Maastricht University

Work instruction

Labelling of working solutions containing hazardous substances

Labelling method

- In the case of working solutions that are made for one day's use, it is sufficient to provide a label with the name and concentration of the relevant hazardous substance(s), the name of the owner and date of preparation. Masking tape may also be used for this purpose.
- With regard to working solutions that must be stored for longer periods, a workplace label must be applied in accordance with the instructions below.
- Solutions to be sterilised using an autoclave must be provided with an autoclave label, which must at least include the name of the solution, the date and the name of the owner. After sterilisation, the solution must be provided with a correct workplace label.
- With regard to solutions that must be placed in a water bath, the workplace label must be applied to the container at a sufficiently high position, or the label provided must be laminated.
- Compound solutions must be classified as hazardous if the concentration of a substance contained within them is higher than the threshold (Table 1). Concentration is expressed as a percentage by volume in the case of liquids and as a percentage by weight in the case of solid substances that have been dissolved in solutions.
- In the case of compound solutions, no more than two symbols with the highest hazard priority may be stated on the workplace label.

  Group A in Table 1 is the most important in this regard, while group G

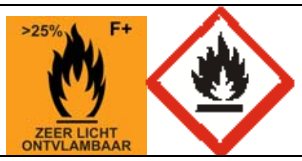
is the least important. This means that the environment symbol (G) can only be applied as the second symbol if only one substance with the symbol of a more serious hazard has a concentration above the threshold.

- Please note, however: the aforementioned information is based on risk of hazards in the workplace, and does NOT mean that substances that are harmful to the environment require less additional attention when disposed of!
- If the symbol E is shown for a substance in a balanced acid/base solution (buffer solution), this is only stated on the workplace label if the pH of the solution is lower than 2 or higher than12.

- <u>Characteristics of workplace label</u>
  - The workplace label may be written in either Dutch or English (or both).
  - Hazard symbols must be printed in black over an orange-yellow background, and must be at least 10% of the size of the workplace label (with a minimum size of 1cm^2).
  - The colour and appearance of the workplace label or stamp must make the symbol and background stand out.
  - The workplace label must be inerasable, clearly visible and clearly legible.
  - The label must also be applied so that it adheres sufficiently to the packaging.

- <u>Information on workplace labels (see example of label below)</u>
  - Name of reagent and concentration
  - Chemical name and concentration of hazardous substance(s), or relevant hazardous components in the case of a mixture if the concentration is above the threshold (Table 1)
  - Name of hazard associated with substance and corresponding hazard symbol (maximum of two)
  - Corresponding warning phrases in full (R-phrases)
  - Name of owner
  - Date on which solution was prepared

Table 1. Categories of hazardous substances, thresholds and corresponding symbols

Group	Threshold	Hazard category	Symbol Chemical Substances Act (obsolete) GHS
A	25%	Explosive (R1-2-3-4-5-6-9) Substances that may explode due to jolting, friction, fire or other causes of ignition	
B	25%	Oxidising (R8) Substances than may cause fire or explosion when in contact with combustible material.	
C	25%	Extremely flammable (R12) Liquids with a flashpoint of <0°C and a boiling point of 35°C	
	25%	Highly flammable (R11) Liquids with a flashpoint of <21°C and >0°C or a flashpoint of <0°C and a boiling point of >35°C. Solid substances that may self-combust or are flammable once in contact for a short time with a source of ignition. Gases that are flammable in air. Substances that form flammable gases when in contact with water.	
D	0.1 %	Very toxic (R26-27-28) LD50 rat 25 mg/kg (oral) LD50 rat 50 mg/kg (via skin) LC50 rat 0.25 mg/litre in 4 hours (via inhalation)	
	0.1 %	Carcinogenic (R45) Substances that are known to cause cancer in humans or that are regarded as carcinogenic in humans	
	0.1 %	Mutagenic (R46) Substances that are known to have mutagenic effects in humans or that are regarded as mutagenic in humans	
	0.5%	Reprotoxic (R60-61) Substances that are known to have reprotoxic effects in humans or substances that are regarded as teratogenic in humans	
	3%	Toxic (R23-24-25) LD50 rat 25–200 mg/kg (oral) LD50 rat 50–400 mg/kg (via skin) LC50 rat 0.25–1 mg/litre in hours (via inhalation)	

Group	Threshold	Hazard category	Symbol Chemical Substances Act (obsolete) GHS
E	1%	Corrosive (R34-35) Substances that can harm the undamaged skin of a laboratory animal across the entire thickness	
F	1%	Potentially carcinogenic (R40) Substances that form a cause for concern in humans due to their **potentially** carcinogenic properties, and the effects of which cannot be fully determined due to lack of information	
	1%	Potentially mutagenic (R63) Substances that form a cause for concern in humans due to their **potentially** mutagenic properties	
	1%	Sensitising (R42-43)	
	5%	Potentially reprotoxic (R62) Substances that form a cause for concern in humans due to their **potentially** teratogenic properties	
	5%	Irritant (R36-37-38) Substances that may cause inflammation of the skin or cause damage to eyes	
	25%	Harmful (R20-21-22) LD50 rat 200–2000 mg/kg (oral); LD50 rat 400–2000 mg/kg (via skin); LC50 rat 1–5 mg/litre in 4 hours (via inhalation)	
G	Harmful to the environment (R50-51-52-53-54-55-56) Substances that (may) give rise to a hazard to one or more aspects of the environment, immediately or over the course of time.		

Example of workplace label

Name of reagent ----------

Contains:

Made by:
Date of preparation:

R-phrases

Examples of suitable labels

Large labels for use with e.g. reagent bottles (105 x 48 mm)
Aquasol:
Company: Etiket BV
Julianaweg 20b
2752 BC Moerkapelle
079 59 32520
www.etiketbv.nl
A4 laser label no. 5070037

Small labels for use in the freezer (56 x 14 mm)
Permanent:
Blank for matrix printer
Company: Labelmed (www.labelmed.nl)
Art. no. FASSON S451

The types of labels listed here are easy to remove when no longer needed. Other labels that may be available have not been tested for ease of removal.

Additional information

For further information, please contact the Department Environment on 043 38 82627 or 043 38 82628, or email maya.debruijn@maastrichtuniversity.nl or marc.fischer@maastrichtuniversity.nl. Alternatively, you may also contact the Functional Manager of GROS via +31 43 388 81125 or p.willemsen@FACBURFDG.unimaas.nl