European Commission



Chemicals at work – a new labelling system

Guidance to help employers and workers to manage the transition to the new classification, labelling and packaging system

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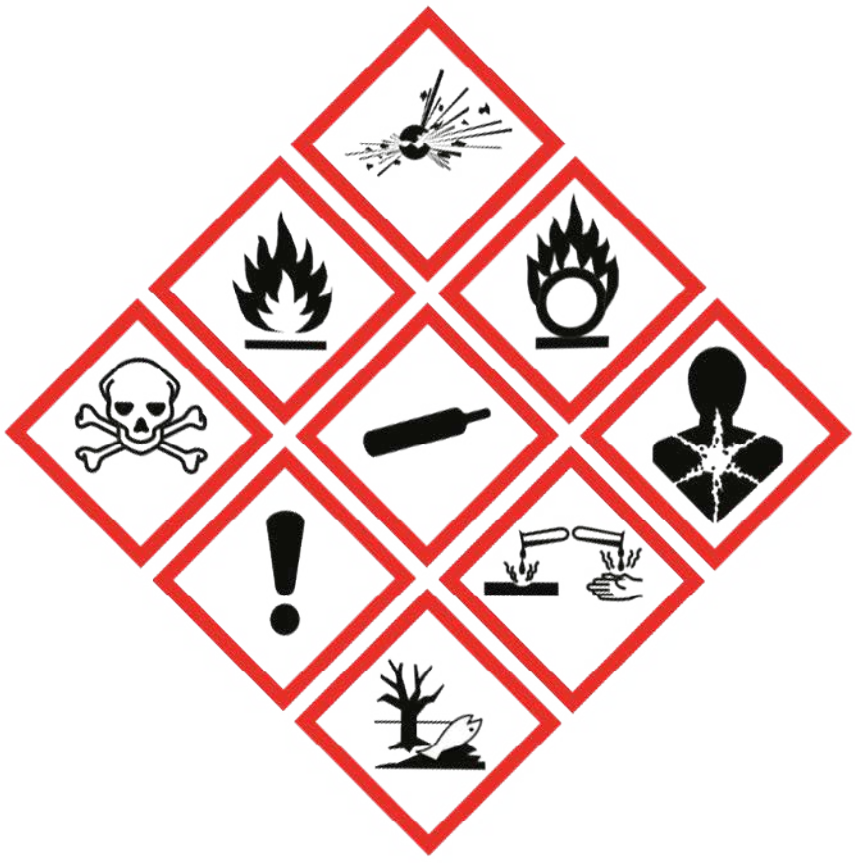
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Chemicals at work – a new labelling system

Guidance to help employers and workers to manage the transition to the new classification, labelling and packaging system



European Commission
Directorate-General for Employment, Social Affairs and Inclusion
Unit B3

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Contents

1. Introduction 5

2. What is CLP and how will it affect me? 7

2.1. Why has CLP been introduced? 7

2.2. How will CLP changes affect the substances and mixtures I use? 8

3. Changes to labels 10

3.1. New pictograms 10

3.2. Signal word 11

3.3. Hazard (H) statements 11

3.4. Precautionary (P) statements 12

3.5. Supplementary labelling section 12

3.6. Combined transport and supply labelling 12

3.7. Example labels 13

4. Practical considerations for the workplace 16

4.1. Chemical agents directive (98/24/EC) 16

4.2. Carcinogens and mutagens directive (2004/37/EC) 18

4.3. Safety signs directive (92/58/EEC) 19

4.4. Pregnant workers directive (92/85/EEC) 20

4.5. Young people at work directive (94/33/EC) 21

5. The CLP classification criteria 22

5.1. Physical hazards 22

5.2. Health hazards 33

5.3. Environmental hazards 40

6. Changes to safety data sheets and other documents 42

7. Appendices 45

7.1. Appendix 1 – Sources of further information 45

7.2. Appendix 2 – Glossary 48

1. Introduction

This document is intended to provide practical guidance to employers and workers on how the directly acting CLP regulation ((EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures) will affect the following worker protection directives:

- chemical agents directive (98/24/EC);
- carcinogens and mutagens directive (2004/37/EC);
- safety signs directive (92/58/EEC);
- pregnant workers directive (92/85/EEC);
- young people at work directive (94/33/EC).

These directives have been implemented in the national legislation of each Member State. Information on this legislation and general guidance on how to comply will be available from the authorities responsible for occupational health and safety in each Member State.

Each of these five directives requires that employers: identify hazardous chemical substances and mixtures in the workplace; assess the risks to themselves, their employees and others who may be affected by their use of the substance or mixture; and take appropriate actions to minimise the risks and ensure the substance or mixture can be used safely without causing adverse effects to the health of people or to the environment.

One of the key steps in identifying hazardous chemical substances and mixtures is to review the information about them provided by suppliers in the form of labels and safety data sheets. For many years, the dangerous substances directive (67/548/EEC) (DSD) and the dangerous preparations directive (1999/45/EC) (DPD) have required that suppliers of chemical substances and mixtures:

- identify the hazards of the chemical using a standardised set of classification criteria;
- package the chemical safely;
- communicate information about hazards to their customers through labels and other documents such as safety data sheets.

The DSD and DPD are now being replaced by the directly acting CLP regulation. This means that Member States will not need to pass implementing legislation to bring CLP into national law, though some national measures may be necessary to lay down penalties and Competent Authority (CA) responsibilities. Requirements for safety data sheets (SDSs) are already laid down in the directly acting REACH regulation ((EC) No 1907/2006 concerning the registration, evaluation, authorisation and restriction of chemicals).

CLP adopts the UN Globally Harmonised System of Classification and Labelling of Chemicals (GHS) within the EU. The GHS aims to improve worker safety throughout the world by introducing a common set of hazard criteria and labelling elements to be used for chemicals. The GHS has the same basic aims as the DSD and DPD; that is to ensure that chemical suppliers identify the hazards of their products, package them safely and communicate information about the hazards through labels and other documents. However, there are some differences between the GHS (and thus CLP and the SDS provisions of REACH) and the system set out in the DSD and DPD. In particular there are some differences in the classification criteria used to identify a substance or mixture as 'hazardous' ('dangerous' under the DSD/DPD), and in the warning symbols, hazard information and safety advice to be included on the label and other documents.

These changes mean that you will need to take action to make sure that you and your employees recognise and understand the new label information. In cases where new data have been generated or made available under REACH which change the classification of the substance or mixture, it may also be necessary to review and update your risk assessments and your procedures.

Detailed guidance on CLP has been produced by the European Chemicals Agency (ECHA). Further information and links to relevant documents are given in Appendix 1 to this guide.

2. What is CLP and how will it affect me?

CLP is changing the classification system for identifying and describing chemical hazards in Europe, and the way this information about the hazards of chemicals is communicated on labels and in safety data sheets and other documents.

CLP is being introduced gradually over a number of years to allow suppliers time to change their products over to the new system. Some products have already been moved over to the new system, and the rest will need to be changed over by 1 June 2015, although some stocks of products already in the supply chain may be onward supplied without needing to be relabelled for a further 2 years after the deadline.



<table>
<tr><td rowspan="2">Substances</td><td colspan="2">All substances must be classified and labelled according to CLP. Both CLP and DSD classifications must appear on the SDS.</td><td rowspan="2">All substances classified and labelled to CLP. Only CLP classifications need appear on the SDS.</td></tr>
<tr><td>2-year derogation, to allow stocks already on the market to be onward supplied.</td><td></td></tr>
<tr><td rowspan="2">Mixtures</td><td colspan="2" rowspan="2">May be classified and labelled according to either DPD or CLP.

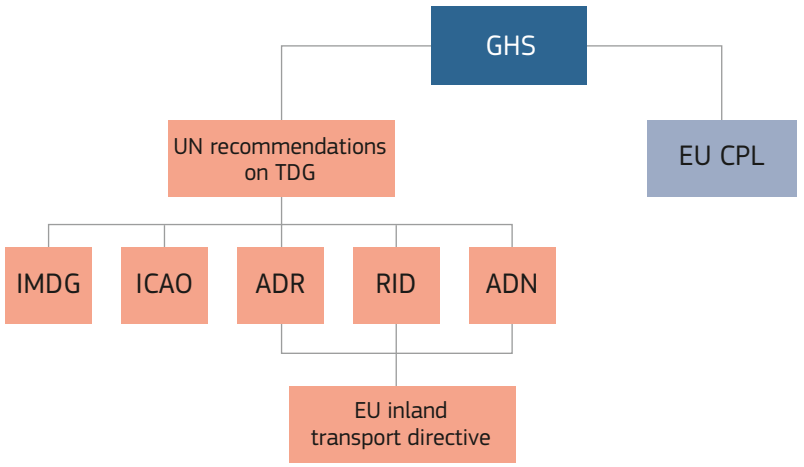
If labelled according to CLP, both DPD and CLP classifications must appear on the SDS.</td><td>All mixtures classified and labelled to CLP. Only CLP classifications need appear on the SDS.</td></tr>
<tr><td>2-year derogation to allow stocks already on the market to be onward supplied.</td><td></td></tr>
</table>

This means that over the next few years you are likely to receive, and have stocks of, chemical substances and mixtures labelled according to both systems, the DSD/DPD and CLP, and you and your employees will need to be trained to recognise and understand both types of label information. It is also important that you help your customers understand the new classification system.

2.1. Why has CLP been introduced?

CLP adopts the Globally Harmonised System of Classification and Labelling of Chemicals, more commonly known as the GHS, and sometimes referred to as the 'purple book' because of its cover. The GHS has been developed as a result of initiatives at the 1992 United Nations Conference on Environment and Development to improve worker protection around the world by introducing a common set of hazard criteria and labelling elements to be used for chemicals. It is managed and published by the UNECE, with input from many intergovernmental organisations and national experts, and is updated every 2 years. The GHS is being adopted by many countries around the world and is also used as the basis for international and national transport regulations for dangerous goods including the UN Recommendations on the Transport of Dangerous Goods – Model regulations (commonly referred to as the 'orange book').

Figure 1: Relationship of the GHS to transport and supply legislation



2.2. How will CLP changes affect the substances and mixtures I use?

There are some differences in the hazard classification system used in the GHS, and therefore CLP, compared to the previous classification system, which was set out in the dangerous substances directive (DSD) and the dangerous preparations directive (DPD). Under the DSD/DPD system, dangerous substances and mixtures are allocated to 15 hazards classes and their associated risk phrases. Under CLP, hazardous substances and mixtures are allocated to 28 hazard classes, which are further subdivided into numbered divisions or categories, with the lowest numbers representing the most severe hazards. In some cases, hazard statements may be used for two or more hazard categories. Under CLP the criteria for determining whether a substance or mixture is classified as hazardous may be different. There are also some new hazard classes. This means that some of the chemical substances and mixtures that you are familiar with may change classification, or become classified as hazardous for the first time.

CLP has also introduced some terminology changes that you should be aware of, as shown below.

Term used in the DSD and DPD	Term used in CLP
Preparations	Mixtures
Dangerous	Hazardous
Symbols	Pictograms
Risk phrases	Hazard statements
Safety phrases	Precautionary statements

At the same time, REACH is also having an impact on the classification of some chemicals, as it requires manufacturers and importers to undertake a more thorough assessment of available hazard data for substances and, where necessary, to carry out additional testing to fill data gaps. This may result in new hazards being identified for existing chemicals, and therefore more changes to classifications.

If you find that the classification of the products you use has changed, you may need to review your risk assessments and safe working practices to make sure that you can continue to use these substances and mixtures safely.

Key points

- Look out for new labels and safety data sheets.
- Train employees to understand and recognise the new label information.
- Check that your use of the substance or mixture is covered on the safety data sheet and is not advised against.
- Follow the advice provided on the new labels and in safety data sheets.
- Check whether the classification has changed.
- Evaluate the risks to workers and update your workplace risk assessments if necessary.
- If you are an employer, communicate these changes to your employees.
- If you have any questions about the new label or safety data sheet, speak to your supplier.

If the classification of a substance or mixture changes, it is important that you understand the reason for this, as it may impact on the risk management measures that you choose. Classifications may change for several reasons.

- The hazard data are still the same, but CLP classification criteria result in a different classification.
- New hazard information has been identified, e.g. through REACH and the substance or mixture is more/less hazardous than previously thought.
- A mixture has been reformulated with different component substances that have different hazards.

Until at least 1 June 2015 suppliers will have to provide classifications under the old DSD/DPD and the CLP system in the SDS, so any fundamental change of classification from new information available will be reflected in the DSD/DPD system classification as well as in the new CLP system.

Because CLP will change the classifications of some substances and mixtures, and because REACH and CLP are identifying new hazard information about some substances, it is expected that some suppliers will reformulate some of their products to avoid the products being placed in a more severe hazard class and/or category. You should look out for, and ask your suppliers to alert you to, any changes as they may mean that you need to change some of your risk management measures. For example a change of solvent in a mixture may mean that the gloves you use no longer provide adequate protection and a different glove material may be needed, or the equipment you use to monitor airborne concentrations of the solvent may need to be adjusted to measure the new solvent.

If you are not sure why the classification of a substance or mixture has changed, you should contact your supplier for more information.

3. Changes to labels

Suppliers of hazardous substances and mixtures have, for many years, been required by the DSD and DPD to label their products with a standard set of information to alert their customers to the dangers of the substance or mixture so that they can take actions to manage them safely and reduce risks in the workplace.

CLP has not changed the purpose of the label, but the meaning of several of the symbols has changed, and CLP has made a number of changes to the details of the information to be provided, including:

- new red-framed pictograms to replace the familiar orange danger symbols;
- a signal word instead of indications of danger;
- hazard statements instead of risk phrases;
- precautionary statements instead of safety phrases;
- some extra hazard statements now in a supplementary labelling section.

Other requirements, such as the requirement to show names and identifiers for hazardous substances or the hazardous component substances in a mixture, the name, address and telephone number of the supplier, and the nominal quantity of the package, are largely unchanged.

During the transitional period, **labels should only include information from one system**, and the package should be labelled according to either the DSD/DPD or CLP. Packages should not include both sets of labels.

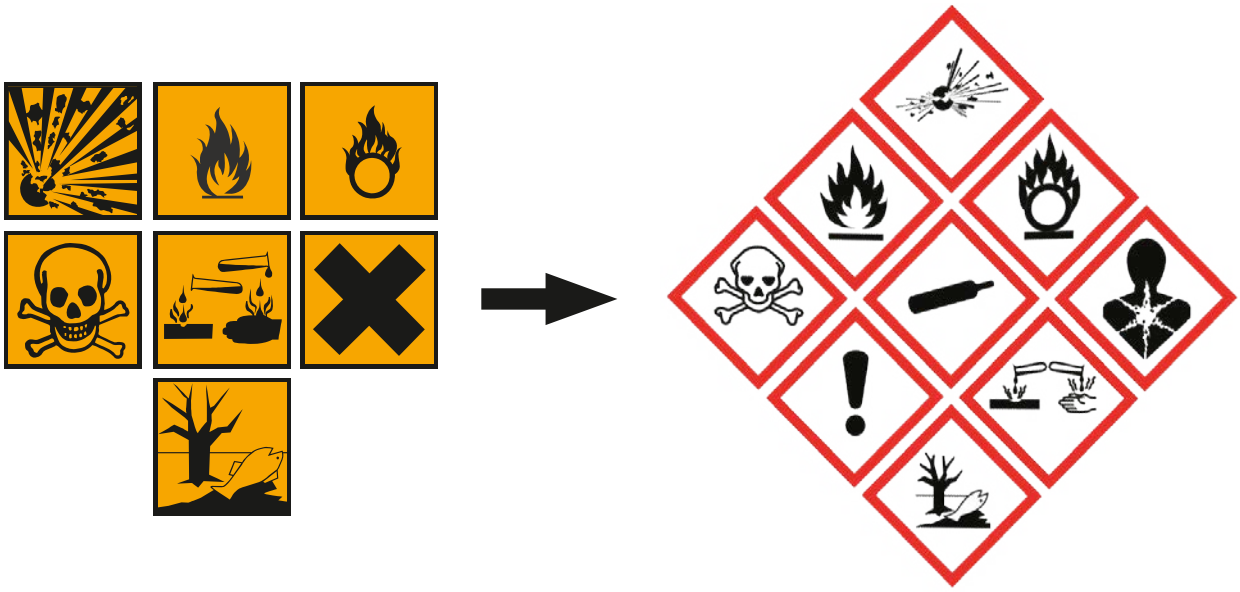
Remember that mandated labels are only needed for substances and mixtures classified as hazardous, and for mixtures that are not otherwise classified as hazardous but contain hazardous component substances above thresholds of concern. For products not classified as hazardous or not containing hazardous component substances, there is no formal requirement for specific labelling.

Until 1 June 2015 suppliers will have to provide classifications under the old DSD/DPD and the CLP system in their SDSs, so you can still carry out your risk assessments the current way until switching over to new schemes that will be developed.

3.1. New pictograms

Under CLP, the seven familiar orange squares with symbols will be replaced by nine new red-bordered diamond symbols. Six of these new symbols are very similar, but, as seen below, **there are three new or changed ones to become familiar with**.

Figure 2: The seven familiar DSD/DPD symbols *The nine GHS pictograms*



The three new symbols have the following meanings:

Type of hazard	DSD/DPD symbol	CLP pictogram
May cause serious long-term health effects, such as carcinogenicity, mutagenicity, reproductive toxicity, respiratory sensitisation, specific target organ toxicity and aspiration hazard	 or	
Less serious health hazards such as irritants, skin sensitisers and less severe toxicity (harmful)		
Contains gases under pressure	No symbol under the DSD and DPD	

3.2. Signal word

CLP uses a signal word to highlight the danger level. The new signal word has two levels:

- **Danger** — those substances and mixtures with the most severe hazards;
- **Warning** — those substances and mixtures with less serious hazards.

NB: In some case no signal word is required for a hazardous chemical.

3.3. Hazard (H) statements

Hazard statements are replacing risk phrases, and provide more information about the type of hazard involved. Many of these are the same as, or very similar to, the risk phrases. In some cases though, they give slightly different information. Some H statements may be used for more than one hazard category within a hazard class, and therefore the H statements alone do not describe the classification – the hazard class and category also need to be mentioned. This is a difference

to the DSD/DPD, where the R phrases were specific to the classification. The H statement code numbers will normally be shown on the safety data sheet. They may also be shown on the label for some chemical products, although this is not required.

Hazard statement code numbers	
H200–H299	Physical hazards
H300–H399	Health hazards
H400–H499	Environmental hazards

3.4. Precautionary (P) statements

Precautionary statements are replacing safety phrases and give advice on preventive measures to take, emergency response actions such as first aid and advice on safe storage and disposal.

There are a greater number of P statements than S phrases for suppliers to select from, and different suppliers may select different P statements for the same chemical, depending on the size of packaging they supply, and their knowledge of how their customers are using the substance or mixture. Normally there will be a maximum of six P statements on the label, unless the chemical is particularly hazardous. Other relevant P statements may be included in the safety data sheet for the chemical.

Precautionary statement code numbers	
P 1 00	General
P 2 00	Prevention
P 3 00	Response
P 4 00	Storage
P 5 00	Disposal

3.5. Supplementary labelling section

This part of the label will contain any of the additional labelling phrases included in CLP, but that are not part of the GHS. These additional labelling phrases include some risk phrases not covered by the GHS, and also the special labelling phrases for certain mixtures used under the DPD. It will also contain any other regulatory information that may be required, e.g. volcanic organic compound (VOC) information.

This supplementary information does not have to be in a separate box and hence may not be immediately obvious as supplementary labelling information. It should, however, be close to the other mandatory label information.

Supplementary hazard statement code numbers	
EUH001–EUH099	Supplementary hazards (risk phrases) which were in the DSD/DPD but are not in the GHS
EUH201–EUH299	Supplemental label elements for certain mixtures

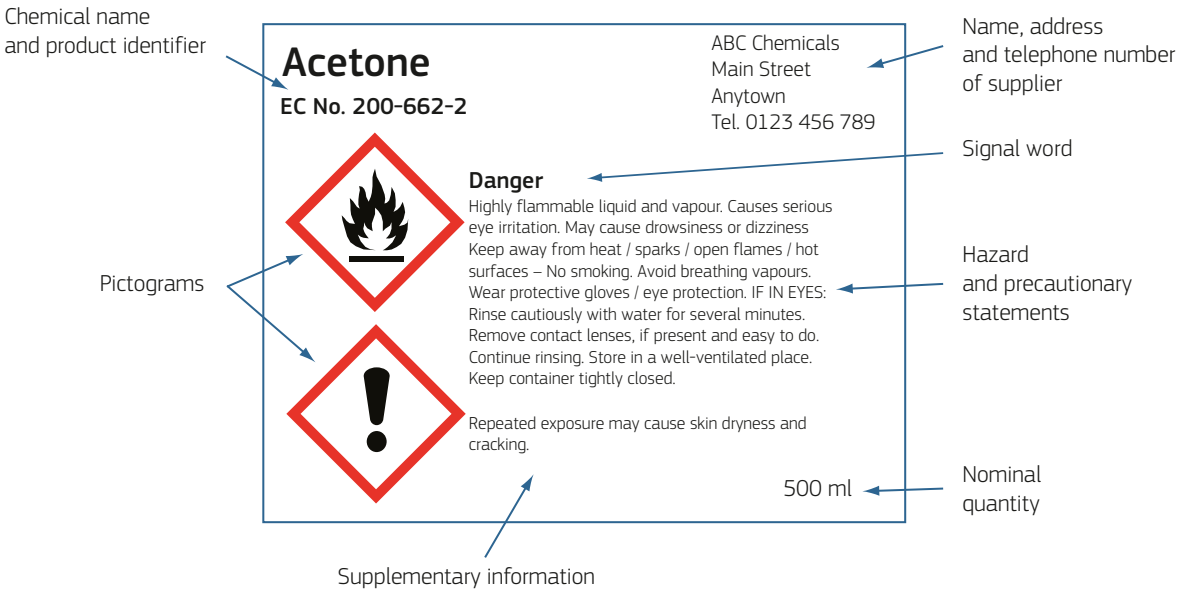
3.6. Combined transport and supply labelling

Under CLP, when hazardous substances and mixtures are packaged in a single packaging, e.g. a drum or IBC, the supplier may decide to omit any CLP pictograms if they repeat the transport hazard class labels attached for the transport of dangerous goods. This means that you will need to check all the labels on a package, both supply and transport, to make sure that you do not miss any information.

Label elements under the DSD and DPD	Label elements under CLP
Symbols	Pictograms NB: On single packagings, pictograms may be omitted if they repeat transport hazard class labels
Indications of danger (or occasionally nothing)	Signal words 'Danger' or 'Warning' (or occasionally nothing)
Risk (R) phrases	Hazard (H) statements
Safety (S) phrases	Precautionary (P) statements
Some risk phrases Special labelling phrases for certain preparations Other regulatory information	Supplementary labelling information

3.7. Example labels

Example 1: Label for a hazardous substance

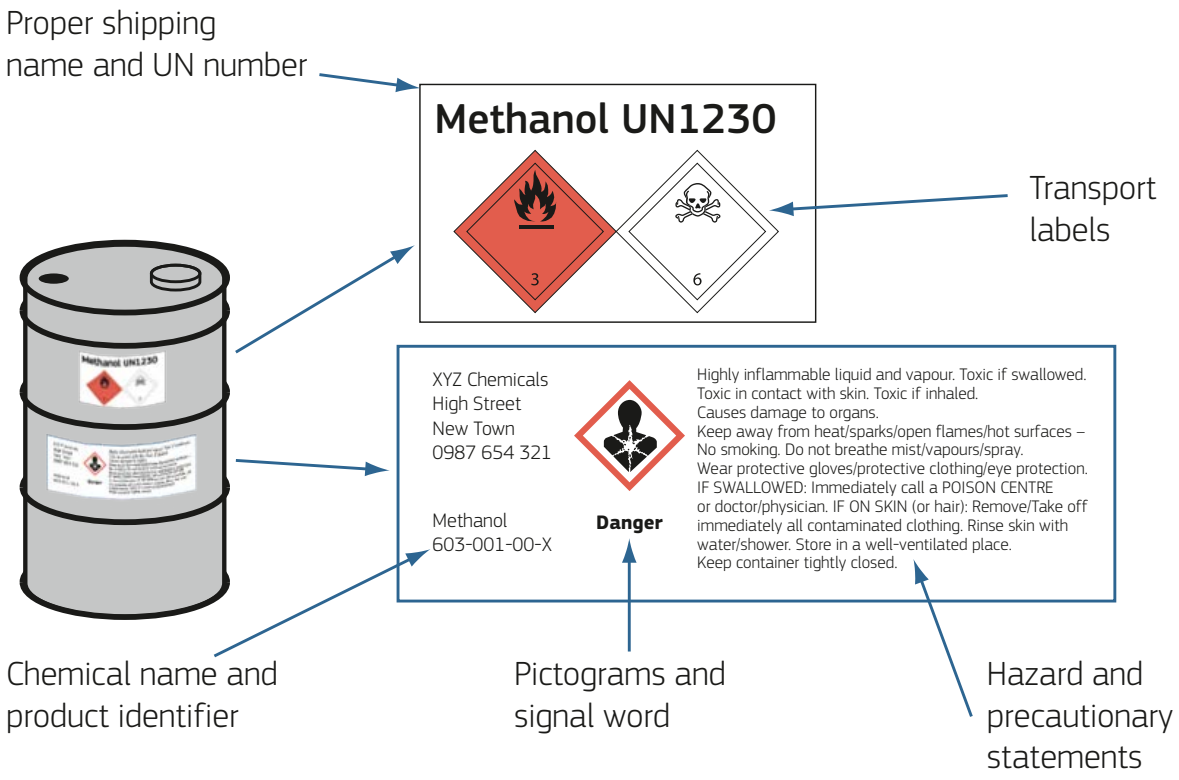


NB: The classification information shown in the above example is the harmonised classification for the substance as given in Annex VI to the CLP regulation ((EC) No 1272/2008) and was correct at the time this document was prepared (1 December 2011).

Example 2: Label for a hazardous mixture



Example 3: Combined supply and transport label



NB: The classification information shown in the above example is the harmonised classification for the substance as given in Annex VI to the CLP regulation ((EC) No 1272/2008) and in the ADR Agreement 2011 and was correct at the time this document was prepared (1 December 2011).

4. Practical considerations for the workplace

Minimum health and safety requirements for the protection of workers from hazardous chemical substances and their mixtures are set out in five European directives:

- chemical agents directive (98/24/EC);
- carcinogens and mutagens directive (2004/37/EC);
- safety signs directive (92/58/EEC);
- pregnant workers directive (92/85/EEC);
- young people at work directive (94/33/EC).

These directives have been implemented in the national legislation of each Member State. Information on national legislation and general guidance on how to comply will be available from the authorities responsible for occupational health and safety in each Member State. This section provides more information about each of these directives, and how the change from the DSD/DPD to CLP may affect the things you do.

4.1. Chemical agents directive (98/24/EC)

The chemical agents directive (CAD) lays down minimum requirements for the protection of workers from risks to their safety and health arising from the effects of hazardous chemical agents that are present at the workplace. The CAD imposes various legal obligations on the employer. The employer must ensure that the risk from a hazardous chemical agent to the safety and health of workers at work is eliminated or reduced to a minimum. Employers have a number of duties under this directive, including:

- identification of hazardous chemicals;
- substitution of hazardous chemicals with less hazardous alternatives;
- risk assessment to determine if the level, type and duration of exposure is acceptable;
- safe use, handling, storing and transporting of substances;
- emergency plans and procedures;
- information, instruction, training and supervision for employees;
- monitoring and health surveillance;
- record keeping;
- provision of adequate PPE and maintenance of protective equipment.

The change from the DSD/DPD to CLP will mean that you need to make sure that you and your employees are trained to recognise and understand the new labels, and that you review your risk assessments carefully and take action to deal with any changes to classifications, safety advice or other new information on the label or in the SDS.

Key activities affected by change to CLP	Tips for transition to CLP
Identify hazardous chemical agents	Check labels and SDSs carefully to make sure all hazards are identified and understood. ▸ Has the classification of the substance or mixture changed to a more or less severe hazard class and category? ▸ Are there any additional hazard statements in the supplementary section of the label? ▸ Check both transport labels and supply pictograms for single containers.
Risk assessment and introduction of appropriate risk management measures to eliminate/ minimise risks	Follow safety information on the label and the SDS. ▸ If an extended SDS (ext-SDS) with exposure scenario has been provided, ensure you work within any limitations set in this document. ▸ If classifications have changed, consider if and how this affects your risk assessment and any control banding systems you use. ▸ If the safety advice on the label or in the SDS has changed, do you need to change your procedures to take account of this advice?
Safe use, handling, storing and transporting of substances	Check whether the classification has changed – does this affect where you store the chemical, how you use and handle it, and how it needs to be transported?
Emergency plans and procedures	Check consistency with safety information on the label and the SDS.
Information, instruction, training and supervision for employees	Train employees to make sure they understand the new label information.
Health monitoring and record keeping	Check whether substances are used for which regular monitoring is required and adapt record keeping.

Example 1

Company X purchases a substance which was labelled under the DSD as



Irritant
R41 Risk of serious damage to eyes.

They are concerned because the new CLP label now carries the corrosive pictogram



Danger
H318 Causes serious eye damage.

Company X is worried it will have to change its procedures as a result.

The classification criteria for substances and mixtures which cause serious eye irritation are very similar between the DSD and CLP, and the intrinsic hazard of the substance is still the same, although the labels are different. If Company X has properly identified the risks from using the substance and has put in place suitable procedures and control measures to manage the risk, then Company X can reasonably conclude that these measures should still be sufficient to manage the risk with the new CLP labels, and no changes to the existing procedures and control measures are needed.

4.2. Carcinogens and mutagens directive (2004/37/EC)

The carcinogens and mutagens directive sets out the minimum standards for the protection of workers from occupational carcinogens. Employers' duties include:

- identifying carcinogenic and mutagenic substances and mixtures;
- assessing the risk to workers, paying special attention to those at particular risk;
- substitution where possible less hazardous substances and mixtures;
- reducing the use of, and exposure to, carcinogens or mutagens at work;
- regular monitoring of workers' exposure to determine any health risk and deciding the measures to be taken;
- providing information and training to workers.

Key activities affected by change to CLP	Tips for transition to CLP
Identify carcinogens and mutagens	Check labels and SDSs carefully to make sure all hazards are identified and understood. ▸ As can be seen in Sections 5.2.5 and 5.2.6, the term 'Category 2' is used in both the DSD/DPD and CLP systems, but to mean different things – if a label or SDS identifies a substance as 'Category 2', make sure you know which system this refers to.
Substitution of hazardous substances and mixtures with less hazardous alternatives	Check labels and SDSs carefully to make sure all hazards are identified and understood and that you don't inadvertently introduce new hazards and risks to employees.
Risk assessment and introduction of appropriate risk management measures to eliminate/ minimise risks	Follow safety information on the label and the SDS. ▸ If an extended SDS (ext-SDS) with exposure scenario has been provided, ensure you work within any limitations set in this document. ▸ If classifications have changed, consider if this affects your risk assessment. ▸ If the safety advice on the label or in the SDS has changed, do you need to change your procedures to take account of this advice?
Training and information for employees	Train employees to make sure they understand the new label information. Update employee information sources (workplace instructions, leaflets, posters, etc.).
Health monitoring and record keeping	Check whether substances are used for which regular monitoring is required and adapt record keeping.

4.3. Safety signs directive (92/58/EEC)

The safety signs directive implements a system of harmonised signs across Europe so that non-native language workers have the same protection as native language workers without needing to understand the information given in a particular language. The directive is concerned with health and safety signs at work relating to location and identification of containers and pipes, fire-fighting equipment, certain traffic routes and illuminated and acoustic signs, as well as the introduction of appropriate verbal communications and hand signals, amongst other information. The duties of employers in relation to hazardous chemical substances and mixtures include the following.

- Ensuring that containers and visible pipes for storage or transport of dangerous substances or mixtures are labelled with pictograms or warning signs, and also with the name of the substance and details of the hazard where appropriate. Storage compounds holding significant quantities of dangerous substances or mixtures must be marked with suitable warning signs.
- Giving information to employees on what measures they should take in connection with safety signs and suitable training on the meaning of safety signs.

Key activities affected by change to CLP	Tips for transition to CLP
Identify hazardous chemical agents	Check labels and SDSs carefully to make sure all hazards are identified and understood. ▸ Has the classification of the substance or mixture changed to a more or less severe hazard class and category? ▸ Are there any additional hazard statements in the supplementary section of the label? ▸ Check both transport labels and supply pictograms for single containers.
Training and information for employees	Train employees to make sure they understand the new label information. Update employee information sources (workplace instructions, leaflets, posters, etc.).

4.4. Pregnant workers directive (92/85/EEC)

The focus of the pregnant workers directive is to protect the health and safety of women in the workplace when pregnant or after they have recently given birth and women who are breastfeeding. Under the directive, a set of guidelines detail the assessment of the chemical, physical and biological agents and industrial processes considered dangerous for the health and safety of pregnant women or women who have just given birth and are breastfeeding. The guidelines also include physical movements and postures, mental and physical fatigue and other types of physical and mental stress.

Employers' duties include:

- identifying specific chemical agents and categories of chemical agents;
- reducing the use of and exposure to chemical agents that may affect a pregnant or breastfeeding worker;
- monitoring workers' exposure to determine any health risk and deciding the measures to be taken;
- providing information and training to workers.

Key activities affected by change to CLP	Tips for transition to CLP
Identify substances with a chronic health hazard, including toxic substances, carcinogens, mutagens and reproductive (CMR) toxins, and sensitisers	Check labels and SDSs carefully to make sure all hazards are identified and understood. ▸ As can be seen in Sections 5.2.5, 5.2.6 and 5.2.7, the term 'Category 2' is used in both the DSD/DPD and CLP systems for CMR substances, but to mean different things – if a label or SDS identifies a substance as 'Category 2', make sure you know which system this refers to.
Substitution of hazardous substances and mixtures with less hazardous alternatives	Check labels and SDSs carefully to make sure all hazards are identified and understood and that you don't inadvertently introduce new hazards and risks to employees.
Risk assessment and introduction of appropriate risk management measures to eliminate/minimise risks	Follow safety information on the label and the SDS. ▸ If an extended SDS (ext-SDS) with exposure scenario has been provided, ensure you work within any limitations set in this document. ▸ If classifications have changed, consider if this affects your risk assessment. ▸ If the safety advice on the label or in the SDS has changed, do you need to change your procedures to take account of this advice?
Training and information for employees	Train employees to make sure they understand the new label information. Update employee information sources (workplace instructions, leaflets, posters, etc.).

4.5. Young people at work directive (94/33/EC)

The young workers directive (YWD) prevents young people being employed for work which exceeds the mental or physical capacities of young people or for work involving harmful exposure to dangerous substances, such as work involving harmful exposure to agents which present a chronic health risk.

The risk assessment under this directive must consider effects on the safety, physical and mental health and development of young people.

Key activities affected by change to CLP	Tips for transition to CLP
Identify substances with a chronic health hazard, including toxic substances, carcinogens, mutagens and reproductive toxins, and sensitisers	Check labels and SDSs carefully to make sure all hazards are identified and understood. ▸ As can be seen in Sections 5.2.5, 5.2.6 and 5.2.7, the term 'Category 2' is used in both the DSD/DPD and CLP systems, but to mean different things – if a label or SDS identifies a substance as 'Category 2', make sure you know which system this refers to. ▸ Particular attention should be paid to substances where the classification is new or has changed in severity.
Substitution of hazardous substances and mixtures with less hazardous alternatives	Check labels and SDSs carefully to make sure all hazards are identified and understood and that you don't inadvertently introduce new hazards and risks to employees.
Risk assessment and introduction of appropriate risk management measures to eliminate/ minimise risks	Follow safety information on the label and the SDS. ▸ If an extended SDS (ext-SDS) with exposure scenario has been provided, ensure you work within any limitations set in this document. ▸ If classifications have changed, consider if this affects your risk assessment. ▸ If the safety advice on the label or in the SDS has changed, do you need to change your procedures to take account of this advice?
Training and information for employees	Train employees to make sure they understand the new label information. Update employee information sources (workplace instructions, leaflets, posters, etc.).

Example 2

Company Y uses a substance which was not classified under the DSD. However, under CLP the product is classified for chronic toxicity effects, due to the changes in the classification criteria for this effect, and is labelled



Warning
H373 May cause damage to organs (kidneys) through prolonged or repeated exposure.

Company Y should review how it uses this substance and decide what control measures it may need to put in place to make sure it employees are adequately protected. In particular, it should review whether vulnerable workers, such as young people, are affected.

5. The CLP classification criteria

CLP, like the DSD and DPD, aims to identify hazardous properties of chemical substances and mixtures so that users can undertake a risk assessment appropriate to how they use the substance or mixture. Hazards are generally grouped into three types:

- physical hazards that may cause harm to workers through their ability to explode, burn or react with other chemicals in a dangerous way which threatens the physical safety of the worker;
- health hazards that may have harmful effects on the health of workers either in the short term (acute hazards) or in the long term (chronic hazards);
- environmental hazards which may cause harmful effects to organisms in the environment, in either the short term or long term.

CLP is based on a system of hazard classes, and within each hazard class there may be one or more hazard categories or divisions depending on the degree of hazard posed by the substance or mixture. Hazard statements, which are the CLP equivalent of risk phrases, are assigned based on the hazard class and category.

A short code system has been developed, for use throughout the EU, based on the English class names, e.g. 'Flam. Liq. 2' is used as a short code for Flammable Liquid Category 2. These short codes are not normally used on their own, but should be used with the H statement number to provide a complete description of the type of hazard presented, e.g. 'Flam. Liq. 2, H225'.

The classes are also referred to in REACH by a class numbering, where the class number is the section reference in CLP Annex I for that hazard class, e.g. flammable liquids are 'Class 2.6'. Take care if using these class numbers not to confuse them with the Transport of Dangerous Goods (TDG) class numbering system, which is different.

5.1. Physical hazards

Under CLP, the number of hazard classes used to identify substances and mixtures with physical hazards has increased from 5 to 16. This does not necessarily mean that many more substances and mixtures will now be classified as hazardous. In most cases, the same substances and mixtures are being classified, but we have a more detailed way of identifying and describing them. There are some differences in the classification system though, and these are described in more detail below. The hazard classes used for physical hazards in the GHS and in CLP are the same as those used for international transport regulations.

5.1.1. Explosives

Explosive substances, mixtures and articles were grouped into two categories under the DSD/DPD, based on their intrinsic properties. In CLP, explosives are grouped into seven categories, which are the same as those used for the transport of dangerous goods and take into consideration both the intrinsic properties of the substance, mixture or article, and also its packaging.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Explosive	R2: Risk of explosion by shock, friction, fire or other sources of ignition	 Danger	Unstable explosives Division 1.1 Division 1.2 Division 1.3	H200: Unstable explosive H201: Explosive; mass explosion hazard H202: Explosive; severe projection hazard H203: Explosive; fire, blast or projection hazard
	R3: Extreme risk of explosion by shock, friction, fire or other sources of ignition	 Warning	Division 1.4	H204: Fire or projection hazard
		— Danger	Division 1.5	H205: May mass explode in fire
		No pictogram or signal word	Division 1.6	None

5.1.2. Flammable gases

Flammable gases were all identified as 'Extremely flammable' under the DSD/DPD. In CLP, they are given their own hazard class. Overall, this hazard class covers the same substances and mixtures as classified under the DSD/DPD but, in CLP, the hazard class is split into two categories with different labelling.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Extremely flammable	R12: Extremely flammable	 Danger	Flammable gas Category 1	H220: Extremely flammable gas
		— Warning	Flammable Gas Category 2	H221: Flammable gas

5.1.3. Flammable aerosols

Flammable aerosols are those filled with flammable contents, which may be liquids, solids or gases, including the contents and the propellant. In the DSD/DPD, flammable aerosols were classified as either extremely flammable, highly flammable or flammable. In CLP flammable aerosols are given their own hazard category and identified as extremely flammable aerosols or flammable aerosols.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Extremely flammable or Highly flammable	R12: Extremely flammable	 Danger	Flammable aerosol Category 1	H222: Extremely flammable aerosol
	R11: Highly flammable	 Warning	Flammable aerosol Category 2	H223: Flammable aerosol
— Flammable	R10: Flammable			

5.1.4. Oxidising gases

Oxidisers are substances and mixtures which can increase the fire hazard of combustible materials by providing their own oxygen in a fire. The tests used to identify these substances and mixtures are the same in both systems and the same substances and mixtures will be classified and labelled.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Oxidising	R8: Contact with combustible material may cause fire	 Danger	Oxidising gas Category 1	H270: May cause or intensify fire; oxidiser

5.1.5. Gases under pressure

Gases under pressure is a new category under CLP and this aspect was not previously addressed under the DSD/DPD since it is based upon how the gas is packaged and not the intrinsic hazard of the gaseous substance or mixture per se. This hazard category is assigned to all commercial gases which are further classified into four groups: compressed gas; liquefied gas; refrigerated liquefied gas; or dissolved gas.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
—	—	 Warning	Compressed gas Liquefied gas Dissolved gas	H280: Contains gas under pressure; may explode if heated
			Refrigerated liquefied gas	H281: Contains refrigerated gas; may cause cryogenic burns or injury

5.1.6. Flammable liquids

Under the DSD/DPD, flammable liquids were classified as extremely flammable, highly flammable or flammable, depending on their flashpoint and initial boiling point. CLP classification is very similar, but the cut-off points between the three categories have changed slightly, so that a few more substances and mixtures will be classified as flammable liquids, and some substances and mixtures which were classified before will be classified in a higher category.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Extremely flammable or Highly flammable	R12: Extremely flammable	 Danger	Flammable liquid Category 1	H224: Extremely flammable liquid and vapour
	R11: Highly flammable		Flammable liquid Category 2	H225: Highly flammable liquid and vapour
— Flammable	R10: Flammable	 Warning	Flammable liquid Category 3	H226: Flammable liquid and vapour

5.1.7. Flammable solids

This hazard class covers solids which are readily ignited. The hazard classification criteria for CLP are based on a similar test to the DSD/DPD but in CLP they are split into two categories depending on whether a wetted zone in the test substance or mixture is able to stop the fire or not. For metal powders, classification is based upon the speed at which a pile of the test material burns.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Highly flammable	R11: Highly flammable	 Danger	Flammable solid Category 1	H228: Flammable solid
		 Warning	Flammable solid Category 2	

5.1.8. *Self-reactive substances and mixtures*

Self-reactive substances are unstable substances which may decompose and become hot causing fire or explosion, even without the presence of air. Under the DSD/DPD, self-reactive substances and mixtures do not have their own hazard class but are classified either as explosive (E; R2 or R3) or as extremely/highly/flammable or, in some cases, may not have been classified as hazardous. Under CLP, self-reactive substances and mixtures are given their own hazard class and are divided into seven categories depending on their properties, the same as in the transport regulations. Like explosives, the test procedure is not only dependent on the intrinsic hazards of the substance or mixture, but is also package dependent.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Explosive	R2: Risk of explosion by shock, friction, fire or other sources of ignition R3: Extreme risk of explosion by shock, friction, fire or other sources of ignition	 Danger	Self-reactive substances Type A	H240: Heating may cause an explosion
		 Danger	Self-reactive substances Type B	H241: Heating may cause a fire or explosion
 Highly flammable	R11: Highly flammable	 Danger	Self-reactive substances Types C & D	H242: Heating may cause a fire
		 Warning	Self-reactive substances Types E & F	H242: Heating may cause a fire
	R10: Flammable	—	Self-reactive substances Type G	—
	Not classified			

5.1.9. *Pyrophoric liquids and solids*

Pyrophoric liquids and solids are substances and mixtures which may catch fire within a few minutes of being exposed to air. In the DSD/DPD they were classified as highly flammable but in CLP pyrophoric liquids and solids are identified in their own hazard category. However, the hazard classification criteria are the same and the same substances and mixtures will be classified.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Highly flammable	R11: Highly flammable	 Danger	Pyrophoric liquids Category 1	H250: Catches fire spontaneously if exposed to air
			Pyrophoric solids Category 1	H250: Catches fire spontaneously if exposed to air

5.1.10. *Self-heating substances and mixtures*

Self-heating substances and mixtures represents a new hazard class introduced into EU supply regulations. It covers the situation where a substance or mixture may show a slow pyrophoricity over hours or days that only occurs when the substance is present in large quantities. Some of these substances and mixtures may have been classified as flammable under the DSD/DPD and others not have been classified at all.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Highly flammable	R11: Highly flammable	 Danger	Self-heating Category 1	H251: Self-heating: may catch fire
		 Warning	Self-heating Category 2	H252: Self-heating in large quantities: may catch fire
—	—			

5.1.11. *Substances and mixtures which, in contact with water, emit flammable gases*

These substances and mixtures react with water and may release flammable gases in hazardous quantities. The classification criteria and procedures are very similar in both CLP and the DSD/DPD; however, in CLP they are subdivided into three categories.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Highly flammable	R15: Contact with water liberates extremely flammable gases	 Danger	Water-reactive Category 1	H260: In contact with water releases flammable gases which may ignite spontaneously
		 Danger	Water-reactive Category 2	H261: In contact with water releases flammable gases
		 Warning	Water-reactive Category 3	H261: In contact with water releases flammable gases

5.1.12. Oxidising liquids and oxidising solids

Oxidisers are substances and mixtures which can increase the fire hazard of combustible materials by providing their own oxygen in a fire. The classification criteria and procedures are very similar in both CLP and the DSD/DPD; however, the way they are subdivided is different between the two systems.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Oxidising	R9: Explosive when mixed with combustible material R8: Contact with combustible material may cause fire	 Danger	Oxidising liquid Category 1 Oxidising solid Category 1	H271: May cause fire or explosion; strong oxidiser
	R8: Contact with combustible material may cause fire	 Danger	Oxidising liquid Category 2 Oxidising solid Category 2	H272: May intensify fire; oxidiser
		 Warning	Oxidising liquid Category 3 Oxidising solid Category 3	H272: May intensify fire; oxidiser

5.1.13. Organic peroxides

Under both CLP and the DSD/DPD the identification of organic peroxides is based on chemical structure (i.e. substances with an –O–O– bond) and, consequently, the same substances and mixtures are identified under each system. Under the DSD/DPD, organic peroxides were identified either as explosive (E; R2 or R3) or oxidising (O; R7). Under CLP, organic peroxides are given their own hazard class and divided into seven categories depending on their intrinsic properties, and also on how they are packaged.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Explosive	R2: Risk of explosion by shock, friction, fire or other sources of ignition R3: Extreme risk of explosion by shock, friction, fire or other sources of ignition	 Danger	Organic peroxide Type A	H240: Heating may cause an explosion
		 Danger	Organic peroxide Type B	H241: Heating may cause a fire or explosion
 Oxidising	R7: May cause fire	 Danger	Organic peroxide Types C & D	H242: Heating may cause a fire
		 Warning	Organic peroxide Types E & F	H242: Heating may cause a fire
		—	Organic peroxide Type G	—

5.1.14. Corrosive to metals

Corrosive to metals is a new hazard category introduced under CLP. It is used for substances and mixtures which can corrode steel or aluminium faster than a set rate. Some chemical users may be familiar with this hazard as it is also used for transport of dangerous goods regulations.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
—	—	 Warning	Metal corrosive Category 1	H290: May be corrosive to metals

5.1.15. Other physical hazards

The DSD and DPD include a number of risk phrases for other hazards which are not part of the GHS. These additional hazards and risk phrases have been included in CLP unchanged except for the numbering of the phrases.

R phrase	CLP statement	Phrase text
R1	EUH001	Explosive when dry
R6	EUH006	Explosive with or without contact with air
R14	EUH014	Reacts violently with water
R18	EUH018	In use, may form flammable/explosive vapour–air mixture
R19	EUH019	May form explosive peroxides
R44	EUH044	Risk of explosion if heated under confinement

5.2. Health hazards

5.2.1. Acute toxicity

Acutely toxic substances and mixtures may cause harm to workers' health after either a single exposure or several exposures over a short period of time (a few hours). They may cause these affects by ingestion (oral exposure), in contact with skin (dermal exposure) or through inhalation.

CLP does not change the overall scope of classification for acute toxicity but there are important differences in the dose ranges used to sub-divide this hazard class between the two systems. This means that some substances and mixtures may move into a higher hazard category in CLP compared to the DSD/DPD.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Very Toxic	R26: Very toxic by inhalation R27: Very toxic in contact with skin R28: Very toxic if swallowed	 Danger	Acute toxicity Category 1 Acute toxicity Category 2	H300: Fatal if swallowed H310: Fatal in contact with skin H330: Fatal if inhaled
 Toxic	R23: Toxic by inhalation R24: Toxic in contact with skin R25: Toxic if swallowed		Acute toxicity Category 3	H301: Toxic if swallowed H311: Toxic in contact with skin H331: Toxic if inhaled
 Harmful	R20: Harmful by inhalation R21: Harmful in contact with skin R22: Harmful if swallowed	 Warning	Acute toxicity Category 4	H302: Harmful if swallowed H312: Harmful in contact with skin H332: Harmful if inhaled

Note that the same hazard statement is used for both Category 1 and Category 2 acutely toxic substances and mixtures. You will not be able to determine which of these hazard categories applies to your substance or mixture from the label, and you will need to refer to the SDS to identify this if it is important for your risk management system.

CLP includes specific provisions for dealing with mixtures where toxicity data is not available for all of the components, and you may see the phrase 'contains x % of ingredients of unknown toxicity' appearing on labels. This should not cause you undue concern, as in reality this information was not known under the previous DPD system either – this is simply better communication of existing information.

Note that the GHS includes Acute Tox 5 for substances with an acute toxic effect (ATE) level of 2 000–5 000 mg/kg. In Europe, the maximum dose indicated for animal testing is 2 000 mg/kg, the use of doses of up to 5 000 mg/kg is discouraged for welfare reasons. Some international labels may include Category 5 (note that this does not carry a pictogram).

5.2.2. Skin corrosion and irritation

Corrosive substances and mixtures can cause serious damage and burns to the skin which can take time to heal and may leave permanent damage such as scarring. Irritant substances and mixtures may cause redness, inflammation, etc. of the skin, but this generally heals within a short period of time. There is a good correlation between the DSD/DPD and CLP classification criteria for corrosivity and irritation.

Note that the same H statement is used for all three skin corrosion categories (1A/1B/1C). Therefore you will need to refer to the SDS if it is important for your control measures to identify the hazard category.

The generic concentration limits used to calculate the classification of mixtures containing corrosive and irritant substances under CLP have decreased significantly when compared with those for the DPD. It is expected that many more mixtures will be classified as 'corrosive' and/or 'irritant' under this regulation compared to the DPD.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Corrosive	R35: Causes severe burns	 Danger	Skin corrosion Category 1A	H314: Causes severe skin burns and eye damage
	R34: Causes burns		Skin corrosion Categories 1B & 1C	
 Irritant	R38: Irritating to skin	 Warning	Skin irritation Category 2	H315: Causes skin irritation

5.2.3. Eye damage and irritation

Like corrosive substances and mixtures, substances and mixtures classified as causing eye damage are capable of causing serious and permanent effects. Irritant substances and mixtures may cause effects that heal with a relatively short period of time.

The generic concentration limits used to calculate the classification of mixtures containing these substances under CLP have decreased significantly when compared with those for the DPD. It is expected that many more mixtures will be classified as 'serious eye irritants' and 'eye irritants'.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Irritant	R41: Risk of serious damage to eyes	 Danger	Eye damage Category 1	H318: Causes serious eye damage
	R36: Irritating to eyes	 Warning	Eye irritation Category 2	H319: Causes serious eye irritation

5.2.4. Sensitisers

Sensitisers are substances which, after an initial exposure, may provoke an allergic reaction such as asthma (respiratory sensitisers) or an allergic skin reaction (skin sensitisers).

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Sensitisation	R42: May cause sensitisation by inhalation	 Danger	Respiratory sensitiser Category 1 and Subcategory 1(A) and 1(B)	H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
	R43: May cause sensitisation by skin contact	 Warning	Skin sensitiser Category 1 and Subcategory 1(A) and 1(B)	H317: May cause an allergic skin reaction

5.2.5. Germ cell mutagenicity

Germ cell mutagens are substances and mixtures which may cause heritable genetic damage by causing changes in the germ cells, i.e. the sperm and egg cells, which can be passed on to the next generation. The classification criteria for substances and mixtures are very similar in both the DSD/DPD and CLP.

DSD/DPD symbol, indication of danger	Risk phrases		CLP pictogram and signal word	Hazard class and category	Hazard statement
	Cat. 1	R46: May cause heritable genetic damage	 Danger	Germ cell mutagenicity Category 1A	H340: May cause genetic defects (route of exposure, if applicable)
	Cat. 2			Germ cell mutagenicity Category 1B	
	Cat. 3	R68: Possible risk of irreversible effects	 Warning	Germ cell mutagenicity Category 2	H341: Suspected of causing genetic defects (route of exposure, if applicable)

Note that both the DSD/DPD and CLP systems use the term 'Category 2' but to mean different things. You should therefore check carefully which system is being used if you are supplied with substances or mixtures described as Category 2 mutagens.

5.2.6. Carcinogenicity

Carcinogens are substances that may cause cancer. The classification criteria for substances and mixtures are very similar between the DSD/DPD and CLP.

Note that both the DSD/DPD and CLP systems use the term 'Category 2' but to mean different things. You should therefore check carefully which system is being used if you are supplied with substances or mixtures described as Category 2 carcinogens.

DSD/DPD symbol, indication of danger	Risk phrases		CLP pictogram and signal word	Hazard class and category	Hazard statement
	Cat. 1	R45: May cause cancer	 Danger	Carcinogenicity Category 1A	H350: May cause cancer (route of exposure, if applicable)
	Cat. 2	R49: May cause cancer by inhalation		Carcinogenicity Category 1B	
	Cat. 3	R40: Limited evidence of carcinogenic effect	 Warning	Carcinogenicity Category 2	H351: Suspected of causing cancer (route of exposure, ifapplicable)

5.2.7. Reproductive toxicity

Reproductive toxins are substances and mixtures which may cause adverse effects on fertility or on development. The classification criteria for substances and mixtures are very similar between the DSD/DPD and CLP.

Note that both the DSD/DPD and CLP systems use the term 'Category 2' but to mean different things. You should therefore check carefully which system is being used if you are supplied with substances or mixtures described as Category 2 reproductive toxins.

DSD/DPD symbol, indication of danger	Risk phrases		CLP pictogram and signal word	Hazard class and category	Hazard statement
	Cat. 1	R60: May impair fertility	 Danger	Reproductive toxicity Category 1A	H360: May damage fertility or the unborn child
	Cat. 2	R61: May cause harm to the unborn child		Reproductive toxicity Category 1B	
	Cat. 3	R62: Possible risk of impaired fertility R63: Possible risk of harm to the unborn child	 Warning	Reproductive toxicity Category 2	H361: Suspected of damaging fertility or the unborn child
—	R64: May cause harm to breastfed babies		—	Lactation effects	H362: May cause harm to breastfed children

5.2.8. *Specific target organ toxicity (STOT)*

Specific target organ toxicity is the ability of the substance or mixture to cause harm to particular organs of the body, such as the blood, the liver or the nervous system, at doses below those which would cause more general toxicity. STOT effects may happen after a single exposure, or after several repeated exposures.

Specific target organ toxicity – single exposure (SE): the classification criteria for substances and mixtures are very similar in both the DSD/DPD and CLP.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 (Very) Toxic	R39: Danger of very serious irreversible effects Combined with one or more of: R26, R28 or R23, R24, R25	 Danger	STOT SE Category 1	H370: Causes damage to organs (or affected organs) (route of exposure, if applicable)
 Harmful	R68: Possible risk of irreversible effects Combined with one or more of: R20, R21, R22	 Warning	STOT SE Category 2	H371: May cause damage to organs (or affected organs) (route of exposure, if applicable)
	R37: Irritating to respiratory system R67: Vapours may cause drowsiness and dizziness	 Warning	STOT SE Category 3	H335: May cause respiratory irritation; or H336: May cause drowsiness or dizziness

Specific target organ toxicity – repeated exposure (RE): although similar, the classification criteria for CLP are likely to result in a few more substances and mixtures being classified for this effect.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Toxic	R48: Danger of serious damage to health by prolonged exposure Combined with one or more of: R23, R24, R25	 Danger	STOT RE Category 1	H372: Causes damage to organs (or affected organs) through prolonged or repeated exposure (route of exposure if applicable)
 Harmful	R48: Danger of serious damage to health by prolonged exposure Combined with one or more of: R20, R21, R22	 Warning	STOT RE Category 2	H373: May cause damage to organs (or affected organs) through prolonged or repeated exposure (route of exposure if applicable)
—	R33: Danger of cumulative effects			

5.2.9. *Aspiration toxicity*

Aspiration toxicants are usually hydrocarbons and oils which can cause serious harm, such as chemical pneumonia, if the liquid accidentally enters the lungs. Although similar, the classification criteria for CLP are likely to result in a few more substances and mixtures being classified for this effect.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Harmful	R65: Harmful: may cause lung damage if swallowed	 Danger	Aspiration toxicity Category 1	H304: May be fatal if swallowed and enters airways

5.2.10. Other health hazards

The DSD and DPD include a number of risk phrases for other hazards which are not part of the GHS. These additional hazards and risk phrases have been included in CLP unchanged except for the numbering of the phrases.

One possible change that may be noted by users is that these additional EUH hazard statements will now be placed in a supplementary section of the label rather than in the main body of the hazard and precautionary statements.

R68	EUH029	Contact with water liberates toxic gas
R31	EUH031	Contact with acid liberates toxic gas
R32	EUH032	Contact with acid liberates very toxic gas
R66	EUH066	Repeated exposure may cause skin dryness and cracking
R70	EUH070	Toxic by eye contact
R71	EUH071	Corrosive to the respiratory tract

5.3. Environmental hazards

5.3.1. Aquatic toxicity

This concerns substances and mixtures which may cause short- or long-term effects to aquatic organisms, including fish, other aquatic organisms and plants. The classification criteria for substances and mixtures are very similar in both the DSD/DPD and CLP.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Dangerous for the environment	R50: Very toxic to aquatic organisms	 Warning	Aquatic Acute 1	H400: Very toxic to aquatic life
	R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment		Aquatic Chronic 1	H410: Very toxic to aquatic life with long-lasting effects
	R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment	 —	Aquatic Chronic 2	H411: Toxic to aquatic life with long-lasting effects
—	R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment	—	Aquatic Chronic 3	H412: Harmful to aquatic life with long-lasting effects
—	R52: Harmful to aquatic organisms; or R53: May cause long-term adverse effects in the aquatic environment	—	Aquatic Chronic 4	H413: May cause long lasting harmful effects to aquatic life

Note that Aquatic Acute 2 and 3 are not being used in CLP, even though they are described under GHS. Therefore, it is possible that imported chemicals with GHS labels will include these criteria. Acute 2 and 3 are equivalent to the old DSD R51 and R52 and indicate that even though there is toxicity to aquatic organisms, the substance or components of a mixture will biodegrade rapidly to ensure no long-term effects.

5.3.2. Hazardous to the ozone layer

This concerns substances and mixtures which may cause harm to the environment by damaging the ozone layer.

DSD/DPD symbol, indication of danger	Risk phrases	CLP pictogram and signal word	Hazard class and category	Hazard statement
 Dangerous for the environment	R59: Dangerous for the ozone layer	 Warning	Ozone	H420: Harms public health and the environment by destroying ozone in the upper atmosphere

6. Changes to safety data sheets and other documents

The requirement to provide a safety data sheet is set out in the REACH regulation, which sets out when a safety data sheet must be provided, and a format which must be used. REACH made some changes to the format, and the format has been further modified by Regulation (EU) No 453/2010, which amended REACH. The new format is more closely aligned with the recommended format of the GHS, and will also include additional information being generated through REACH. In addition to the familiar 16 section headings, the information in each section of the SDS will be organised under a series of standardised subheadings, which will make it easier to locate the information you need. The new SDS requirements also demand that all subsections must be filled in – no blank sections are allowed (though in Section 3 only Subsection 3.1 (for substances) or 3.2 (for mixtures) need be shown).

This chapter is not intended to be a comprehensive guide to reading SDSs , but to highlight some of the more important changes to SDSs that are being introduced.

SDS section	Key changes
Section 1 Identification of the substance/mixture and the company/undertaking	Section 1.1 – REACH registration numbers for substances will be included once a substance has been registered. Section 1.2 – Details of relevant identified uses for the substance or mixture, and also any uses advised against, with an explanation of why the substance or mixture should not be used for that purpose. If the substance is registered under REACH, or is a mixture containing one or more substances registered under REACH, these uses should be consistent with any exposure scenarios attached to the SDS.
Section 2 Hazards identification	Section 2.1 – Classification of the substance or mixture under the DSD/DPD and CLP. Section 2.2 – Labelling information: This information has been moved from Section 15 of the SDS to Section 2.2 of the SDS. For substances, and for mixtures which have been labelled according to CLP before 1 June 2015, the classification and labelling of the product should be given for both the DSD/DPD and for CLP. From 1 June 2015, only the CLP classification and labelling need to be shown. Some SDSs for mixtures already in the supply chain before 1 June 2015 may continue to show the DSD/DPD classification and labelling until 1 June 2017. In a few cases, you may see some differences between the classification for a chemical in Section 2.1 and the labelling in Section 2.2. This is because some H statements repeat information, making both unnecessary. For example, if a chemical is classified as both 'Aquatic Acute 1, H400: Very toxic to aquatic life' and 'Aquatic Chronic 1, H410: Very toxic to aquatic life with long-lasting effects', only H410 needs to be included on the label. Section 2.3 – Information about any other types of hazard not covered by the classification and labelling.
Section 3 Composition/information on ingredients	Subsection 3.1 (Substances) – This subsection will not normally contain classification information – see Section 2. Subsection 3.2 (Mixtures) – The CLP classifications for component substances of mixtures will be shown in this section of the SDS once this information has been made available to the supplier, as well as the DSD classifications of the component substances. From June 2015, the DSD classifications of component substances will no longer need to be shown. REACH registration numbers will be shown for component substances once they have been registered and this information communicated to the supplier of the mixture.

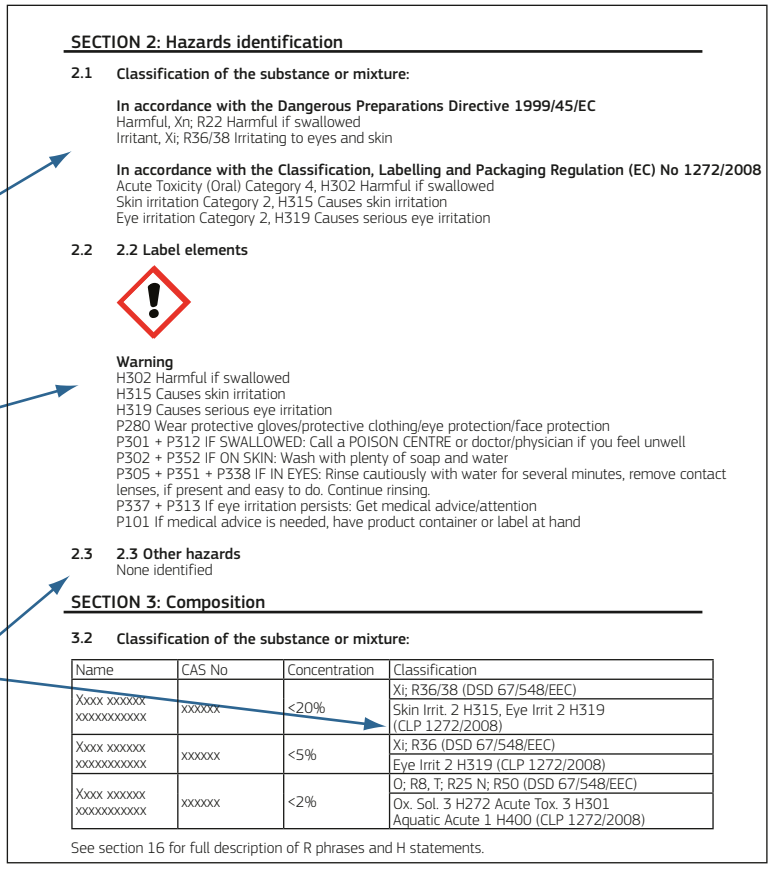
SDS section	Key changes
Section 4 First aid measures	Section 4.2 – As well as first aid measures, this section of the SDS will now include information about the likely symptoms and effects of exposure, both acute and delayed.
Section 5 Firefighting measures	No significant changes likely unless new information about the hazards of the substance or mixture is identified.
Section 6 Accidental release measures	No significant changes likely unless new information about the hazards of the substance or mixture is identified.
Section 7 Handling and storage	No significant changes likely unless new information about the hazards of the substance or mixture is identified. For REACH-registered substances and mixtures containing registered components, the risk management measures described should be consistent with the exposure scenario if provided.
Section 8 Exposure controls/personal protection	Section 8.1 – Derived no effect levels (DNELs), derived minimum effect levels (DMELs) and predicted no effect concentrations (PNECs) provide additional information about safe exposure levels for human health and the environment and will be included for registered substances when required as part of the registration, and for registered component substances of a mixture. When carrying out your workplace risk assessment, you should try to ensure that exposure of workers and the environment is reduced through appropriate risk management measures to levels below the DNEL, DMEL and PNEC. Section 8.2 – For REACH-registered substances and mixtures containing registered components, the risk management measures described should be consistent with the exposure scenario if provided.
Section 9 Physical and chemical properties	Section 9.1 – This section will include a more comprehensive set of physico-chemical properties which should be useful in carrying out risk assessments.
Section 10 Stability and reactivity	No significant changes likely unless new information about the hazards of the substance or mixture is identified.
Section 11 Toxicological information	Section 11.1 – As substances progress through the REACH registration process, more data should become available and this section will include more detailed information about the expected health effects of substances and mixtures, and test data to support these conclusions.
Section 12 Ecological information	Section 12.5 – In future, SDSs should indicate whether an assessment has been carried out to determine if the substance or any component substances of a mixture have been assessed for PBT (persistent, bioaccumulative, toxic) or vPvB (very persistent, very bioaccumulative) properties.
Section 13 Disposal considerations	No significant changes likely unless new information about the hazards of the substance or mixture is identified.
Section 14 Transport information	No significant changes likely unless new information about the hazards of the substance or mixture is identified.
Section 15 Regulatory information	Section 15.1 – This section will no longer contain information about the labelling of the substance or mixture. It will include details of any specific national regulatory requirements, if applicable. It will also include details of any authorisation or restriction under REACH for the substance or component substance of a mixture.
Section 16 Other information	No significant changes likely unless new information about the hazards of the substance or mixture is identified.

SDS section	Key changes
Annex	Exposure scenarios are required to be included in an Annex to the SDS for registered hazardous substances which are manufactured or imported by the registrant in quantities of 10 tonnes per year or more. Exposure scenarios set out the conditions which the supplier has assessed for whether the substance can be safely used. The exposure scenario will give advice on the quantities of substance used, the frequency and duration of exposure, the expected operational controls and risk management measures used when handling the substance or mixtures containing it. Where a substance has multiple uses under different conditions, separate exposure scenarios may be produced for each use or group of uses, and you should make sure that you identify the most appropriate exposure scenario for your use of the substance or mixture. If you need help to understand information in the exposure scenario, or to determine which exposure scenario is relevant to your use, you should contact your supplier.

Classification according to both the DSD/DPD and CLP for substances and for mixtures already labelled according to CLP until 1 June 2015

Label information including any pictograms

Classification of component substances according to both the DSD and CLP for mixtures until 1 June 2015



SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

In accordance with the Dangerous Preparations Directive 1999/45/EC
Harmful, Xn; R22 Harmful if swallowed
Irritant, Xi; R36/38 Irritating to eyes and skin

In accordance with the Classification, Labelling and Packaging Regulation (EC) No 1272/2008
Acute Toxicity (Oral) Category 4, H302 Harmful if swallowed
Skin irritation Category 2, H315 Causes skin irritation
Eye irritation Category 2, H319 Causes serious eye irritation

2.2 2.2 Label elements

Warning
H302 Harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
P280 Wear protective gloves/protective clothing/eye protection/face protection
P301 + P312 IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell
P302 + P352 IF ON SKIN: Wash with plenty of soap and water
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention
P101 If medical advice is needed, have product container or label at hand

2.3 2.3 Other hazards
None identified

SECTION 3: Composition

3.2 Classification of the substance or mixture:

Name	CAS No	Concentration	Classification
Xxxx xxxxxx xxxxxxxxxx	xxxxxx	<20%	Xi; R36/38 (DSD 67/548/EEC) Skin Irrit. 2 H315, Eye Irrit 2 H319 (CLP 1272/2008)
Xxxx xxxxxx xxxxxxxxxx	xxxxxx	<5%	Xi; R36 (DSD 67/548/EEC) Eye Irrit 2 H319 (CLP 1272/2008)
Xxxx xxxxxx xxxxxxxxxx	xxxxxx	<2%	O; R8, T; R25 N; R50 (DSD 67/548/EEC) Ox. Sol. 3 H272 Acute Tox. 3 H301 Aquatic Acute 1 H400 (CLP 1272/2008)

See section 16 for full description of R phrases and H statements.

7. Appendices

7.1. Appendix 1 – Sources of further information

Information on the five worker protection directives discussed in this document: the chemical agents directive (98/24/EC); the carcinogens and mutagens directive (2004/37/EC); the safety signs directive (92/58/EEC); the pregnant workers directive (92/85/EEC); and the young people at work directive (94/33/EC) and links to the directives themselves can be found at http://ec.europa.eu/social/main.jsp?catId=716&langId=en and http://europa.eu/legislation_summaries/employment_and_social_policy/health_hygiene_safety_at_work/index_en.htm.

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
Links to the REACH regulation, subsequent amending legislation and corrigenda can be found on the ECHA website at http://echa.europa.eu/legislation/reach_legislation_en.asp

Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP regulation)
Links to the CLP regulation in 22 languages, subsequent amending legislation and corrigenda can be found on the ECHA website at http://echa.europa.eu/legislation/classification_legislation_en.asp

National helpdesks
Information on the REACH and CLP helpdesks in 27 member States can be found at http://echa.europa.eu/help/nationalhelp_contact_en.asp

The Globally Harmonised System of Classification and Labelling of Chemicals is available on the UNECE website at http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

Recommendations on the transport of dangerous goods; ***Manual of tests and criteria***; United Nations; 2010 (download free of charge from http://www.unece.org/trans/danger/danger.htm)

CLP guidance (available from the ECHA website)
http://www.echa.europa.eu/web/guest/support/guidance-on-reach-and-clp-implementation;jsessionid=C9C521C89A1391ADF473376F868195A7.live1

- Introductory guidance on the CLP regulation
- Guidance on the application of the CLP criteria
- Q & A document (background information, general features, procedures)
- FAQ (helpdesks, practical and technical advice)

Other useful REACH guidance (available from the ECHA website
http://www.echa.europa.eu/web/guest/support/guidance-on-reach-and-clp-implementation;jsessionid=C9C521C89A1391ADF473376F868195A7.live1)

- Guidance document on information requirements and chemical safety assessment; in particular
  - Section R.3.4 for information sources on hazardous chemicals
  - Section R4 for data evaluation
  - Section R7 for endpoint specific guidance
- Guidance for downstream users

Other useful documents
Criteria on human health and the environment: Comparison between the current EU and the GHS criteria (Dec. 2007)
http://ec.europa.eu/enterprise/sectors/chemicals/files/ghs/ghs_comparison_classifications_dec07_en.pdf

MS Excel file of signal words, hazard statements and precaution statements in 23 languages
http://ec.europa.eu/enterprise/sectors/chemicals/files/ghs/signalwords_hs_ps_en.xls

Guidance for employers on controlling risks from chemicals – Interface between CAD and REACH at the workplace
http://ec.europa.eu/social/BlobServlet?docId=6126&langId=en)

Guidance produced by the European Agency for Safety and Health at Work (EU-OSHA) (in 19 languages)
Facts 40 Skin sensitisers
(http://osha.europa.eu/en/publications/factsheets/40/view)

Facts 39 Respiratory sensitisers
(http://osha.europa.eu/en/publications/factsheets/39/view)

Facts 35 Communicating information about dangerous substances
(http://osha.europa.eu/en/publications/factsheets/35/view)

Facts 34 Elimination and substitution of dangerous substances
(http://osha.europa.eu/en/publications/factsheets/34/view)

Facts 33 An introduction to dangerous substances in the workplace
(http://osha.europa.eu/en/publications/factsheets/33/view)

Guidance produced by Member State competent authorities and other national organisations

	Link
Austria	WKO – Das GHS-System in der Praxis – Ein Leitfaden zur Einstufung und Kennzeichnung in der EU http://portal.wko.at/wk/dok_detail_file.wk?angid=1&docid=1272806&conid=450339
Belgium	Chemicals: read the label, it protects you
	CLP helpdesk – Frequently asked questions
Cyprus	CLP poster
France	INERIS: Labelling and classification of chemical change: an overview in 15 minutes http://clp-info.ineris.fr/files/CLP_vue-d-ensemble_banni%C3%A8re_icone.pdf
	INERIS: CLP – Calendar on the transitional period http://clp-info.ineris.fr/files/P%C3%A9riode%20de%20transition%20-%20CLP.pdf
	INERIS: CLP – Frequently asked questions
Germany	BAUA (2011): REACH – Info 8: Next steps under the EU REACH regulation
	BAUA (2011): Frequently asked questions on CLP
	http://www.umweltdaten.de/publikationen/fpdf-l/3973.pdf
	Umweltbundesamt (2010): Operational implementation of the CLP regulation – The 'five steps' approach
Greece	CLP – Brochure
	CLP – Fact wallet
	CLP – In brief
	Determination of penalties for the performance of CLP
Iceland	UMHVERFISSTOFNUN: CLP and REACH
	UMHVERFISSTOFNUN: Further clarification of the provisions of CLP regulation
	UMHVERFISSTOFNUN: Classification of reference materials in the preparation of reports in the classification and labelling files
	UMHVERFISSTOFNUN (2010): Regulation on classification, labelling and packaging
Ireland	HSA (2010a): Reclassification and Notification of Chemicals (Webinar)
	HSA (2010b): CLP Poster 1, Classification and labelling elements
	HSA (2010c): CLP Poster 2, Hazard and precautionary statements
	HSA (2010d): 2010 Seminar slides
	HSA (undated a): classification, labelling and packaging (clp) of substances and mixtures under EU CLP regulation
	HSA (2011): Chemical distributor duties REACH and CLP
Italy	http://www.lavoro.gov.it/Lavoro/SicurezzaLavoro/PrimoPiano/20110701_Lettera_Circolare.htm http://www.salute.gov.it/sicurezzaChimica/sicurezzaChimica.html
Malta	Malta Standards Authority (undated): Notification under the CLP regulation
	MCCAA (undated b): The CLP regulations – Classification, labelling and packaging of chemicals
Netherlands	National government (2009): Reporting implications for EU-GHS licensing authorities
	Senter Novem (2009): Note EU–GHS implications for licensing authorities
	SIRA Consulting (2008): Dutch research into the consequences of the CLP Regulation for the Dutch business
	National government (undated): EU–GHS – Education
	National government (undated): EU–GHS FAQs
Sweden	KEMI: Klassificering, märkning och förpackning
	NKG (2010): CLP workshop
	KEMI (2009): Poster of present and new symbols
United Kingdom	RoSPA(2009): Young workers
	Business Link (undated): Employing older workers
	Directgov (undated): Employers' health and safety responsibilities
	HSE (undated): A guide for new and expectant mothers who work
	SOHAS (2007): Health and safety at work for pregnant women and new mothers – Information for employers

7.2. Appendix 2 – Glossary

ATE	Acute toxicity estimate
Authorisation	A system by which the use of substances with properties of very high concern and their placing on the market can be made subject to an authorisation requirement. Such substances are included in Annex XIV to the REACH regulation, and may not be placed on the market or used without an authorisation.
CA	Competent Authority
CAD	Chemical agents directive (1998/24/EC)
CLP	Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures
CMR	Umbrella term for carcinogens, mutagens and reproductive toxicants
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DPD	Dangerous preparations directive (1999/45/EC)
DSD	Dangerous substances directive (67/548/EEC)
EC50	Effective concentration that causes the effect (e.g. immobilisation in Daphnia) in 50% of the population
EUH statement	EU special statement in CLP additional to GHS H statements
Ext-SDS	Extended safety data sheet under REACH, with exposure scenarios
GHS	Globally Harmonised System of Classification and Labelling of Chemicals (also known as the 'purple book')
H statement	Hazard statement – CLP equivalent of risk phrase as label element
LC50	Lethal concentration that causes death in 50% of the tested animals in an inhalation study
LD50	Lethal dose that causes death in 50% of the tested animals in an oral or dermal study
MS	EU Member State (e.g. France, United Kingdom)
NOAEL	No observed adverse effect level – dose, usually in mammalian repeated-dose study, at which no adverse effects are seen. Adverse effect indicates serious damage (clear functional disturbance or morphological change that has toxicological significance), so is higher than the no observed effect level (NOEL).
NOEC	No observed effect concentration – concentration usually in ecotox study where no adverse effects are seen
OEL	Occupational exposure limit
P statement	Precautionary statement – CLP equivalent of safety phrase
PBT	Persistent, bioaccumulative, toxic
PNEC	Predicted no effect concentration (for ecotoxicological effects)
REACH	Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
Restriction	Any condition for or prohibition of the manufacture, use or placing on the market of a substance. The substances restricted under REACH and the conditions of their restrictions are included in Annex XVII to the regulation.
RMM	Risk management measure
SDS	Safety data sheet
Signal word	CLP equivalent of indication of danger
STOT	Specific target organ toxicity
UNTDG	UN transport of dangerous goods recommendations (commonly known as the 'orange book')
VOC	Volatile organic compound
vPvB	Very persistent, very bioaccumulative
YWD	Young people at work directive (94/33/EC)

European Commission

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Over the next few years, new legislation known as the CLP regulation is changing how chemical products are classified to identify hazards, and how this information is communicated on labels and safety data sheets (SDSs).

This document is intended to provide practical guidance to employers and workers on how the directly acting CLP regulation (Regulation (EC) No 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures) will affect the following worker protection directives:

- chemical agents directive (98/24/EC);
- carcinogens and mutagens directive (2004/37/EC);
- safety signs directive (92/58/EEC);
- pregnant workers directive (92/85/EEC);
- young people at work directive (94/33/EC).

These directives have been implemented in the national legislation of each Member State. Information on this legislation and general guidance on how to comply will normally be available from the authorities responsible for occupational health and safety in each Member State.

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