

General laboratory regulation

(Operating instruction in accordance with § 14GefStoffV)



January 2015

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This general laboratory regulation is for the faculty of chemistry, in addition to which the following regulations are to be observed:

1. The specific operating instructions where emphasis is laid on the team's or practical's specific hazards.
2. The operating instructions relating to the particular work, substance or group of substances.

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Preliminary note

When working with gaseous, liquid and solid hazardous substances as well as hazardous substances which exist as dust, there are special rules of conduct and precautionary measures to take.

Hazardous materials are substances or preparations with the following characteristics:

Explosive (E)	corrosive (C)
Oxidizing (O)	irritant (Xi)
Highly flammable (F ⁺)	sensitizing
Flammable (F)	carcinogenic
Very toxic (T ⁺)	mutagenic (endangering reproductive processes)
Toxic (T)	genetically harmful (capable of changing the genotype)
Harmful (Xn)	dangerous for the environment

Substances whose hazards are neither known nor specified.

Substances or preparations whose use could give rise to the production of dangerous or explosive substances are also to be classified as the hazardous materials. Dangerous biological material from biological and genetic engineering, as well as pathogenic material belongs to the hazardous materials.

The intake of substances in the human body can occur by inhalation into the lungs, by absorption through the skin, the mucous membrane and the digestive tract.

The following regulations must be observed in all laboratory activities.

1. Basic rules

1.1 Before working with hazardous substances and before implementing any activity that could give rise to hazardous substances, the risk potential must be investigated. The sources of information are as follows: reference literature, producer's catalogues, trader's catalogues and safety guidelines (data sheets).

Advice for to special hazards (R-phrases or H-statements) and safety precautions (S-phrases or P-statements) are strictly to be observed.

Substances whose hazardous information could not be found (particularly newly synthesised substances), must be considered as dangerous and should be treated at least according to the following Statements:

R23,24, R38, R8, R43 respectively H331, H311, H301, H315, H241, H317

1.2 The content of the following writings should be observed in all laboratories.

- Regulations for safety and health protection when working with hazardous substances in high school area (GUV 19.17).

- Regulations for safety and health protection for laboratories (GUV-I 850-0).

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- Further team related and work related operating instructions, as well as substance or substance groups related operating instructions, and miscellaneous instructions from the superiors.

1.3 Hazardous substances should not be kept or stored in such a way that they could be mistaken for edible items.

- 1.4 Hazardous substances should be stored or kept in such a way that only well informed persons could have access to them. Suitably trained laboratory personnel are well informed persons.
- 1.5 Flammable liquids as well as highly flammable and flammable substances should only be stored in fridges or deep freezers whose interiors are protected from explosion.
- 1.6 All standing vessels must be labelled with names and hazard symbols of the substances contained, big (> 1000 ml) vessels must be fully labelled, that means including the R- and S-phrases and H- and P-statements.
- 1.7 Flammable liquids, which are used in small quantities at the place of work, should only be stored in containers with maximum nominal volume of 1 liter (TRGS 52, 4.15.1). At the place of work in the laboratory, only the use of a maximum of 1 liter breakable standing vessel is allowed.
- 1.8 Avoid the inhalation of vapours and dusts as well as the contact of hazardous substances with skin and eyes. Work in the hood, when dealing with gas forming, dust forming hazardous substances or hazardous substances with high vapour pressure. In any case it must absolutely be be sure, that the colleagues are not endangered.
- 1.9 Goggles (protection glasses with laps at the sides) must always be worn in the laboratory. Users of medicated glasses must either wear medicated goggles or wear goggles over their own medicated glasses.
- 1.10 Eating, drinking, smoking and storage of food items in the laboratory is prohibited.
- 1.11 Materials for body protection (goggles, facial protection and appropriate gloves) which are stipulated in the S- phrases and P-statements and operating instructions should be used.
- 1.12 Laboratories with compressed gases should be marked with pictogram din W019 “gas cylinder”
- 1.13 Inspect electrical appliances before use.
- 1.14 When working in the laboratory a sufficiently long laboratory coat with long sleeves is to be worn. Laboratory coats made of commercially fibres are permissible, provided no increased hazard in case of fire is to be expected due to their burning or melting properties. Only strong impact protected footwear should be worn.
- 1.15 The laboratory and place of work must be clean and cleared. (Appliances which are contaminated with hazardous substances must immediately be cleaned). Do not keep objects on the floor.
- 1.16 A colleague is to be accompanied when carrying out dangerous work.

- 1.17 Unauthorised persons are prohibited in the laboratory.
- 1.18 Escape routes and rescue ways should be kept clear. Chemicals and substances which promote fire (e.g. paper, wood, polystyrene) should not be kept in corridors; wheelbarrows should not be kept in the corridors.
- 1.19 Pregnant women should inform the head of the team about her pregnancy.
- 1.20 Damage, defects or critical states should be repaired/ removed or reported to the line manager.

2. Common protection and safety equipments

- 2.1 The front slide of the hood should always be closed. The efficiency of the hood should be checked before starting work. Faulty hoods should not be used.
- 2.2 Smoke trapping doors must always remain closed.
- 2.3 Keep yourself informed about the warning signals for the evacuation of the building.
- 2.4 Keep yourself informed about the location and method of operation of emergency shut off devices for gas, power and water supplies. The central office (Leitwarte, Tel. 7777) should immediately be informed after tampering with gas, power or water supplies. Interference with the supply systems are limited to emergency cases.
- 2.5 Fire extinguishers, fire fighting sand containers and containers for absorption materials must be refilled after use. Used fire extinguishers, even the ones with faulty seals should be reported to the central office (Leitwarte, Tel. 7777). The content of the first aid boxes should be regularly checked and restocked if need be (University first aid service, Tel. 6352)
- 2.6 The efficiency of the emergency shower (body and eye shower) is to be checked monthly.
- 2.7 Floor water-inlet and washbasin-siphons are regularly to be filled with water. Water outlets which are located under the water taps, with the yellow ring in the front, flow into the internal cooling circuit. Only cooling water should be allowed into these outlets.

3. Conduct in dangerous situations

- 3.1 Human protection is more important than material protection. When dangerous situations occur e.g. fire, release of gaseous harmful substances, leakage of dangerous

liquids and solvents, measures which are intended to stop or minimize the danger must be carried out immediately and the following rules of conduct must be observed:

-Alarm plan (located next to the lifts)

-Conduct in the event of fire (s. point 6 of this operating instruction)

-Conduct in the event of alarm (s. point 7 of this operating instruction)

3.2 Keep calm!

3.3 Warn any endangered persons. If necessary request them to leave the rooms and arrange the evacuation of all the adjacent laboratories. Resumption of work should only take place after the elimination of the hazard.

3.4 Stop all experiments. Turn off gas, power and possibly water. Cooling water must continue to run.

3.5 Assistants and heads of the teams or practicals as well as the service office should be informed (Tel. internal 112)

3.6 If a danger of explosion or another hazard like the discharge of toxic gases arises, the nearest manual fire alarm in the staircase should be activated so that that part of the building can be alerted and evacuated.

3.7 On suspicion of health damage, indisposition or allergic skin reaction, which could occur as a result of contact with the chemicals, consult a physician; the head of the team should be informed.

3.8 A report of the accident is to be prepared immediately for the office of the dean of the faculty of chemistry. The forms for the report are available there.

3.9 Every work with hazardous substances should be stopped in the incident of failure of ventilation system. Leave the laboratory after turning off the devices and inform the head of the team.

4. Principles of the first aid service

The following listed principles indicate first aid measures typical for the laboratory that every member of the faculty is obliged to follow.

Further tips specific to accidents in chemistry are contained in chapter 11 of the brochure „ Safety in University Chemistry Coarses“ BGI/GUV-I 8553 E). Furthermore, attention should be drawn to the recurring free first aid course available at the University of Bielefeld. The university first aid service at C01-227 is reachable during the opening hours (Dienstzeit).

- 4.1 Personal security should be considered in all first aid services. Make the internal emergency call (112 / with cell phone: 0521-106 112) as quickly as possible.
- 4.2 Rescue the endangered persons and take them off the danger area.
- 4.3 Put out fire, especially fire on clothes.
- 4.4 Rinse contaminated skin with plenty of water.
- 4.5 Use of the emergency shower: First remove all clothes which are stained with chemicals, in emergency cases remove everything; clean with water and soap.
- 4.6 For eye injuries, use the ocular (eye) shower to wash both eyes extensively.
- 4.7 Take care of the injured persons until the arrival of the emergency service.
- 4.8 Guarantee information to the physician by collecting the vomit and chemicals.

5. General emergency call

Fire / accident **112** (cell phone: 0521-106 112)

The central service office answers the call, 24 hours a day.

- 5.1 Make points in any emergency calls in the following order:

Where did the accident occur? / Information about the location.

What happened? / Fire, burns, fall, slump etc.

Which injuries? / Type and location on the body.

How many injured persons? / number.

Wait until the central office terminates the call, there could be important questions to be answered.

- 5.2 Emergency numbers in cases of poisoning

In cases of poisoning contact the places listed below for relevant information about the current situation:

- a) Beratungsstelle für Vergiftungserscheinungen und Embryonaltoxikologie
 Spandauer Damm 130,
 14050 Berlin
 Tel. 0-(0 30)-1 92 40

- b) Zentrum für Kinderheilkunde Universitätsklinikum Bonn
 Tel. 0-(02 28) 1 92 40

- c) Internet: <http://www.gizbonn.de>

6. Conduct in the event of fire

Keep calm and avoid panic. If the fire is just beginning, put it out with appropriate means. (Inform the head of the team or practical). When putting out fire consider retreat possibilities (possible escape routes). Smoke blocks the way very quickly.

6.1 Emerging (small) fire

Put out emerging fire. A fire which has not started to attack equipment is referred to as emerging fire e.g burning oil, burning solvent in the apparatus etc.

Use the appropriate fire extinguisher e.g. no water for metals or burning oil. Consider special hazards like poisonous gases, vapours etc. Remove flammable substances, and compressed gas containers from the vicinity of the fire.

6.2 Advanced fire

A fire which has already started to attack equipment is referred to as advanced fire. Activate the manual fire alarm in the staircase; remove injured persons from the vicinity of the fire. Inform the service office (emergency call 112, cell phone: 0521-106 112) about the fire's location, extent, injured persons and possibly number of persons trapped in the fire, special hazards: compressed gas bottles, poisonous gases, large quantities of solvents etc.

Leave the building from the nearest escape route.

Do not use the lifts.

Assemble at the alarm meeting points north west of block F and E. Check if everybody is present. Think who might have been trapped in the fire.

Direct the fire brigade. This should be done by someone who is well informed about the area (a local expert).

Keep the entrance for the fire brigade free. Vehicles should be parked at the parking lots. Nobody resumes work until the dean or his representative gives the all clear.

7 Conduct in the event of alarm

7.1 When the alarm begins to sound at the corridors or at request, everybody has to leave the building through the emergency exits and should assemble at the alarm meeting points .

7.2 Running experiments should be stopped and secured (removal of the heating baths, continued operation of the cooling systems etc.).

- 7.3 One should make sure that his colleagues depart the room with him. Disabled persons and visitors should be helped.
- 7.4 When departing the rooms keep all doors closed.
- 7.5 The escape routes of block E and F are the staircases. Do not use the lifts. Emergency exits are located in each case at the underground level (02) or as connecting corridors to the next part of the building in each floor.
- 7.6 After gathering at the meeting point, it is necessary that the students and the official personnel cross-check themselves allowing a fast assessment of the whereabouts of everybody. The leader or the safety personnel should be informed about everybody's location in the building.
- 7.7 The instructions of the safety personnel must be carried out.
- 7.8 Motor vehicles must be parked at the parking lots in order to create a free entrance for the emergency vehicles (fire brigade, ambulance, police etc.).
- 7.9 Nobody resumes work until the dean or his representative gives the all clear/go ahead.

8 Adequate disposal of waste

- 8.1 Reduce the amount of hazardous waste to a minimum by using only the needed amounts of substances in reactions. Reuse or recycling, e.g. of solvents, has preference over disposal.
- 8.2 Each hazardous waste should be collected separately. In this respect, follow the instructions of the Hazardous waste disposal department (Tel. 2085, 2109).
- 8.3 The disposal of hazardous waste should be planned in such an interval that storage, transport and destruction of the substance do not lead to any danger.
- 8.4 To avoid waste legacies working environments should be checked annually for hazardous waste.

Alarm Meeting Points

