



SAFETY TRAINING LEAFLET 21 CHEMICALS

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Prepared by Safety Advisory Council

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Note: this Safety Training Leaflet is taken from Leaflet 20: CHEMICALS in Doc 23/08 Safety Training of Employees. The leaflet has been put into a new format and revised.

1 Introduction

1.1 Safety leaflets

Safety training leaflets summarise the basic operational safety knowledge which needs to be known by employees working in the gas industry.

Refer to EIGA Doc 23 *Safety Training of Employees* for the various combinations of leaflets which define the scope of safety training for a variety of specific jobs.

Each leaflet addresses a specific topic as identified in the title.

1.2 Comprehension tests

There is a comprehension test for each leaflet, included in **Appendix 1**.

Each test comprises several questions. To pass the test it is suggested that the employee should score 75% at the first attempt. Incorrect answers should be discussed to confirm understanding.

Appendix 2 includes the list of correct answers.

2 Chemicals

2.1 Use of chemicals

In air separation, liquid carbon dioxide, dissolved acetylene and cylinder filling plants, various chemicals are used for such operations as purifying, cooling, drying, water treatment, cleaning, etc. These can be handled safely provided that their properties are understood, and adequate precautions taken. Safety Data Sheets and/or specific work instructions must be posted where chemicals are used and stored.

- Before use, carefully examine all labels on the container. Read the Safety Data Sheet and comply with its requirements, especially wear adequate protective equipment.
- Do not put a chemical into an unmarked or unsuitable container. Always use the approved tightly closed container and make sure that it is clearly labelled with the name and properties (i.e. "flammable", "highly corrosive", "poisonous") of the chemical.
- Withdraw only the amount of chemical needed for the job in progress. Guard it from contamination and return any unused chemical to storage.
- Do not dump waste or surplus chemicals into the sewer, the drain or into normal waste container. Segregate hazardous waste and dispose of it in an authorised manner (report to your supervisor).
- Any spillage of chemical should be reported to your supervisor immediately. He will advise the best method of clearing it up safely. Do not allow chemicals to creep into the sewer grid.

2.2 Flammable chemicals

Some chemicals are flammable - i.e. they burn in the presence of air. Some flammable liquids (solvents) are very volatile, they freely produce a vapour which when mixed with air can explode violently.

2.3 Corrosive and poisonous chemicals

Chemicals such as acids and alkalis rapidly attack the skin and sensitive membranes, causing serious damage.

Many chemicals are poisonous. It is not always necessary to swallow a chemical to be poisoned by it. Breathing its vapour may be dangerous; while some can be absorbed into the bloodstream through the skin.

- Always wear the correct protective equipment when working with or near a chemical.
- Learn the correct first aid treatment to be adopted in the event of being splashed with, breathing or swallowing the chemical.
- If a chemical comes into contact with skin or eyes, immediately flush the contaminated part with water for several minutes to dilute and wash away the chemical. (Note: recommendation is for at least 15 minutes; cold water can give the feeling that the chemical has been removed but this is not always the case after only a few minutes, and then the chemical can react again) Remove clothing from affected areas. Then apply the appropriate first aid treatment and if necessary get medical help. Report incident to your management.
- Know where the nearest eye wash and safety showers are located.
- Always get medical help if chemical has entered the eyes or been swallowed.
- If your clothing becomes contaminated with a chemical, then change it (already mentioned under 2.3) and have the contaminated articles washed.
- After handling chemicals, carefully wash your hands before eating and do not consume food or drink in a potentially contaminated area.

2.4 Chemical solvents

Solvents are a special case. All the precautions in this leaflet should be applied, and there is further information in Safety Training Leaflet Number 22 *Solvents*.

2.5 Storage of chemicals

Chemicals are stored in dedicated areas which are designed to prevent negative impact on environment in case of spillage. Such areas are usually fitted with retention basins (bunds). Draining of retention basins is governed by stringent procedures.

2.6 Disposal of chemicals

Disposal of hazardous waste must comply with regulations and must involve officially qualified subcontractors.

Appendix 1 – Chemicals – Test Questions

Tick the correct answer (s) or write in the blank spaces as requested.

1. Tick two actions to be taken before using any chemical product:
A. Use standard overalls
B. Wear the specified PPE
C. Read the label
D. Shake the container violently
2. Tick at least two things that must be done when transferring a chemical product:
A. Make sure that the new receptacle is suitable
B. Ground the receptacles if the product is flammable
C. Throw leftovers down the drain
D. Follow work procedures
3. After using chemical products, you must _____ your hands thoroughly before eating
4. The document containing all the information on a chemical product's characteristics, risks and preventative measures is called
S _____ D _____ S _____
5. What is the first step to be taken in the event of splashing or being injured by an acidic or alkaline (basic) product?
A. Remove affected clothing
B. See a doctor
C. Remove clothing under the emergency shower while this is running
D. Dilute the product
E. Treat burns
6. After use, chemicals may become a hazardous waste and their handling needs the same safety procedures as before:
A. True
B. False
7. What is the main hazardous characteristic of acetone?
A. Toxic
B. Flammable
C. Colourless
D. Corrosive
E. Inert
F. Poisonous
8. Chemicals are stored in dedicated areas which are designed to prevent negative impact on environment in case of spillage. Such areas are usually fitted with retention basins (bunds):
A. True
B. False

Appendix 2 - Chemicals – Test Answers

1. B and C
2. A, B and D
3. **"Wash"**
4. **"Safety Data Sheet"**
5. C
6. A
7. B
8. A