method to use can be sought on a case-by-case basis by contacting the Health and Safety Laboratory at www.hsl.gov.uk/ or Business Development Group, Health and Safety Laboratory, Harpur Hill, Buxton, Derbyshire SK17 9JN.

97 Once you have the test results you should compare them with the criteria in the ACLG to determine the classification. The ACLG contains all of the information needed to do this.

Exception to basic procedure

98 You need not test for a dangerous physicochemical property if:

- the preparation has no ingredients with that property; and
- you judge, on the basis of the information available to you, that the preparation is unlikely to have that property.

99 In such cases the preparation is not placed into the relevant category of danger or assigned the corresponding R-phrase. However, keep in mind that some preparations have dangerous physicochemical properties not possessed by any of their constituents. For example, gunpowder (a mixture of carbon, sulphur and potassium nitrate) is explosive even though none of its ingredients are.

EXAMPLE 3

A preparation consists of 80% water and 20% of acetone

Acetone is classified in Table 3.2 as F: R11 ('highly flammable') (and with various health effects not relevant to this example). The preparation could be flammable and should be tested for that property. However, it would not be necessary to test for explosivity or oxidation since acetone does not have these properties and there is no reason to suspect that a mixture of acetone and water would have them.

Calculation-based approaches

100 **The conventional method is not applicable to physicochemical properties** but some calculational approaches are available and described in the ACLG under 'Special cases'. They include an optional method for flammability of gases and two obligatory methods for the oxidising potential of gases and of organic peroxides.

Classification on the basis of health effects and environmental effects

101 The aim is to decide whether the preparation should be placed into any of the categories of danger – very toxic, toxic, harmful, corrosive, irritant, sensitising, carcinogenic, mutagenic, toxic for reproduction or dangerous for the environment – and assigned the relevant R-phrases.

102 If a preparation has no constituents with dangerous health or environmental effects then it will not have these effects. However, if it does have such constituents then you must assess whether the preparation is dangerous for health or the environment.

103 There are two ways of obtaining the classification:

- using the conventional method; or
- using test data and the criteria in the ACLG.

104 The following restrictions apply:

- **carcinogenic, mutagenic and toxic to reproduction effects** – you may only use the conventional method to classify for these effects;
- **aspiration hazard (R65)** – you may only classify for this on the basis of test data (see the relevant part of the paragraph headed 'harmful' in the ACLG);
- **all other health effects** – you are free to use either the conventional method or test data and the criteria in the ACLG;
- **environmental effects** – you must use the conventional method (but see paragraph 126 for an exception).

Classification on the basis of test data

105 Test the preparation in accordance with the methods described in the European Commission Regulation on Test Methods.[12] Then compare the test results to the classification criteria in the parts of the ACLG entitled 'Classification on the basis of health effects' and 'Classification on the basis of environmental effects'.

106 Employ someone with the necessary facilities and expertise, eg a contract testing house, if you are unable to perform the tests yourself. Once you have the test results you should compare them with the criteria in the ACLG to determine the classification. The ACLG contains all of the information needed to do this.

Classification on the basis of the conventional method

107 The **conventional method is applicable to both health and environmental effects**. To use it you have to know the:

- **classification** of each dangerous constituent;
- **concentration** of each dangerous constituent; and
- **concentration** limits for the dangerous effects of each dangerous constituent.

Where do I get the classifications of the dangerous constituents?

108 Substances listed in Table 3.2 have their classifications given there. Other substances should be self-classified as described in Part three of this guide. Where you have received a substance or a preparation from another supplier you may use their classification provided you make reasonable checks of its reliability.

What is the concentration of a dangerous constituent?

109 This is the proportion of the preparation that the constituent makes up. Concentrations should be calculated on a weight-for-weight basis for solid or liquid preparations, and on a volume-for-volume basis for gaseous preparations, and expressed as percentages.

EXAMPLE 4

1 kg of a preparation contains 0.5 kg of water and 0.5 kg of substance X. The concentration of substance X is (0.5 kg)/(1.0 kg) = 50%

What is a concentration limit?

110 This is the lowest concentration of a chemical with a given dangerous effect which causes a preparation containing that chemical to be deemed to have the effect. For example, the concentration limit for the effect represented by the phrase R52 (harmful to aquatic organisms) is 25%, so a preparation containing 25% or more of a substance assigned R52 would also be assigned R52.

111 Some dangerous effects give rise to a hierarchy of concentration limits corresponding to varying degrees of danger. For example, if a substance is classified as T+: R28 (very toxic by swallowing) then a preparation containing it will be classified as:

- T+: R28, if the substance's concentration is greater than or equal to 7%;
- T: R25 (toxic by swallowing), if greater than or equal to 1%; and
- Xn: R22 (harmful by swallowing), if greater than or equal to 0.1%.

Types of concentration limit

112 There are two types of concentration limit:

- **specific concentration limits** which are assigned to some substances in Table 3.2 and apply only to them; and

- **general concentration limits** which apply to the hazardous effects of any substance which has not been assigned specific concentration limits.

113 The general concentration limits are in Part II (health) and Part III (environmental) of Schedule 3 to the CHIP Regulations.

Using the conventional method

114 The procedure is set out in Part I of Schedule 3, from paragraph 5 onwards. Each paragraph deals with a different category of danger and gives the conditions for a preparation to be placed into that category. The basic idea is that you should read each paragraph in turn and check to see if your preparation meets the conditions for classification in that category. It will usually be obvious that some paragraphs can be omitted because they are not relevant to your preparation.

EXAMPLE 5

A preparation has an ingredient classified as very toxic and as a category 2 carcinogen. Which paragraphs in Schedule 3 Part I are relevant in classifying the preparation?

Depending on its concentration, a very toxic ingredient may cause a preparation to be classified as very toxic, toxic or harmful. Paragraph 7 (classification as 'very toxic') should be checked first. If the condition there is not met, paragraph 8 (toxic) should be checked next and then paragraph 9 (harmful). If it meets none of these, the preparation is not classified for these effects. An ingredient classified as a category 2 carcinogen may cause a preparation to be classified as a category 2 carcinogen but not as anything else. So, it is only necessary to check paragraph 13(1) (category 1 and 2 carcinogenic). It is not necessary to check 13(2) (category 3 carcinogenic) or any other paragraphs.

115 The conditions to be met for a preparation to be classified with a particular dangerous effect are of two types:

- firstly, if it contains an ingredient whose concentration is greater than or equal to the relevant concentration limit;
- secondly, if it contains a number of ingredients whose combined effects meet a condition expressed by a formula.

116 The first type applies to every dangerous effect. The second type applies only to some dangerous effects (known as additive effects).

117 As an example of how this works, look at paragraph 7 in Part I of Schedule 3, which gives conditions for classification of a preparation as 'very toxic'. This category of danger covers two types of dangerous effect:

- acute lethal effects; and
- non-lethal irreversible effects after a single exposure.

118 Acute lethal effects are those with the R-phrases identified in Tables I and IA in Part II (ie R26, 27, 28 and their combinations). Non-lethal irreversible effects are those with R-phrases in Tables II and IIA (ie R39/route(s) of exposure, eg R39/26).

119 **Acute lethal effects** are covered by paragraph 7(1)(a) of Part I (a condition of the first type in paragraph 112) and subparagraph (1)(b) (a condition of the second type in paragraph 112). Subparagraph (1)(a) should be applied first. If this does not lead to classification, and if there is more than one very toxic ingredient, subparagraph (1)(b) should be tried. If this does not lead to classification then the preparation is not classified as very toxic for acute lethal effects. However, it may be toxic or harmful for these effects and the relevant subparagraphs in paragraphs 8 and 9 should be checked.

120 **Non-lethal irreversible effects** are covered by paragraph 7(2) of Part I (a condition of the first type in paragraph 112). If this is not met then the preparation is not classified as very toxic for non-lethal irreversible effects. However, it may be toxic or harmful for these effects and the relevant subparagraphs in paragraphs 8 and 9 should be tried.

Additive effects

121 Notice that there is a formula (in paragraph 7(1)(b) of Part I) for evaluating the combined effect of a number of ingredients with acute lethal effects but none for non-lethal irreversible effects. Effects like acute lethality which may be added up over all the ingredients sharing them are additive. The table below identifies additive and non-additive effects with their corresponding R-phrases.

Table 4 Additive and non-additive dangerous effects

Type of dangerous effect	*R-phrases for classification*
Additive health effects	
Acute lethal effects	**R20, R21, R22, R23, R24, R25, R26, R27, R28,** and combinations, eg **R20/21**
Corrosive and irritant effects	**R34, R35, R36, R37, R38, R41,** and combinations, eg **R36/37**
Additive environmental effects	
Acute aquatic effects	**R50** and **R52**
Long-term aquatic effects	**R53**
Acute and long-term aquatic effects	**R50/53, R52/53**
Non-additive health effects	
Non-lethal irreversible effects after a single exposure	**R39/**route(s) of exposure (eg **R39/24**) and **R68/**route(s) of exposure (eg **R68/20**)
Severe effects after repeated or prolonged exposure	**R48/**route(s) of exposure (eg **R48/20**)
Sensitising effects	**R42, R43** and **R42/43**
Carcinogenic, mutagenic and toxic to reproduction effects	**R40, R68, R45, R46, R49, R60, R61, R62,** and **R63**
Non-additive environmental effects	
Ozone depleting effects	**R59**

Importance of a systematic approach

122 When using the conventional method it is important to work in an orderly way. In particular, it is a good idea to start by writing down all the ingredients of the preparation together with their concentrations, classifications and relevant concentration limits. A possible format is:

Preparation A			
Name	Concentration	Classification	Concentration limits
Ingredient J	15%	Xn: R22 Xi: R36	≥25% then Xn: R22 ≥20% then Xi: R36
Ingredient K	20%	R42 N: R50, 53	≥1% then R42 ≥25% then N: R50, 53 <25% and ≥2.5% then N: R51, 53 <2.5% and ≥0.25% then R52, 53
Non-classified ingredient(s)	65%	n/a	n/a

(The symbols '≥' and '<' mean 'greater than or equal to' and 'less than' respectively.)

The conventional method – worked examples

123 We'll now illustrate the conventional method with some examples. We'll deal with both health and environmental effects as there is no essential difference between these as far as the conventional method is concerned.

EXAMPLE 6

Preparation A			
Name	Concentration	Classification	Concentration limits
Substance X	50%	Xn: R22	≥25% then Xn: R22
Water	50%	n/a	n/a

Substance X is not in Table 3.2 so we have used the general concentration limit for R22 which is 25% (see Table I in Part II of Schedule 3).

X is classified as harmful so it may mean the preparation is classified as harmful. To see if it does we refer to paragraph 9 (harmful) in Part I of Schedule 3. R22 is an acute lethal effect so subparagraphs (1)(a) and (1)(b) are the relevant parts of paragraph 9. Subparagraph (1)(a) indicates that a preparation is harmful if it contains a harmful ingredient at a concentration greater than or equal to its harmful limit. X's concentration (= 50%) is greater than its concentration limit for harmful (= 25%) so we classify preparation A as harmful and assign R22 (ie as Xn: R22).

Note: If the concentration of substance X was reduced to less than the concentration limit, the preparation would escape classification.

EXAMPLE 7

A liquid preparation with one dangerous ingredient and more than one concentration limit

Preparation B			
Name	Concentration	Classification	Concentration limits
Substance Y	5%	T+: R28	≥7% then T+: R28 ≥7% and ≥1% then T: R25 <1% and ≥0.1% then Xn: R22
Non-classified ingredient(s)	95%	n/a	n/a

Substance Y is not in Table 3.2 so we have used the general concentration limits for R28 as given in Table I in Part II of Schedule 3.

Y is very toxic and may cause the preparation to be very toxic, toxic or harmful. First we must check the possibility of very toxic so we look at paragraph 7. The relevant subparagraphs are (1)(a) and (1)(b), as R28 is an acute lethal effect. The condition in (1)(a) is not met because the concentration of Y (= 5%) is less than its very toxic limit (= 7%). Subparagraph (1)(b) only applies if there is more than one very toxic ingredient which is not the case here. Therefore the preparation is not very toxic. We move on to consider paragraph 8 (toxic). The condition in paragraph 8(1)(a) is met as Y's concentration (= 5%) is greater than its toxic limit (= 1%) so we classify preparation B as toxic and assign R25 (ie T: R25).

Where an ingredient has multiple concentration limits it can be helpful to refer to these limits by name. For substance Y, 7%, 1% and 0.1% are respectively its very toxic, toxic and harmful limits.

EXAMPLE 8

A preparation with another preparation as an ingredient

Preparation C (description 1)			
Name	Concentration	Classification	Concentration limits
Preparation A	40%	Xn: R22	≥25% then Xn: R22
Water	60%	n/a	n/a

Preparation C (description 2)			
Name	Concentration	Classification	Concentration limits
Substance X	20%	Xn: R22	≥25% then Xn: R22
Water	80%	n/a	n/a

The procedure to classify C is the same as described in Example 6. However, the result is different depending on which description of C we use. Description 1 leads to classification as Xn: R22 and description 2 leads to non-classification.

Neither of these classifications is wrong and either can be used. The difference between them is due to the fact that description 1 did not take account of the large amount of water in preparation A. If you wish to avoid possible over-classification of a preparation which contains other preparations you should use the most detailed breakdown of it you can. This may involve working closely with your suppliers.

EXAMPLE 9

A preparation with two ingredients with a non-additive effect

Preparation D			
Name	Concentration	Classification	Concentration limits
Substance P	0.75%	R43	≥1% then R43
Substance Q	0.75%	R43	≥1% then R43
Non-classified ingredient(s)	98.5%	n/a	n/a

Sensitisation – both skin sensitisation and respiratory sensitisation – is covered by paragraph 12 in Part 1 of Schedule 3. Paragraph 12 says that a preparation should be classified with R43 if it has an ingredient classified with R43 whose concentration is greater than or equal to its concentration limit for R43. Because the concentrations of P and Q (= 0.75%) are each less than their concentration limit (= 1%) preparation D is not classified.

Notice that the preparation is not classified even though it contains 1.5% of skin sensitisers. Skin sensitisation is not an additive effect so classification is always considered one ingredient at a time.

EXAMPLE 10

A preparation with two ingredients with an additive effect

Preparation E			
Name	Concentration	Classification	Concentration limits
Substance R	15%	Xi: R38	≥20% then Xi: R38
Substance S	15%	Xi: R38	≥25% then Xi: R38
Water	70%	n/a	n/a

Substance R is in Table 3.2 without specific concentration limits so we use the general concentration limit for R38 from Table IV in Part II of Schedule 3. Substance S is in Table 3.2 with a specific concentration limit for R38.

R38 (irritating to the skin) is covered by paragraph 11 in Part I. The relevant subparagraphs are (3)(a) and (b). Paragraph 11(3)(a) indicates that a preparation is classified as Xi: R38 if it contains corrosive (R34 or R35) ingredients or skin-irritating ingredients (R38) which are present at or above their irritant limit. It is clear that E has no corrosive ingredients and although R and S are skin irritants their concentrations (= 15%) are less than their irritant limits (= 20% and 25% respectively). Thus neither R nor S on its own classifies the preparation, but irritancy is an additive effect so we can and should consider their combined effect.

Turning to subparagraph (3)(b) we see that a preparation should be classified as a skin irritant, ie as Xi: R38, if the following condition is met:

$$\sum \left(\frac{P_{C:R35}}{L_{Xi:R38}} + \frac{P_{C:R34}}{L_{Xi:R38}} + \frac{P_{Xi:R38}}{L_{Xi:R38}} \right) \geq 1$$

where:
$P_{C:R35}$ is the concentration of each corrosive ingredient with R35 (causes severe burns)
$P_{C:R34}$ is the concentration of each corrosive ingredient with R34 (causes burns)
$P_{Xi:R38}$ is the concentration of each irritant ingredient with R38
$L_{Xi:R38}$ is the irritant (R38) concentration limit for each ingredient

The formula appears complex but in fact it contains only some divisions, additions and a simple comparison. To apply it we must:

(1a) work out the fraction $P_{C:R35}/L_{Xi:R38}$ for each corrosive ingredient with R35
(1b) work out the fraction $P_{C:R34}/L_{Xi:R38}$ for each corrosive ingredient with R34
(1c) work out the fraction $P_{Xi:R38}/L_{Xi:R38}$ for each irritant ingredient with R38
(2) add up all of these fractions
(3) if the total is greater than or equal to 1 classify the preparation as Xi: R38

Following the steps we have:

(1a) there are no corrosive ingredients with R35 so we ignore the first term in the formula
(1b) there are no corrosive ingredients with R34 so we ignore the second term in the formula
(1c) for substance R: $P_{Xi:R38}$ = 15% and $L_{Xi:R38}$ = 20% so $P_{Xi:R38}/L_{Xi:R38}$ = 15%/20% = 0.75
for substance S: $P_{Xi:R38}$ = 15% and $L_{Xi:R38}$ = 25% so $P_{Xi:R38}/L_{Xi:R38}$ = 15%/25% = 0.6
(2) 0.75 + 0.6 = 1.35
(3) because 1.35 is greater than 1 preparation E is classified as Xi: R38

Notice that if the concentration of S is reduced to 5% then $P_{Xi:R38}/L_{Xi:R38}$ = 5%/25% = 0.2 and because 0.75 + 0.2 = 0.95 is less than 1 the preparation would escape classification.

Lower limits of concentration

124 Lower limits of concentration are cut-off concentrations below which ingredients do not have to be taken into account when working out the classification of a preparation. For example, if a preparation has a number of irritant ingredients only those whose individual concentrations are 1% or more will be considered when classifying the preparation for irritancy. There is a table of lower limits of concentration in paragraph 6 of Part I of Schedule 3 to the Regulations.

EXAMPLE 11

A preparation with an ingredient whose concentration is less than the lower limit of concentration

Preparation F			
Name	Concentration	Classification	Concentration limits
Substance U	4.5%	C: R35	≥10% then C: R35 <10% and ≥5% then C: R34 <5% and ≥1% then Xi: R36/38
Substance V	0.5%	C: R35	≥10% then C: R35 <10% and ≥5% then C: R34 <5% and ≥1% then Xi: R36/38
Water	95%	n/a	n/a

Substances U and V are in Table 3.2 without specific concentration limits so we use the general concentration limits given in Table IV and IVA in Part II of Schedule 3.

The lower limit of concentration for substances classified as corrosive (R34 or R35) is 1%. We do not take any account of substance V when classifying preparation F for corrosive or irritant effects. So, F is classified as Xi: R36/38 by virtue of the presence of U.

Assigning appropriate R-phrases

125 The formulas at paragraphs 7(1)(b), 8(1)(b) and 9(1)(b) in Part I of Schedule 3 determine whether a preparation containing a number of ingredients with acute lethal effects should be classified as very toxic, toxic or harmful. However, unlike the other formulas, they leave the choice of R-phrase(s) up to you. Example 12 illustrates the approach to be taken in such cases.

EXAMPLE 12

A preparation where ingredient substances are below the relevant concentration limits but their combined effects result in a classification

Preparation G			
Name	Concentration	Classification	Concentration limits
Substance G1	0.5%	T+: R28	≥7% then T+: R28 <7% and ≥1% then T: R25 <1% and ≥0.1% then Xn: R22
Substance G2	15%	T: R24	≥25% then T: R24 <25% and ≥3% then Xn: R21
Water	84.5%	n/a	n/a

It is clear that substance G1 on its own does not classify the preparation as very toxic or toxic because in both cases its concentration is less than its concentration limits. Substance G2 also does not classify the preparation as toxic for the same reason. However, before we can leave toxic and consider harmful we must consider the combined effect of G1 and G2 (R28 and R24 are acute lethal effects and therefore additive). Paragraph 8(1)(b) in Part I of Schedule 3, indicates that a preparation should be classified as toxic if:

$$\sum \left(\frac{P_{T+}}{L_T} + \frac{P_T}{L_T} \right) \geq 1$$

Where:

P_{T+} is the concentration of each very toxic ingredient with acute lethal effects
P_T is the concentration of each toxic ingredient with acute lethal effects
L_T is the toxic limit for each ingredient with acute lethal effects

Applying the formula we have:

(1) for substance G1: $P_{T+} = 0.5\%$ and $L_T = 1\%$ so $P_{T+}/L_T = 0.5\%/1\% = 0.5$
for substance G2: $P_T = 15\%$ and $L_T = 25\%$ so $P_T/L_T = 15\%/25\% = 0.6$
(2) $0.5 + 0.6 = 1.1$
(3) because 1.1 is greater than 1 preparation G is classified as toxic (ie T)

What R-phrase(s) should be assigned?
G1 is very toxic if swallowed (R28) and G2 is toxic in contact with skin (R24). The preparation G is toxic by virtue of the presence of G1 and G2 and its classification should reflect their routes of exposure, ie oral and through skin. We need R-phrases which describe toxic effects by these routes. The relevant R-phrases are R24 and R25 (R25 is toxic by swallowing) and we classify the preparation as T: R24/25.

Note that T: R24/28 would be incorrect as R28 means very toxic by swallowing which cannot legitimately be combined with T.

This concludes the examples illustrating the conventional method.

Exception to the use of the conventional method when classifying for environmental effects

126 We mentioned in paragraph 104 that there was an exception to the requirement that you must always use the conventional method to classify for environmental effects. This exception allows you to test your preparation and then use the criteria in the ACLG to classify it. It applies only to assessment of acute aquatic toxicity and is subject to the following condition (except in the case of preparations subject to the Plant Protection Products Regulation (see www.pesticides.gov.uk/guidance/industries/pesticides/topics/pesticide-approvals/legislation/plant-protection-product-legislation-in-the-uk, where other requirements may apply):

- the preparation must be tested on all three test species (algae, daphnia and fish) unless testing on one species determines classification at the highest hazard classification.

Retention of data

127 Regulation 12 of CHIP requires that the person who is responsible for first supplying a dangerous preparation has to keep a record of the information:

- used for the purpose of classifying the dangerous preparation;
- used for the purpose of labelling the dangerous preparation; and
- relating to any child-resistant fastening or any tactile warning device which forms part of the packaging in which the dangerous preparation is contained.

This information is to be kept for at least three years after the date on which that dangerous preparation was last supplied by that person.

128 An HSE inspector (or a trading standards officer if you sell direct to the public) may request a copy of the information described above. You should provide the information within 28 days of the date of the request.

129 Additionally, a supplier of a dangerous preparation should provide an enforcing authority with a copy of any certificate issued by a qualified test house when requested to do so.

130 There is no standard format for this data and it may be kept electronically if desired.

Summary of key points

- The transitional arrangements in the CLP Regulation mean that you do not have to apply CLP to any of the preparations you supply until 1 June 2015. To continue to classify your preparations under CHIP, you may still need to know the CHIP classification of the constituent substances. The CLP Regulation recognises this so its transitional arrangements require suppliers to classify substances according to both the existing (CHIP) system and the CLP Regulation until 1 June 2015.
- Classify for physicochemical properties on the basis of test data (unless adequate data are available).
- Classify for health and environmental effects on the basis of either test data or the conventional method, but subject to the restrictions set out in paragraphs 104 and 126.
- Keep record of information used to classify a preparation for at least three years after it is last supplied.

Part five: Supply labelling for dangerous preparations

131 **Remember, if you supply a substance now you should classify, label and package it according to the CLP Regulation. You must ALSO classify substances according to CHIP until 1 June 2015**. For more information about the transition to CLP, see paragraphs 169–172 of this guide.

132 The guidance below relates only to the labelling of preparations under CHIP.

What do you have to label?

133 Only packages containing preparations (and any outer layer of packaging, other than that used solely for transport purposes) have to be labelled with CHIP labels. If you supply a chemical in bulk or down a pipeline then it does not need to be labelled (although you will still have to provide a safety data sheet required by the REACH Regulation).

Combined supply and carriage labelling

134 Rules for combined supply and carriage labels are in regulations 8 and 9 of CHIP.

How do you label it?

135 It is important that the label is clear and has impact. The label should be:

- securely fixed to the package with its entire surface in contact with the package, or directly printed onto the package;
- clearly and indelibly printed;
- designed so that the information on it can be easily read; and
- designed so that the symbol or symbols stand out and are easily noticed.

What size should the label be?

136 The size of the label depends on the size of the package. The requirements are given in Table 5:

Table 5 Label size

Capacity of package	Label size
3 l or less	if possible at least 52 x 74 mm
3 l but <2 l	at least 74 x 105 mm
50 l but <500 l	at least 105 x 148 mm
500 l	at least 148 x 210 mm

137 You are not obliged to set this information out on a separate label or in a separate part of your product label, but Table 5 shows the minimum area that you must devote to this information.

What size should the symbols be?

138 On this matter the text of CHIP closely follows that of an EC Directive, which is capable of being interpreted in more than one way. Some people consider that each symbol should be at least 10% of the minimum size of the label as specified above, the symbols could therefore be less than 10% of the actual size of the label if the label was larger than the minimum. However, HSE recommends that each symbol should be at least 10% of the actual size of the label. Some EC countries have drafted their law to make this an explicit requirement. Because it is a grey area in CHIP, suppliers may make their own choice.

What colour should be used?

139 The only part of the label which has a colour specification is the symbol. This should be black on an orange/yellow background. The precise shade is left for you to choose.

What goes on the label?

140 The following information should be included on a label for a preparation (the layout is not obligatory):

The name, address and telephone number of a supplier in the EEA.

- The trade name or other designation of the preparation.
- The names of the main dangerous ingredients in the preparation according to the rules laid down in Part I of Schedule 4 to CHIP 4.
- The indication or indications of danger and the corresponding symbols (these can be found in Schedule 2 to CHIP 4).
- The risk phrases. As a general rule, no more than six risk phrases should appear on the label.
- The safety phrases.
- If the preparation is to be sold to the general public, the nominal quantity.
- There are also additional labelling requirements if the preparation contains specific substances (such as isocyanates) or is used in a specific way (eg by spraying). More details of these can be found in Part II of Schedule 4 to CHIP.

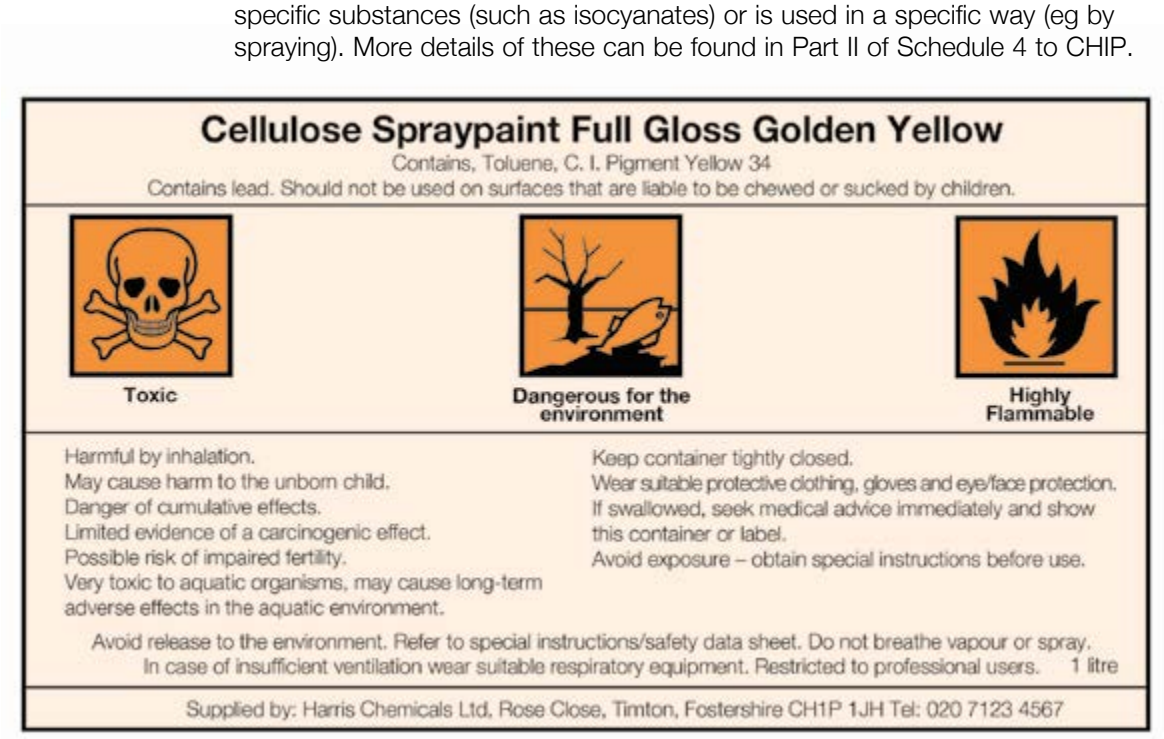


Figure 3 Specimen CHIP label for a preparation

Are there any circumstances where I need to label if my preparation is not classified as dangerous?

141 In a few specific cases a label will be required on a preparation even if it isn't classified as dangerous. More details of these preparations can be found in Section B in Part II of Schedule 4 to CHIP.

Do I have to take any action if my preparation contains a sensitiser but is not classified as sensitising?

142 Yes, paragraph 7 of Section B in Part II of Schedule 4 to CHIP 4 requires suppliers to label the packaging of preparations containing at least one substance classified as sensitising (present in a concentration > = 0.1% or in a concentration specified under a specific note in its Table 3.2 entry) with:

'Contains (name of sensitising substance(s)). May produce an allergic reaction.'

Are there any exceptions to the labelling requirements for preparations?

143 There are some important exceptions to the requirement to label a dangerous chemical. Full details of these can be found in regulations 7, 8, 9 and 10 of CHIP. However, remember that these are exceptions to labelling only, the chemical will still be classified and you may have to provide a safety data sheet to professional users.

144 The label does not have to have its entire surface in contact with the package if the package is an awkward shape or too small. The label may be attached to the package in some other appropriate way (regulation 10(7) of CHIP). This could be by a fold out (concertina) label or a tag. The label should be securely attached and resistant to damage. It is essential that the part of the label which sets out the classification is visible to a prospective purchaser. You can put the safety phrases on a separate sheet which accompanies the package if the container is an awkward shape or so small that it cannot be put on the label.

Can I keep any constituents of my preparation confidential?

145 There are limited provisions for this in paragraph 3 in Part I of Schedule 4 of CHIP. Where the person responsible for placing a preparation on the market wishes to take advantage of this, they have to make a formal request. In the case of the UK, you must apply to HSE to take advantage of confidentiality provisions, enclosing the information specified in Annex VI to Council Directive 1999/45/EC. Further information can be obtained from:

HSE Alternative Names Team
2.3 Redgrave Court,
Merton Road,
Bootle, L20 7HS
Telephone: 0151 951 3295
Fax: 0151 951 3308
Email: ukconf@hse.gsi.gov.uk
(quoting CHIP 4: confidential preparations)

Words, terms or phrases not permitted on a hazard label

146 Descriptions such as ‘non-toxic’, ‘non-flammable’, ‘non-harmful’, non-polluting’, ‘ecological’ or any statement indicating that the dangerous preparation is not dangerous or that is likely to lead to an underestimation of the dangers of that preparation, are not allowed on the packages of dangerous (ie classified) preparations (CHIP regulation 7(4)).

Language to be used on a hazard label

147 The label should be in English. However, if you are supplying chemicals in more than one member state of the EEA, you might wish to provide the labelling information in more than one language on the same label. It is a good idea to have corresponding blocks for each language to prevent confusion. Make sure you meet the minimum requirements for size and clarity. In addition, you must bear in mind that all the EU member states have their own legislation on this subject. It is all based on the same European law as CHIP, but there may be minor differences and you should ensure your label follows the rules of the member state(s) where it is marketed.

Part six: Packaging of dangerous preparations

148 **Remember, if you supply a substance now you should classify, label and package it according to the CLP Regulation. You must ALSO classify substances according to CHIP until 1 June 2015**. For more information about the transition to CLP, see paragraphs 169–172 of this guide.

149 **The guidance below relates ONLY to the packaging of preparations under CHIP**.

150 CHIP requires that the package containing a dangerous chemical should:

- prevent escape of the chemical;
- not be adversely affected by the chemical; and
- be strong enough to withstand normal handling.

151 In addition, if the package has a replaceable closure this must continue to prevent escape even after repeated use. The requirements of regulation 6 are considered satisfied if the packaging meets the relevant standards required by legislation on the carriage of dangerous goods.

Special packaging requirements

152 CHIP sets out a number of special requirements in respect of packaging.

Child-resistant fastenings

153 Child-resistant fastenings (CRFs), also referred to as child-resistant closures (CRCs), are package closures designed to prevent children from gaining access to dangerous chemicals. Regulation 11 sets out when a chemical that is to be supplied (to the general public) must have a child-resistant fastening.

154 Additionally, the packaging for any chemical in any of the four classes identified above must not have a shape or designation likely to attract the active curiosity of children or mislead consumers. This applies regardless of whether the packaging is recloseable or not.

Tactile warning devices

155 CHIP also includes provision as to when packaging in which a dangerous preparation is supplied should carry a tactile warning device (TWD). TWDs, normally small raised triangles, are intended to warn the visually impaired that they are handling a dangerous chemical.

Standards

156 Both CRFs and TWDs must meet certain British and international standards as set out in CHIP regulation 11 and Schedule 5. You could be asked by a trading standards officer for proof that CRFs meet the standard. You can make sure that they do by having them tested by an approved testing house (one that conforms to BS EN ISO/IEC 17025[13]), which will give you a test certificate confirming that the standard has been met.

157 If you are still unclear about what needs to be done, you should first contact your local trading standards office for advice.

Part seven: Safety data sheets

158 If you supply a chemical for use at work by professional users, you must provide a safety data sheet (SDS). An SDS provides additional information about a chemical, including its full classification; information on its ingredients or components; first-aid measures; handling and storage; and disposal considerations.

159 The duty to provide an SDS appeared in earlier versions of CHIP. However, in 2007, the SDS requirements were moved to the REACH Regulation (Article 31 and Annex II) and were deleted from CHIP.

160 As before, the SDS should be provided the first time the chemical is supplied and if the ingredients of the product (composite substances) change and new information has to be included.

161 It is important for chemical suppliers to understand what classification and labelling information should or may be included in an SDS during the transitional period offered by the CLP Regulation where the existing classification and labelling system and the CLP will run in parallel. You should check the European Chemicals Agency guidance on REACH and the CLP Regulation for the detail.

162 Enquiries about the classification and labelling details included in an SDS should be dealt with by HSE's International Chemicals Unit. Any other enquiries which relate to the compilation of an SDS should be referred to the UK REACH Competent Authority Help Desk at:

Email: ukreachca@hse.gsi.gov.uk.

This email account is managed Monday–Friday between 0900 and 1700 hours. It is possible to request a phone call-back from one of the REACH experts.

Part eight: The law on chemical classification, labelling and packaging – the future

Introduction of the European CLP Regulation

163 We said at the start of this guide that CHIP has changed. We have had to make changes to accommodate the transition to the new European Regulation on Classification, Labelling and Packaging of Substances and Mixtures (EC) No 1272/2008 – the CLP Regulation.

164 The main purpose of the CLP Regulation is to adopt, within the European Union (EU), the UN Globally Harmonised System on the classification and labelling of chemicals (GHS).[14]

The Globally Harmonised System

165 The Globally Harmonised System (GHS) is a voluntary international agreement which has its background in the World Summits of 1992 and 2002, when countries from across the world agreed to work together with industry representatives and others to agree a classification and labelling system that can be used worldwide. This followed increasing concern that the systems used throughout the world differed to such a wide degree that the level of protection for people and the environment was inconsistent, and that the differences created unnecessary barriers to international trade.

166 GHS sets out internationally accepted definitions and criteria to identify the hazards of chemicals and to communicate those hazards via labels and SDSs.

167 GHS will eventually establish a worldwide system on the classification and labelling of chemicals, promoting chemical safety across the world and making international trade in chemicals easier.

168 Countries, or blocs of countries, have to adopt the GHS criteria and terminology through national or regional legislation. The EU has achieved this through the direct-acting CLP Regulation. Over a transitional period lasting until June 2015, the CLP Regulation will replace the existing European system on the classification, labelling and packaging of chemicals.

Transitional arrangements for the CLP Regulation

169 The CLP Regulation progressively replaces, with transitional arrangements, the Dangerous Substances Directive and the Dangerous Preparations Directive. These directives will be repealed with effect from 1 June 2015.

170 CHIP contains transitional provisions mirroring those in the CLP Regulation (see regulation 13). Tables 6–7 provide an overview of the transitional arrangements for the CLP Regulation and CHIP.

Substances

Table 6 Transitional arrangements for substances

Date	What you need to do
1 December 2010 – 1 June 2015	Suppliers must classify substances according to both CHIP and CLP. They must label and package according to CLP
1 June 2015 onwards	Suppliers must classify, label and package according to CLP

171 Substances which have been classified, labelled and packaged in accordance with CHIP and placed on the market before 1 December 2010 do not need to be relabelled and repackaged in accordance with the CLP Regulation until 1 December 2012.

Preparations (mixtures)

Table 7 Transitional arrangements for preparations (mixtures)

Date	What you need to do
20 January 2009 – 1 June 2015	Suppliers must classify preparations according to CHIP and may continue to label and package them according to regulations 6 to 11 of CHIP. However, they may as an alternative choose to classify, label and package mixtures according to CLP. In this case, they must also continue to classify under regulation 4 of CHIP, but the requirements on labelling and packaging in regulations 6 to 11 of CHIP no longer apply
1 June 2015 onwards	Suppliers must classify, label and package according to CLP

172 Preparations classified, labelled and packaged in accordance with CHIP and placed on the market before 1 June 2015, do not need to be relabelled and repackaged in accordance with the CLP Regulation until 1 June 2017.

Guidance on the CLP Regulation

173 Guidance on the CLP Regulation and its transitional arrangements are available from the European Chemicals Agency:

- http://echa.europa.eu/home_en.asp

174 You can find out more about the GHS and the CLP Regulation online:

- **Information about the CLP Regulation**
www.hse.gov.uk/chemical-classification/legal/clp-regulation.htm

- **Text of the CLP Regulation**
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:EN:PDF

- **Information from the European Chemicals Agency**

http://echa.europa.eu/classification_en.asp
http://echa.europa.eu/regulationshttp://echa.europa.eu/web/guest/guidance-documents/guidance-on-clp

- **Information from the United Nations on GHS**

www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

References and further reading

References

1 *The CLP Regulation: Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures*
http://ec.europa.eu/enterprise/sectors/chemicals/documents/classification/

2 *Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* SI 2009/716 The Stationery Office 2009 www.legislation.gov.uk/

3 *The Dangerous Substances Directive: Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances*
http://eur-lex.europa.eu/en/index.htm

4 *The Dangerous Preparations Directive: Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations*
http://eur-lex.europa.eu/en/index.htm

5 *ESIS: European chemical Substances Information System: Annex VI of the CLP Regulation: Harmonised Classifications*
http://esis.jrc.ec.europa.eu/index.php?PGM=cla

6 *Approved Classification and Labelling Guide (Sixth edition). Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4). Approved Guide* L131 (Sixth edition) HSE Books 2009 ISBN 978 0 7176 6370 5
www.hse.gov.uk/pubns/books/l131.htm

7 *An introduction to CHIP 4* Leaflet INDG350(rev1) HSE Books 2010
www.hse.gov.uk/pubns/indg350.htm

8 *Read the label: How to find out if chemicals are dangerous* Leaflet INDG352(rev1) HSE Books 2010 www.hse.gov.uk/pubns/indg352.htm

9 *REACH: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)*
http://eur-lex.europa.eu/en/index.htm
http://echa.europa.eu/web/guest/regulations/reach/legislation

10 *Prior Informed Consent: Regulation (EC) No 689/2008 of the European Parliament and of the Council of 17 June 2008 concerning the export and import of dangerous chemicals* http://eur-lex.europa.eu/en/index.htm

11 *EH40/2005 Workplace exposure limits: Containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations (as amended)* EH40 (Second edition) HSE Books 2011 ISBN 978 0 7176 6446 7 www.hse.gov.uk/pubns/books/eh40.htm

12 *European Commission Regulation (EC) No 440/2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)* http://eur-lex.europa.eu/en/index.htm

13 British Standard on the general criteria for the operation of testing laboratories which came into effect on 31 October 1989 BS EN ISO/IEC 17025:1989

14 *UN Globally Harmonised System on classification and labelling of chemicals (GHS)* www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

Further reading

HSE web pages:

CLP Regulation and the GHS:
www.hse.gov.uk/chemical-classification/legal/clp-regulation.htm
www.hse.gov.uk/chemical-classification/legal/background-directives-ghs.htm

CHIP Regulations:
www.hse.gov.uk/chemical-classification/legal/chip-regulation.htm/

REACH Regulation:
www.hse.gov.uk/reach/

PIC Regulation:
www.hse.gov.uk/pic/index.htm

COSHH Regulations:
www.hse.gov.uk/coshh/

COMAH Regulations:
www.hse.gov.uk/comah/index.htm

European sources of information:

European Inventory of Existing Commercial Substances (EINECS)
http://ihcp.jrc.ec.europa.eu/

European Chemicals Agency (ECHA)
http://echa.europa.eu/home_en.asp

Department for Transport
www.dft.gov.uk

UK helpdesks:

CHIP Enquiry point: chip@hse.gsi.gov.uk

CLP Helpdesk: ukreachca@hse.gsi.gov.uk

REACH Helpdesk: ukreachca@hse.gsi.gov.uk

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

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