

## Safety guide: Department of Physics, Chemistry and Pharmacy – SDU

### Safety rules at Department of Physics, Chemistry and Pharmacy

→ Always check the updated version at: <https://sdunet.dk/en/enheder/institutter/fkf/arbmoljosikker>

### Alarming

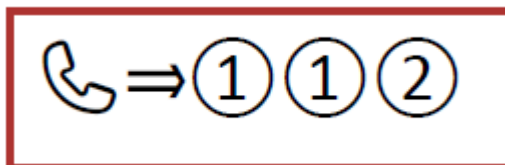
1) Stop the accident (and reduce the damage)

2) Call 1-1-2, and state the following:

Your name

What has happened

Where you are calling from



3) Evacuate the area:

Activate alarm systems if available

Alarm your surroundings

Use the nearest secure exit

**4) Call 6550 8888 and inform SDU.**

#### Relevant phone numbers and websites

Taxi: 6615 4415

ER/medical emergency service: 7011 0707

Poison Control Hotline: 8212 1212

Danish Emergency Management Agency, Chemical laboratory: 4582 5400

<https://kemikalieberedskab.dk/>

#### Location of safety equipment etc.

Carbon dioxide extinguishers, fire blankets, fire hose, safety showers and eyewash are available in the laboratory or in the hallway next to the laboratory

Fresh-air masks (breathing apparatus) are placed in the red cabinets marked "Firefighter equipment", which are located at the end of the hallway on the 1st floor (Ø9-409b-2) and at CP3 close to the CP3 meeting room Ø15-604-1).

In case of an accident, which requires use of the fresh air equipment, you must locate and report to one of the following persons, who is approved of using the equipment.

- Tina Christiansen ([tinak@sdu.dk](mailto:tinak@sdu.dk))
- Danny Kyrping ([danny@sdu.dk](mailto:danny@sdu.dk))
- Lone O. Storm ([lost@sdu.dk](mailto:lost@sdu.dk))
- Stefan Vogel ([snv@sdu.dk](mailto:snv@sdu.dk))
- Christian Brandt Jørgensen ([christianbj@sdu.dk](mailto:christianbj@sdu.dk))
- Frederik Wendelboe Lund ([fwl@sdu.dk](mailto:fwl@sdu.dk))

Suction machine (water): can be found in the gas cylinder compartment ([Ø11-509a-0](tel:011-509a-0)).

### Escape routes:

**When evacuating go to Assembly Point P2 at car park 2 (outside the Technical Faculty) and wait for further information there. For Phylife it is Assembly Point 3 at the DIAS building. All employees are encouraged, to locate the nearest Safety Point (Indoor Red cabinet with maps) and assembly point (outdoor sign), according to where you are staying at SDU.**

Personal protective equipment at the department includes:

- Gloves
- Hearing protection
- Safety glasses
- Filter masks
- If special protective equipment is required, this can be requested as needed.

### Work-related injuries

Work-related injuries can be physically as well as mentally damaging. All work-related injuries must be reported to the head of department. From there, it is forwarded to the Working Environment Office, which assesses whether the Danish Working Environment Authority and the National Board of Industrial Injuries should be informed.

### Use of Lasers:

Always follow the instructions carefully when working with lasers and laser dyes. Wear special goggles. When in doubt, you are welcome to ask someone from the work environment group.

<https://sdunet.dk/en/enheder/institutter/fkf/udvalg-og-moeder/arbejdsmiljoeudvalg>

### Transport in lifts:

**Elevator transport of chemicals, chemical waste and liquid nitrogen tanks must always take place without personal involvement.**

In general, the safe internal transport of chemicals must be considered. Transport can be done through areas that are not designed to deal with chemical waste. Internal transport must be carried out in closed containers. Transport equipment can be a plastic bucket for individual containers, or a roller table with a transport box.

### Chemical instructions:

Prior to working with chemicals, you need to make sure that for each work process a chemical risk assessment is done. Templates are being prepared. You can find them here.

[https://sdunet.dk/en/enheder/institutter/fkf/personaleforhold\\_og\\_arbejdsmiljoe/arbejdsmiljoe/kemiskrisikovurd](https://sdunet.dk/en/enheder/institutter/fkf/personaleforhold_og_arbejdsmiljoe/arbejdsmiljoe/kemiskrisikovurd)

New ones are added continuously. To complete the risk assessment, you need to obtain information on the hazards of the chemicals as well as information on how to handle the chemical. Online workplace instructions for safe use of the chemical can be found at Kemibrug: <http://www.kemibrug.dk/>.

If in doubt, turn to your immediate supervisor.

### Further guidelines:

You are obliged to comply with the instructions given by the head of department or one of the working environment representatives.

Coats, sensible closed footwear and safety goggles must be worn in all laboratories where chemicals are handled.

Eating and consuming food and beverages in the laboratory is prohibited.

All tables and fume cupboards must be cleaned daily and equipment and materials that are not used frequently must be removed.

Dirty glassware must be rinsed and washed.

Dirty glassware containing volatile chemicals must be stored in a fume cupboard.

All chemicals that are not used frequently must be returned to the chemical collection.

Toxic chemicals (marked with the danger symbol T or Tx) must be stored in a locked cupboard or returned to the collection of chemicals immediately after use.

The amount of combustible material (including solvents) must not exceed 50 combustible units per room. Do not store chlorinated compounds close to flammable solvents.

#### combustible unit and classification of solvents

Flammable solvents are sorted, according to flash point, into three classes:

- Class I: flash point  $< 21\text{ }^{\circ}\text{C}$
- Class II:  $21\text{ }^{\circ}\text{C} \leq \text{flash point} \leq 55\text{ }^{\circ}\text{C}$
- Class III:  $55\text{ }^{\circ}\text{C} < \text{flash point} \leq 100\text{ }^{\circ}\text{C}$

1 combustible unit (OE):

1 liter of class I or (f.ex. Ethanol)

5 liters of class II or

50 liters of class III

Do not place objects of any kind in the corridors outside the laboratories.

Opening windows are escape routes and must not be blocked by large furniture or experimental setups.

At the end of the working day, make sure the light is off, all windows are closed, and the doors are locked. This must be acknowledged on the board at the door.

#### Peroxides in ethers:

Ethers must be stored in the dark! Remember, you should regularly review your solvent cabinets, check the ethers you have stored for peroxides and date them. It is a very good habit to check them for peroxide content every time you need to use them.

Do not use peroxide-containing ethers for synthesis or column purification. Evaporation with subsequent precipitation of organic peroxides can explode without any notice, resulting in glass equipment shattering and, in the worst case, the mutilation of you and your fellow students.

Test of peroxides: 2-3 drops of ether are mixed with 2 drops of 0.2 M KI, then 2-3 drops of 1 M acetic acid are added. The color is assessed after a few minutes. A negative test is colorless, a yellow to reddish brown solution is positive. Another option is peroxide strips. In order for these to give reliable results, it is important that they are stored correctly and that the instructions for use are followed.

Peroxide-containing ethers may NOT be sent directly to FORTUM, they must either be:

- purified (methods for purification can be found in "Amarego: Purification of laboratory chemicals", a handbook found in most organic laboratories) or
- destroyed (peroxides can be effectively destroyed by adding a little sodium borohydride to the ether and leaving it under gentle stirring for a few days. Then excess sodium borohydride must be removed. This is done by diluting the ether with water so that excess sodium borohydride is max. 3%. Then carefully add 10 ml of 10% acetic acid per 100 ml of water phase under nitrogen while still stirring, let the mixture stand until no more hydrogen is formed. Only then can the mixture be discarded).

## Waste

Paper can be placed in the regular office trash or recycling bins. You empty your trash yourself as needed in the large rubbish bins, located on the east and west corridors on both floors. Cardboard boxes are placed in the waste room at the entrances to the 500-meter and 600-meter basement corridors.

Empty, evaporated plastic solvent cans are placed in the waste room in the basement as well.

Glass waste: Empty glass packaging, bottles and the like, are cleaned of chemical residues, after which they can be placed in the glass waste containers, which are also placed in 500- and 600m-meter basement corridors. Hazardous chemical residues MUST be destroyed in a safe manner by the user immediately before placing the empty packaging in the glass waste containers. Glass and bottles with toxic chemical residues (e.g. Br) are collected with laboratory waste and sent to FORTUM in Nyborg.

Needles, scalpels and other pointed objects are placed in the yellow needle containers.

All other chemical waste is also sent for destruction at FORTUM in Nyborg. The waste is sorted according to FORTUM's alphabet.

All containers for chemical waste must have a special waste label attached, which must be completed stating:

- 1) Group symbol of waste
- 2) Indication of the main chemicals. Most often it will be sufficient to list the 3-4 solvents that are found in the greatest concentration.
- 3) Readable signature given by a permanent department employee, who assumes responsibility for the waste declaration.

**A waste container in use, must be labeled to know the content.** Waste bins that do not have a signature will not be accepted for treatment. The reason for this is that in the further processing in special cases (e.g. in the event of accidents), it must be possible to request additional information regarding the nature and properties of the waste.

In the distillation room in the basement, naturally, all the above rules also apply, it is especially important to fill in notes on the composition of the waste, just as it is the individual's responsibility to remove empty packaging and other waste. New 5-liter cans and various buckets can be picked up in the solvent compartment ([Ø13-604b-0](#)).

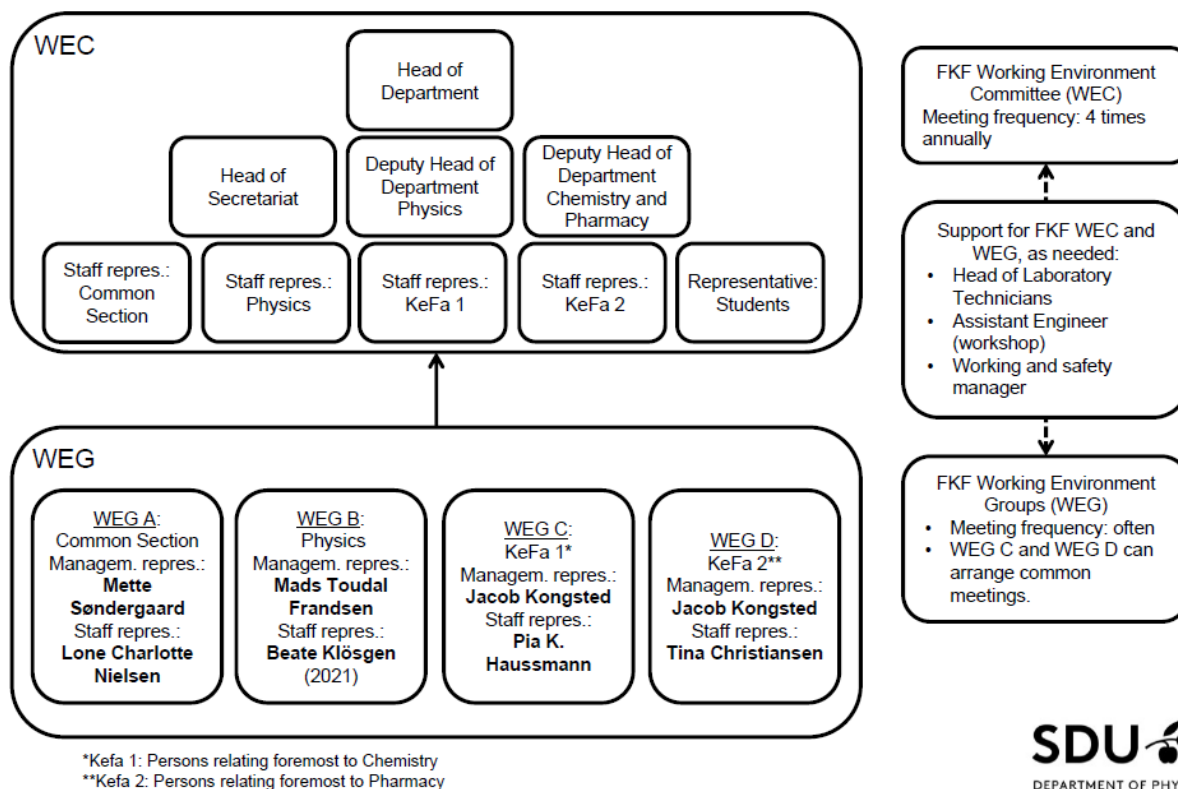
Waste coordinator: Pia Klingenberg Haussmann [pkh@sdu.dk](mailto:pkh@sdu.dk)

Group symbol of waste



The working environment group at the Department of Physics and Chemistry and Pharmacy:

## Working Environment Committee - FKF



### Offensive behavior:

FKF explicitly calls for respect and justice in relation to each other in and between all groups and individuals. All employees should use friendly but concrete statements to influence them if they perceive aggressive and illegal behavior. In this way, everyone can actively contribute to preventing or eliminating psychological or even physical (sexual) attacks in advance or at least as quickly as possible.

### Ergonomics:

It is recommended that you check your ergonomics at your workstations:

<http://bar-kontor.dk/Files/Billeder/BARKontor/pdf/Working-with-computers.pdf>

### Further information:

Further information can be found at:

[https://sdunet.dk/en/enheder/institutter/fkf/personaleforhold\\_og\\_arbejdsmiljoe/arbejdsmiljoe](https://sdunet.dk/en/enheder/institutter/fkf/personaleforhold_og_arbejdsmiljoe/arbejdsmiljoe)

## Signposting

Equipment:



Eye protection required



Gloves required



Closed footwear required

Prohibitions:



No access when red light is on



No smoking



No access for people with pacemakers

Warnings:



Laser beams



Radioactivity



Flammable substances

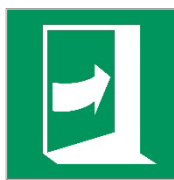


Pressure cylinder – remove in case of fire

Directions:



Escape route



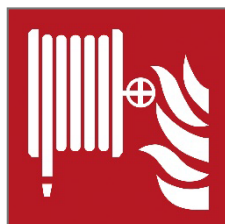
Emergency exit



Emergency shower



Eye rinse



Defibrillator


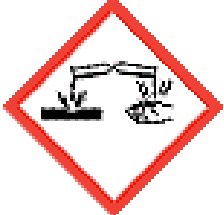







Fire hose

Solid carbon dioxide  
extinguisher

Smoke-helmeting  
equipment

Fire-proof door

**Danger symbols:**

|   |   |   |  |   |
|---|---|---|--|---|
| <br>Acute toxicity | <br>Etching hazard | <br>Acute toxicity<br>(less dangerous) | <br>Risk of fire                   | <br>Allergy by inhalation,<br>carcinogenic,<br>mutagenic,<br>reproductive<br>damage, organ<br>damage by single or<br>multiple effects, lung<br>damage by ingestion |
| <br>Explosive     | <br>Oxidizing     | <br>Gases under<br>pressure           | <br>Harmful to the<br>environment |   |