

**Safety rules**  
**Department of**  
**Physics, Chemistry and Pharmacy**  
**Alarm**

**Limit the accident**

- Contain the damage.

**Call 1-1-2. Tell them:**

- Your name
- What has happened
- Where you are calling from

**Evacuate the area if necessary**

- Activate the alarms
- Alert those in your vicinity as quickly as possible.
- Use the nearest safe exit.

**Call 6550 8888 and inform SDU.**

Taxi: 6615 4415

Emergency Room: 7011 0707

Information on hazardous materials:  
 (Giftlinien) 8212 1212

**The National Response Center: Emergency Management Agency, Chemical Laboratory:**  
 (Kemikalieberedskabsvagtten: Beredskabsstyrelsen, Kemisk laboratorium):  
 Phone. 4582 5400, <http://www.kemikalieberedskab.dk/>

**Carbon dioxide extinguishers, fire blankets, fire hose, emergency showers and eye wash bottles** are placed in the laboratory or in the corridor nearby.

**Breathing apparatuses (full face masks)** are placed in the red cupboards marked "Brandmandsudstyr" which you will find in: at the end of the corridor by Ø9-409b-2 "Mellengangen" 1<sup>st</sup> floor ([the lunch room](#)), and in the building near the staircase to the mass lab. ([Ø14-604a-1](#)).

In connection with the use of breathing apparatuses you must contact of the following employees: Tina Christiansen, Danny Kyrping, Lone O. Storm, Stefan Vogel, who all have attended a course in the use of breathing apparatuses.

**A vacuum cleaner for removal of water spills** is placed in the gas cylinder room in the basement ([Ø11-509a-0](#)).

**Escape Routes:**

Plans showing fire-fighting equipment and escape routes are displayed in the corridors of the Department. It is important that you familiarize yourself with the location of fire-fighting equipment and escape routes in case of an emergency.

In the case of an emergency go to assembly point 2 at parking lot 2.

**Industrial injuries:**

Injuries at work may affect both your physical as well as your mental health.

All industrial accidents must be reported to the Safety Manager who will forward a report to the Industrial Injury Board and if necessary to the Factories Inspectorate.

**Personal protective gear:**

At the department you will find:

- Gloves
- Ear protection
- Safety glasses
- Filter masks

If required, special protective gear may be requested.

**Kemibrug**

Before working with chemicals you must find information on hazard of the substance and how to handle it. You will find safety data sheets in the laboratories.

Online information on chemicals and reagents is available in Kemibrug: <http://www.kemibrug.dk/>

You are obliged to follow the instructions given by the head of department or one of the WE-representatives.

All persons in the laboratory must wear coat, sensible footwear and safety glasses when handling chemicals.

Smoking, consuming food and drinking are prohibited in the laboratory.

All benches and fume cupboards should be cleaned daily, and equipment and materials not currently in use should be removed.

Dirty glassware equipment should be washed up without delay. Dirty glassware/equipment containing volatile chemicals should be kept in a fume cupboard.

All chemicals out of use should be returned to the stockroom for chemicals.

Toxic chemicals (marked with safety code T or Tx) should be kept in a locked cupboard or returned to the stockroom for chemicals immediately after use.

The amount of inflammable materials (*e.g.* solvents) must not exceed 50 burn units per area corresponding to a normal office room. Do not store chlorinated compounds close to inflammable solvents.

No objects must be placed in the corridors outside the laboratories.

Windows that can be opened are escape routes and must not be blocked by furniture or experimental setups.

Before you leave the laboratory at the end of the day please ensure that you have switched off the light, closed the windows, locked the door (s) and signed for this on the board by the door.

**Lasers:**

Always follow instructions carefully when working with lasers and laser dyes. Always use special laser safety glasses.

If you are in any doubt concerning this procedure, do not hesitate to ask a person from [the working environment group](#).

**GENERAL HANDLING OF CHEMICALS**

**Peroxides in ethers**

Ethers should be kept in a dark place! Nevertheless, you should regularly check if the ethers in your fume cupboards contain peroxides and label them with date. It is continuously good practice to check this each time you use ethers.

Do not use peroxide-containing ethers for synthesis or column purification. Evaporation and subsequent concentration of organic peroxides can explode spontaneously, resulting in shattering of glass equipment and at worst that you and your fellow students may be severely injured.

*The peroxide test:* Add 2-3 drops of ether to a mixture of 2 drops of 0,2 M KI and 2-3 drops of 1 M acetic acid, estimate the colour after a few minutes. If the mixture remains colourless, the test is negative, a positive test will result in a yellow to reddish brown mixture. Another possibility is to use peroxide test strips. *Important:* A condition for getting reliable results from the strips is that you store them correctly and follow the instructions. You are **not** allowed to send peroxide-containing ethers direct to "Kommunekemi", they should either be

**purified** (you will find methods for purification in "Amarego: Purification of laboratory chemicals", a handbook available in most organic laboratories) or

**destroyed** (peroxides can be effectively destroyed by adding a little sodium boron hydride to the ether and stirring it slightly for a few days. Thereafter, remove the surplus of sodium boron hydride; Dilute the ether with water, so that the surplus of sodium boron hydride makes up a maximum of 3% w/w in the water phase. Then add carefully - under nitrogen - 10 ml of 10% acetic acid / 100 ml water phase under continuous stirring. Let the mixture remain until no more hydrogen is formed. Afterwards (and never before this!) the mixture can be discarded).

**WASTE**

**Wastepaper** should be placed in the grey wastepaper baskets marked "**GENBRUG PAPIR**". You empty your own wastepaper basket into the big dustbins in the corridors on both floors. Cartons etc. should be placed in the basement, either in the waste room near the entrance to "500-metre- and 600-metre corridors".

**Glass waste.** Empty glass bottles etc. must be cleaned of chemical residues before disposal. After that you place them in one of the two glass waste containers in the basement corridors mentioned above. Hazardous chemical residues **must** be destroyed immediately in a secure manner by **the user** before the empty bottles are placed in the glass waste container. Glass and bottles containing toxic chemical residues (*e.g.* Br) will be collected together with laboratory waste and are sent to 'Fortum' i Nyborg.

**Hypodermic needles, scalpels and other sharp objects** must be placed in the yellow plastic waste containers for hypodermic needles.

**All chemical waste is sent to 'FORTUM' Nyborg for destruction:** The waste is sorted out according to The 'Fortum' code:

<b>Waste group</b> <b>O</b>	Yes	Does the waste contain organic peroxides, strongly oxidizing substances or does the waste react with water and exhaust inflammable or acidic gases?
	←	No ↓
<b>Waste group</b> <b>K</b>	Yes	Does the waste contain mercury, e.g. mercury batteries, thermometers, or COD liquids?
	←	No ↓
<b>Waste group</b> <b>Z</b>	Yes	Does the waste contain miscellaneous residues in small containers from laboratories or private households, pressure bottles, aerosol cans, empty containers, asbestos, drugs, isocyanates or batteries without mercury?
	←	No ↓
<b>Waste group</b> <b>T</b>	Yes	Does the waste contain pesticides or empty containers that have contained pesticides?
	←	No ↓
<b>Waste group</b> <b>X</b>	Yes	Does the waste only contain inorganic substances, e.g. hydrochloric acid, sulphuric acid, nitric acid, soda lye, cyanide-containing baths or metallic salts?
	←	No ↓
<b>Waste group</b> <b>A</b>	Yes	Does the waste only contain mineral oil products and no emulsifying substances, e.g. lubricating oil, fuel oil or diesel fuel, e.g. in a mixture with water, soil or gravel?
	←	No ↓
<b>Waste group</b> <b>B</b>	Yes	Does the waste contain substances with sulphur, fluorine, chlorine, bromine or iodine, e.g. trichloride, freon, carbon disulfide, mercaptans, PCB or similar substances which upon combustion exhaust acidic halogen or sulphur-containing gases?
	←	No ↓
<b>Waste group</b> <b>C</b>	Yes	Is the waste liquid, and does it have a heating value of 18 GJ/ton at the minimum, e.g. petrol or turpentine, diluent, toluene, alcohols or acetone? The water content of the waste must not exceed 50%.
	←	No ↓
Waste group <b>H</b>		

All containers for chemical waste must be marked with a special label, correctly filled in:

- The group symbol of the waste.
- Specification of the main constituents. Usually it will be sufficient to state 3 or 4 of the solvents that are present in the largest concentration.
- A readable signature given by a permanent staff member, who takes the responsibility for the declaration of the waste. Waste containers without such a signature will not be accepted for treatment. The reason for this decision is that on further treatment supplementary information on the nature and properties of the waste might be required in special cases, *e.g.* accidents.

In the basement distillation room the above-mentioned rules naturally also apply, especially it is important to fill in slips on the composition of the waste. Also, it is the responsibility of each individual user to remove empty containers and other kinds of waste.

**The work environment group**  
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**Safety signs**

**Mandatory sign**



Glasses prescribed



Gloves prescribed



Closed footwear prescribed

**Prohibition**



No admittance by Red light



No Smoking



No admittance for people with pacemaker

**Warnings:**



Laser beam



Radioactivity



In case of fire remove pressurized cylinders



Storage of flammable liquid

**Instructions:**



Escape route



Eye wash



Emergency shower



Emergency exit



Stairs



Fire hose



Carbon dioxide extinguisher



Breathing apparatus



Fire door

**Hazard symbols:**



Acutely Toxic



Corrosive



Harmful



Flammable



Health hazard/  
 Carcinogen/  
 Mutagen/  
 Reproductive toxicity/  
 Specific target organ toxicity/  
 Aspiration hazard/  
 Respiratory sensitiser



Explosive



Oxidising



Pressurised gases



Hazardous to the environment

**Working environment guide**  
**Department of**  
**Physics and Chemistry and Pharmacy**  
**University of**  
**Southern Denmark**



**Information to employees and students**



**Please read this leaflet thoroughly**

Further information can be found on:  
<http://www.sdu.dk/fkf>