

Topic 9: Signs and labels

This *Topic* (dated July 2013) is an updated version of *Topic 9*, which appeared in the 3rd edition of *Topics in Safety* (ASE, 2001). The main changes are in section 9.4, about labelling bottles and other containers of chemicals.

9.1 Safety signs on walls, cupboards, etc

A range of safety signs may be used in and around buildings to give safety information. *The Safety Signs Regulations*¹ implement a European Council Directive aimed at standardising safety signs in workplaces across Europe. Signs fall into five categories.

Prohibition signs are circular with a black pictogram on a white background, red edging and a red diagonal line.



DO NOT DRINK THE WATER



NO NAKED FLAMES

Warning signs are triangular, with a black pictogram on a yellow background and black edging.



RISK OF ELECTRIC SHOCK



BIOHAZARD

Mandatory signs are circular, with white pictogram on a blue background.



EYE PROTECTION MUST BE WORN



GLOVES MUST BE WORN

¹ *The Health and Safety (Safety Signs and Signals) Regulations 1996* or, in Northern Ireland, *The Health and Safety (Safety Signs and Signals) Regulations (NI) 1996*.

Emergency escape or first aid signs (sometimes called **safe condition signs**) are rectangular or square, with white pictogram on a green background.



FIRST AID POINT



EYE WASH STATION



FIRE EXIT

Fire-fighting signs are rectangular or square, with a white pictogram on a red background.



FIRE EXTINGUISHER



FIRE HOSE

More extensive examples can be found in several publications². The symbol alone may be sufficient, but it is permitted to add text, which should be on a 'sign board' of the same background colour as the symbol, with text in the colour of the relevant pictogram. For example, a chemical store may contain substances with a range of hazards. Rather than confuse the situation with a proliferation of signs, it would be more appropriate to use the general danger sign, as below, with a sign board as shown. However, unless the fire risk assessor requires it, there is no general requirement to label chemical stores at all.



Despite a widely-held belief to the contrary, it is not compulsory to display safety signs in most situations, although if safety signs are used, they must conform to the standard specification. However, they are only required where the risk cannot be controlled by other methods. Putting signs, for example, on the doors of chemical stores may simply increase the risk of vandalism,

² The HSE guidance document *Safety Signs and Signals* (2nd edition, 2009) is freely available as a download from the HSE web site www.hse.gov.uk and has many examples. Examples are also available in many publications intended for those working in school science, for example, *Safeguards in the School Laboratory*, 11th edition, ASE, 2006; *Student Safety Sheets*, CLEAPSS (latest edition) and *E232 Common Safety Signs*, CLEAPSS, available to members on the CLEAPSS web site, www.cleapss.org.uk. Most of the signs used in this *Topic* have been taken, with permission, from this CLEAPSS document.

although it is usual to put the HIGHLY FLAMMABLE sign on the doors of the highly flammable cabinets inside the store room or preparation room. The main risk from chemical stores would be to fire-fighters and the local Fire & Rescue Service may be prepared to agree that if the information about the location of chemical stores is made available by other means (eg, by the caretaker or site manager in an emergency) then no sign is needed. The HSE guidance document *Work with ionising radiation. Ionising Radiations Regulations 1999 Approved Code of Practice and guidance* recommends (paragraph 507) the radioactive trefoil be on the door of the cupboard in which sources are kept and the school's fire risk assessment will usually require the Fire and Rescue Service to be informed.



HIGHLY FLAMMABLE



RADIOACTIVE

Similarly, there is no need to put up a sign saying EYE PROTECTION MUST BE WORN in every laboratory. If there were such a sign, it would mean that every person entering the laboratory – pupils, science staff, cleaners, the headteacher with a group of visitors – would have to put on eye protection, whether or not practical work was under way. The risks from practical activities with chemicals, etc are better controlled by verbal instructions from the teacher, notes on worksheets, etc. However, there may be advantages for teaching purposes in having a **removable** EYE PROTECTION MUST BE WORN sign (eg, a laminated poster, stuck to the wall with Blu-tack), as long as it really is removed when there is no risk.

The Regulations define certain standard signs, although minor variations in the pictogram are permitted. Where no suitable standard sign exists, the user can define one, provided that it is simple and conforms to the general principles. The two following signs are examples.



DO NOT EAT OR DRINK



GAS CUT-OFF

9.2 Fire extinguishers

To comply with the British European Standard³, the body of all fire extinguishers must be 'Signal Red'. In the UK, unlike some countries, it is not a legal requirement to adopt the relevant standard, even for new equipment. However, adopting the standard in the UK might be regarded as good evidence in a court of law that the duty of care had been complied with. Despite this, some suppliers in the UK sell silver-coloured stainless steel or polished alloy extinguishers. The alleged justification is for aesthetic reasons and some, but not all, suppliers admit that they do not comply with the British European Standard.

3 BS EN 3-7:2004 + A1:2007, para 16.1

In addition to the body colour there may be a zone of colour, up to 10% of the surface area, to identify the extinguishing agent. The colours to be used in the UK are specified in a British Standard⁴ as follows.

Extinguishing medium	Colour
Water	red
Foam	pale cream
Powder	blue
Carbon dioxide	black
Wet chemical	canary yellow
Clean agent (including halons)	green

The use of halon extinguishers is generally illegal but still allowed in some specialist applications (eg, military, emergency services).

Under the British European Standard, every fire extinguisher must carry a pictogram showing its suitability for different types of fire. Those which might be met in schools are shown below.



Class A
Combustible organic
solids, eg wood, paper.



Class B
Flammable liquids



Class F
Cooking oils and fats

9.3 Labels on bottles and other containers

The labelling on bottles is governed by different regulations⁵ from those dealing with signs around a building, although some of the same pictograms are used⁶. The system is in the process of change. Most chemical suppliers have already phased out the old symbols (square with a black pictogram on an orange background) but doubtless bottles with these labels on them will be found in chemical stores for many years to come.

The new globally-harmonised system (GHS), implemented in the European Union under the *Classification, Labelling & Packaging of Substances & Mixtures Regulations* (CLP) has a diamond (officially, an end-on square) with a black pictogram on a white background and red edging. The complete set is shown below.

⁴ BS 7863:2006, para 4

⁵ European Regulation (EC) No 1272/2008 *The Classification, Labelling and Packaging of Substances and Mixtures Regulations* (CLP Regulations). These replace the previous *Chemicals (Hazard Information and Packaging for Supply) Regulations* (CHIP Regulations) which will finally be withdrawn in 2015.

⁶ See, for example, *Safeguards in the School Laboratory*, 11th edition, ASE, 2006; *Student Safety Sheets*, CLEAPSS.



GHS 01



GHS 02



GHS 03



GHS 04



GHS 05



GHS 06



GHS 07



GHS 08



GHS 09

Note that these symbols do not have a name other than GHS 01 up to GHS 09. Most of the pictograms have similar meanings to those in the old system. GHS 07 (the exclamation mark) might be described as 'moderate hazard' (and to some extent replaces the previous HARMFUL and IRRITANT symbols). GHS 08 (the exploding chest) implies health hazards such as sensitizers and carcinogens. However, some chemicals have been re-classified and you may find, for example, that some substances not previously labelled as TOXIC do now carry the GHS 06 (skull and cross bones) symbol. Unless there is new evidence, for the vast majority of substances, the hazards are the same as they always were – these are labelling changes.

In addition to the manufacturer's contact details, quantity, etc a CLP label comprises:

- one or more symbols, GHS 01 to 09 as shown above;
- a signal word (DANGER, WARNING or no word at all), alerting users to the severity of the most significant hazard of the substance;
- hazard statements (eg, *H302 - Harmful if swallowed; H314 – Causes severe skin burns and eye damage*);
- precautionary statements (eg, *P262 - Do not get in eyes, on skin, or on clothing; P263 - Avoid contact during pregnancy/while nursing*). [No more than six statements need to be shown unless they are required to reflect the severity of the hazards.];
- other information that the supplier considers useful, eg to comply with other EU legislation.

The regulations only apply to suppliers. There is no requirement for schools, as users, to put any labels on their chemicals. However, it is good practice to do so and goes some way to meeting the requirements of the *COSHH Regulations* by informing users (ie, teachers, technicians and pupils) of the main hazards of a particular chemical. It also contributes to the health and safety education of pupils, as required by most National Curricula and examination specifications. Suppliers of chemicals are obliged to show all the items listed above on the label. However, schools could be more selective, perhaps including:

- the name of the chemical;
- the concentration (for solutions);
- the relevant CLP symbols, GHS 01 to 09, as shown above;
- the relevant signal word (DANGER, WARNING or no word at all);
- (possibly) major control measures (eg, WEAR EYE PROTECTION, USE A FUME CUPBOARD) relevant in the school's context.

Where labels are used, they should be accurate. It would be educationally unsound and would promote an unreasonable fear of chemicals if their hazards were exaggerated. For example, solutions of acids should not be labelled with the GHS 05 symbol unless, at that concentration, the solutions really are corrosive. Members can obtain information from CLEAPSS⁷ or SSERC about the correct classification of solutions.

It is important not to over-label bottles but a few special cases may be justified. A chemical which is not classified as hazardous should not be labelled as if it is, but if a risk assessment of its likely use in schools identifies a significant risk, a warning to that effect could be placed on the label. For example, a school might consider it a good idea to mention the WEAR EYE PROTECTION control measure on bottles of lime water or 1M hydrochloric acid.

Pictograms are available from several commercial suppliers on rolls or sheets of sticky tape. They can also be reproduced by printing, preferably in colour, from some software packages⁸ including those from CLEAPSS (GL110 or GL111 for CLP pictograms, and D236 for the old CHIP ones).

For more information about the *CLP Regulations* and the *REACH (Registration, Evaluation, Authorisation & restriction of **C**hemicals) Regulations* members should refer to CLEAPSS or to SSERC.

7 See the CLEAPSS guidance leaflet GL111 *CLP hazard classifications for diluted common chemicals*, available to members on the web site, www.cleapss.org.uk. For SSERC members, information on labels for dilutions is included in the entries for chemicals in the *Hazardous Chemicals* database.

8 See the CLEAPSS guidance leaflet GL111 *CLP hazard classifications for diluted common chemicals*, available to members on the web site, www.cleapss.org.uk or the CD-ROM version of the *Hazardous Chemicals* Manual (SSERC, 1997).

9.4 Signs and labels as control measures

When a risk assessment is carried out, one of the control measures to reduce the risk from a particular hazard might be the use of a sign or label. This is particularly true of risks in and around the prep room. Examples of signs and labels which might be useful include the following. Each should be combined with the general danger sign and printed on a yellow background.



THIS BOX HAS A MASS OF 20KG. ONLY TO BE LIFTED BY 2 PEOPLE.

THIS APPARATUS ONLY TO BE USED BY THOSE WHO HAVE BEEN TRAINED.

DO NOT ISSUE THIS CHEMICAL WITHOUT CHECKING WITH HoD.

CHECK THAT THE STEAM VALVE IS OPERATING BEFORE USE.

CHECK THAT AIR IS FLOWING INWARDS BEFORE USING THIS FUME CUPBOARD.

DO NOT STORE CHEMICALS IN THIS FUME CUPBOARD.

DO NOT PUT SOLID WASTE DOWN THIS SINK.

STUDENTS ARE NOT ALLOWED TO ENTER.

STAFF: LOCK THIS DOOR WHEN THE ROOM IS NOT IN USE.

NO FOOD / NO FLAMMABLE LIQUIDS IN THIS REFRIGERATOR.

WARNING: THIS EQUIPMENT IS HOT.

CHARCOAL BLOCKS COOLING – DO NOT OPEN LID.

However, be warned against a proliferation of signs – they will be ignored.

If an experiment has to be left running outside lesson times, or a piece of equipment (other than that obviously designed for continuous operation, such as a refrigerator) left switched on, there should be a suitable label. An example is given as *Appendix 1* to this *Topic* – it may be freely copied.

Appendix 1: Copiable notice

Unattended Running of Apparatus Outside Normal Working Hours

..... School / College Room

Apparatus / Investigation

Date / Time started To run until

PLEASE LEAVE ON

Services switched on (tick as appropriate):

Electricity Computer

Water Gas

Other (specify)

In an emergency

Emergency contact(s):

Name	Position	Phone	Address
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1

2

Signature of person in charge Date

Place this sheet adjacent to / fastened to the apparatus / investigation.

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