



Betriebsanweisung Nr. 1

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# Laboratory regulations

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of the Institute of Biology and Environmental Sciences  
(IBU), Faculty V (Mathematics and Natural Sciences),  
Carl von Ossietzky University of Oldenburg

## **Contents**

### **Preface**

- 1. Additional regulations to the laboratory regulations**
- 2. General basic rules**
- 3. Duties of the responsible laboratory manager**
- 4. Terms of use**
- 5. Protective and safety devices**
- 6. Personal safety in the laboratories**
- 7. Conducting experiments**
- 8. Devices**
- 9.1 Handling chemicals and hazardous materials**
- 9.2 Storage of chemicals**
- 9.3 Handling carcinogenic and mutagenic substances**
- 9.4 Transport of chemicals**
- 9.5 Compressed gas cylinders**
- 9.6 Waste disposal**
- 10. Behaviour in the event of malfunctions and danger**
- 11. Behaviour in the event of accidents and first aid**
- 12. Behaviour in case of fire and fire alarm**

## Preface

Operating instruction no. 1:

*"Laboratory Regulations of the Institute of Biology and Environmental Sciences  
of the Faculty V, Carl von Ossietzky University Oldenburg"*

For the operation of biological laboratories and the activities carried out there, the state occupational health and safety laws and regulations with the associated technical rules, the accident prevention regulations of the state accident insurance fund and the Animal Welfare Act must be observed. They take precedence over these laboratory regulations. The following regulations in their currently valid versions are important for biology laboratories:

Chemicals Act

Ordinance on Hazardous Substances, with the associated technical regulations

Genetic Engineering Act, with the associated ordinances

Ordinance on Biological Substances, with the associated technical regulations

Industrial Safety Ordinance

Animal Welfare Act

DGUV Information 213-850 Safe working in laboratories (laboratory guidelines)

DGUV Information 213-039 (Activities involving hazardous substances in universities)

DGUV Information 213-026 (Safety and health in chemical university internships)

The "Operating Instruction No. 1" must be available in every laboratory and is part of the annual safety briefing.

The University's Occupational Health and Safety, Biological Safety and Radiation Protection Unit (AGBS) can advise on the legal basis and assist in finding the relevant guidelines. Further contacts are the institute's safety officers (a list of current officers can be found on the department's online pages).

These Operating Instructions No. 1 "Laboratory Regulations of the Institute of Biology and Environmental Sciences of Faculty V, Carl von Ossietzky University Oldenburg" are valid from 17.01.2024 and replace the previous ones.



Institutsdirektorin  
Prof. Dr. G. Gerlach

Oldenburg, den 08.01.2024

## 1 Additional regulations to the laboratory regulations

Special regulations apply to work with open radioactive emitters, X-ray and interference emitters, laser beams and when handling genetically modified organisms, dangerous organisms and laboratory animals. Compliance with the relevant regulations is one of the obligations of these laboratory regulations and must be ensured by those responsible for the laboratory. They can entrust employees with the relevant tasks.

### 1.1 Handling open radioactive sources

Open radioactive sources may only be used in the isotope laboratory. This also applies to activities below the exemption limits for the radionuclides in question. Before starting work, the radiation protection officer must be informed, who will arrange for all necessary safety measures and the determination of the body dose. Radioactive preparations may only be procured by the management of the isotope laboratory.

The legal basis for working with open radioactive substances is the Radiation Protection Act, the Radiation Protection Ordinance, the laboratory regulations of the isotope laboratory and the regulations for handling radioactive substances at the Carl von Ossietzky University of Oldenburg (according to the currently valid official notifications).

**Radiation protection representative:** Dr. Anna-Maria Hartmann / Deputy: Dr. Johann Meyer

### 1.2 Use of X-ray and interference emitters

Procurement, commissioning, technical modifications and decommissioning of interfering radiators and X-ray equipment must be reported to the radiation protection officer. All devices may only be operated in the authorised rooms in compliance with the applicable safety regulations. Room changes must be reported.

The legal basis for working with interference emitters and X-ray equipment is the Radiation Protection Act, the Radiation Protection Ordinance and the regulations for handling radioactive substances at the Carl von Ossietzky University of Oldenburg (in accordance with the currently valid official notifications).

**Radiation protection representative:** Dr. Anna-Maria Hartmann / Deputy: Dr. Johann Meyer

### 1.3 Working with laser beams

Laser beams may only be used in suitable and labelled rooms. A laser safety officer with proven expertise must be appointed to monitor the experiments and ensure compliance with safety regulations. The legal basis for this is the Ordinance on the Protection of Employees from Hazards Caused by Artificial Optical Radiation (OStrV) and the associated Technical Rules on Laser Radiation. The procurement, commissioning, technical modifications and decommissioning of ultrashort pulse laser machines (USPL) that exceed an irradiance of  $> 1 \times 10^{13}$  watts per square centimetre and the local dose rate at 0.1 metres from the touchable surface exceeds 1 microsievert per hour must be reported to the radiation protection officer.

The legal basis for working with UKPL is the Radiation Protection Act, the Radiation Protection Ordinance and the regulations for handling radioactive substances at the Carl von Ossietzky University of Oldenburg (in accordance with the currently valid official notifications).

**Laser safety officer:** Dr. Franziska Curdt

**Radiation protection representative:** Dr. Anna-Maria Hartmann / Deputy: Dr. Johann Meyer

#### 1.4 Genetic engineering

All organisational and safety-related aspects of genetic engineering work are regulated by the Genetic Engineering Act and the Genetic Engineering Safety Ordinance. Genetic engineering work includes the production of genetically modified organisms, their storage, testing and other handling (propagation, destruction or disposal) and may only be carried out in "genetic engineering facilities". These are rooms authorised by the competent authority (currently the Hanover State Trade Supervisory Office) following registration and approval procedures and equipped in accordance with regulations. The rooms are labelled with yellow signs on the doors, e.g. "Gentechnische Anlage der Sicherheitsstufe 1" (Genetic engineering facility of safety level 1). Work may only be carried out there under the supervision of an officially authorised project manager and by persons who have received annual technical and subject-specific safety training (e.g. from the project manager or the university's Biological Safety Officer). The work is subject to the obligation to keep records. Genetic engineering work is categorised into safety levels (S1 to S4) and the laboratories of the genetic engineering facility must be equipped accordingly. We currently have a number of S1 and S2 genetic engineering facilities at the University.

**Biological safety officer:** Dr. Alexander Scholten / Deputy: Dr. Dominik Heyers

**Contact for authorisations under the GenTG:** Dr. Johann Meyer / Astrid Goebel (AGBS staff unit)

#### 1.5 Handling laboratory animals

When handling laboratory animals, the provisions of the Animal Welfare Act, among others, must be observed to protect the animals. The animals may only be handled by authorised persons who have acquired the necessary expertise or in accordance with instructions and under supervision. Animal husbandry rooms for vertebrate animals require an animal husbandry licence and must not be freely accessible.

A possible risk to humans when handling laboratory animals is generally less due to animal bites or scratches, but mainly due to the acquisition of allergies. Allergies can be triggered either by the animals themselves (especially hair, feathers), by animal feed or, for example, by bedding. To protect people, handling animals should therefore be restricted to authorised persons or only take place after instruction. Protective measures can be achieved, for example, by wearing gloves, lab coats or face masks.

**Animal welfare officer:** Bettina Vettermann / Deputy: Lennart Lieberum

## **1.6 Working with hazardous organisms (Biological agents ordinance)**

The Biological Agents Ordinance regulates the handling of hazardous organisms. These are weighted on a scale of 1 to 4 according to ascending hazard. Laboratory managers must carry out a risk assessment of the organisms used and, if necessary, arrange for technical protective measures as well as hygiene measures and occupational medical check-ups. The legal basis is the Biological Agents Ordinance. The activities must be registered with the AGBS staff unit, Dr Johann Meyer / Astrid Goebel prior to commencement.

## **2 General basic rules**

**2.1** The use of biological, chemical and physical methods involves a variety of hazards. People can suffer acute or chronic damage to their health, e.g. injuries, burns, frostbite, chemical burns, poisoning, irritation, allergies, infectious diseases, cancer, genetic damage and reproductive damage. The release of hazardous substances into the air, water and soil can lead to environmental damage.

**2.2** Users must take note of these laboratory regulations and comply with them. Acknowledgement must be confirmed by signature to the person responsible for the laboratory. In the event of a serious breach of the obligations arising from these regulations, the user may be banned from the laboratory.

**2.3** Smoking, eating and drinking in the laboratories is strictly prohibited.

**2.4** Hands must be washed thoroughly at the end of work and before eating or drinking. Personal protective equipment used in laboratories (lab coats, gloves, protective goggles, etc.) may not be worn in libraries, lecture theatres, seminar rooms or cafeterias.

## **3 Duties of the responsible laboratory manager**

**3.1** For each laboratory of the Department of Neuroscience, a responsible head is appointed, whose name is stated on the door sign of each laboratory.

**3.2** All laboratory users must be instructed about the hazards arising during their activities and the measures to prevent them before employment and thereafter at appropriate intervals, but at least once a year. The instructions must be documented with the content and signature of the instructed person. The laboratory supervisor is responsible for the instructions.

**3.3** The person responsible for the laboratory shall ensure that all necessary safety-relevant documents are made available. This includes Operating instructions for all classes of hazardous substances used, operating instructions and safety regulations.

**3.4** The person responsible for the laboratory is obliged to prepare risk assessments for the existing workplaces and each new workplace in his/her area of responsibility.

## 4 Terms of use

**4.1** Work in a laboratory must be carried out in such a way that nobody is harmed, endangered or exposed to more than is necessary under the circumstances. When carrying out hazardous work, at least one other person must be within calling distance and all persons working in the vicinity must be informed of hazards and the necessary protective measures. The person responsible for a working group or practical training shall regulate the working hours and access authorisation to the laboratories for his/her area.

**4.2** The University's opening hours from 6.00 a.m. to 10.00 p.m. on working days apply to staff working in the laboratories. Access authorisation must be requested for work outside these hours.

**4.3** The following regulations apply to equipment and apparatus that must remain in operation outside laboratory opening hours:

(a) All equipment and apparatus must be suitable for unattended continuous operation (e.g. by means of temperature monitors, leakage water monitors, overheating protection and other electrical safety devices).

(b) The duration of the experiment, the operator and his/her whereabouts or telephone number where he/she can be contacted must be visible.

(c) Special hazards must be pointed out.

**4.4** Users are responsible for the proper and safe operation of devices and equipment following instruction/instruction.

**4.5** Students and staff may only carry out work in accordance with the instructions given to them. Instructions from the internship supervisor and the management of the scientific facilities must be followed.

**4.6** Escape and rescue routes must be free of obstacles and sources of danger (e.g. fire loads). This applies in particular to corridors.

**4.7** Safety-impairing defects in the building, facilities or equipment must be rectified immediately or reported to the responsible management or the occupational safety specialist.

## 5 Protective and safety devices

**5.1** Users must familiarise themselves with the type and use of safety equipment such as emergency stop switches for electrical power, portable fire extinguishers, fire blankets, extinguishing sand, first aid kits, emergency showers and eye showers and their locations.

**5.2** Fire doors must not be wedged or obstructed.

**5.3** Fume cupboard sashes must always be kept closed.

**5.4** The functionality of the fume cupboards must be ensured (checked) before the start of the test.

## **6 Personal safety in the laboratory**

**6.1** The aids prescribed for the protection of users (such as pipetting aids, desiccator safety devices, trolleys for transporting glass bottles) must be used. The usual personal protective equipment in the laboratory, such as lab coats (linen, cotton), safety goggles and, if necessary, protective gloves, must be worn. When working with special risks, the additional prescribed protective measures must be taken.

**6.2** Mechanical equipment must be used for pipetting. Pipetting by mouth is prohibited.

**6.3** Body safety showers and eye showers must not be blocked. Their functionality must be checked and documented on a monthly basis.

**6.4** Work that would require the wearing of respiratory protection devices is prohibited. Exceptions require the express authorisation of the laboratory management.

## **7 Conducting experiments**

**7.1** Before carrying out experiments, laboratory users must inform themselves about the risks and the corresponding protective measures on the basis of experiment regulations, operating instructions and operating manuals. Safety instructions in the work regulations must be observed. The necessary protective measures must be taken.

**7.2** Chemicals available on the premises, including products manufactured in-house, are intended exclusively for research, teaching and training and may not be used for other purposes or taken outside the premises.

## **8 Devices**

**8.1** Appliances may only be used as intended. Defective equipment and faulty electrical appliances must not be used. Portable electrical appliances must be checked for operational safety at least once a year. Appliances that run overnight must have appropriate safety devices (see Section 4.3).

**8.2** The handling of autoclaves, pressurised and vacuum apparatus and centrifuges etc. requires particular care and is only permitted after appropriate instruction and in compliance with the operating instructions and safety regulations. The person responsible for the laboratory is responsible for ensuring that the regular inspection dates for autoclaves and centrifuges are adhered to.



## 9 Chemicals and hazardous materials

### 9.1 Handling chemicals and hazardous materials

**9.1.1** Hazardous substances are substances that pose a risk to humans and the environment. Substances with comparable hazard potential are summarised in hazardous substance classes.

Hazard	Hazardous material classes	Basic rules
Fire, explosion	Oxidising, highly flammable, extremely flammable, explosive.	Observe explosion protection measures and experiment carefully: No flame, sparks, vibration.
Health impairment	irritant, sensitising, harmful to health (carcinogenic, mutagenic, toxic for reproduction) corrosive, toxic, very toxic.	Avoid incorporation, inhalation and skin contact. (Work in fume cupboard/safety cabinet, wear prescribed protective clothing)
Harm to the environment	Environmentally hazardous	Do not release, but dispose of properly

The hazardous substance classes are labelled with class-specific hazardous substance symbols.

**9.1.2** The regulations on the handling of hazardous substances on the container labels (H and P statements), in the operating instructions and the safety data sheets of the chemical distributors must be complied with.

### 9.2 Storage of chemicals

**9.2.1** Chemicals stored in the laboratory must be organised, clearly arranged and limited to the necessary quantity. Containers must be labelled with a clear substance name, concentration details, date of manufacture and manufacturer. Hazardous substances must also be labelled with hazardous substance symbols. The storage of chemicals in commercially available food packaging or in beverage bottles is prohibited.

**9.2.2** Only those hazardous substances and self-produced reagents that can still be used within a reasonable period of time may be stored in laboratories; everything else must be safely destroyed, disposed of or handed over to the chemicals exchange (BI laboratory supply store).

**9.2.3** Flammable, highly flammable, extremely flammable and explosive liquids may only be stored in laboratories in quantities of no more than 1 litre necessary for manual use. Larger quantities may only be stored in designated safety cabinets.

**9.2.4** Refrigerators for the storage of oxidising, highly flammable, extremely flammable and explosive liquids must be explosion-proof.

**9.2.5** Biological preparations containing hazardous substances (e.g. as preservatives) may only be stored in cabinets designed for this purpose and connected to the exhaust air.

**9.2.6** Toxic, very toxic, carcinogenic, mutagenic or reprotoxic substances may only be stored in locked locations that are only accessible to competent or instructed persons.

## 9.3 Handling carcinogenic and mutagenic substances

**9.3.1** Before using carcinogenic, mutagenic or mutagenic chemicals, check whether these substances can be replaced by other processes. Extreme care and caution must be exercised when handling these hazardous substances.

**9.3.2** When handling toxic, very toxic, carcinogenic, mutagenic or reprotoxic substances, special employment bans must be observed for young people, women of childbearing age and pregnant women. There is a duty of investigation for those responsible and the following provisions must be observed: Chemicals Act, Hazardous Substances Ordinance, Maternity Protection and Youth Labour Protection Act, GUV-SR 2005 and TRGS 526.

## 9.4 Transport of chemicals

**9.4.1** When transporting and decanting chemicals, suitable measures must be taken to prevent spillages (transport chemical containers in buckets, use suitable aids for decanting). Any leaked liquid or spilt hazardous substances must be properly disposed of immediately. Any absorption material used must then be disposed of as hazardous waste.

**9.4.2** When decanting and filling cryogenic liquid gases, safety goggles and cold protection gloves must be worn. Protective measures against asphyxiation must be observed. Liquefied gases may only be transported in the containers provided for this purpose. The simultaneous transport of liquid nitrogen and persons in lifts is prohibited.

## 9.5 Compressed gas cylinders

Pressurised gas cylinders may only be transported with the protective cap screwed on and using the special transport trolleys. Storage is only permitted in the designated gas cylinder rooms. During operation, they must be secured against falling over and protected against heating. Pressure reducers may only be fitted and replaced by qualified personnel. Pressurised gas cylinders whose withdrawal valves cannot be opened by hand must be labelled, taken out of service and immediately handed over to the BI laboratory supply store.

## 9.6 Waste disposal

**9.6.1** Solid and liquid hazardous waste must be collected in accordance with the "Service Instructions for the Disposal of Hazardous Waste at the University of Oldenburg" (available from the chemicals store).

**9.6.2** Hazardous substances must not be disposed of with residual waste and waste water. They must be collected in appropriately labelled collection containers. Different hazardous substances of the same hazardous substance class may only be mixed after checking their compatibility. Toxic and very toxic substances must always be collected in separate containers. Very toxic substances must be inactivated if possible before being added to hazardous waste. Collection containers must be stored in suitable locations according to their contents. Full collection containers must be handed over to the BI hazardous waste interim storage centre.

**9.6.3** Glass and broken porcelain (collection in special glass waste containers) and other objects that could cause injury during transport may not be disposed of with residual waste in the same way as hazardous waste. This also includes needles. These must be collected in puncture-proof waste containers. Full collection containers must be handed over to the BI hazardous waste interim storage centre.

**9.6.4** Radioactive waste, animal carcasses, organisms covered by the Biological Substances Ordinance, waste from molecular biology experiments and genetically modified organisms are subject to special disposal regulations (see Section 1).

## **10 Behaviour in the event of malfunctions and danger**

**10.1** If the ventilation system or fume cupboards fail, experiments with substances that are harmful to health, toxic or odorous must be stopped immediately. The equipment must be secured and the fume cupboard labelled accordingly. Persons at risk must be warned and, if necessary, asked to leave the room.

**10.2** In the event of a power failure, all ongoing experiments must be cancelled immediately and secured accordingly.

**10.3** If quantities of gases, vapours, dusts, solids or liquids that are hazardous to health and/or the environment are released in an uncontrolled manner in a laboratory, all persons present must be asked to leave the danger area immediately; neighbouring areas must be warned. The danger zone may only be re-entered after explicit authorisation.

## **11 Behaviour in the event of accidents and first aid**

### **11.1 First aid**

**11.1.1** Keep calm when dangerous situations arise and avoid rash, hasty action.

**11.1.2** Pay attention to your own safety when providing assistance! Personal protection takes precedence over property protection!

**11.1.3** Injured persons must be given first aid immediately.

**11.1.4** In the event of eye injuries caused by chemicals, rinse immediately with water for a longer period of time (10-15 minutes), use the eye showers and then consult an ophthalmologist.

**11.1.5** In the event of burns or extensive chemical burns, rinse contaminated skin with plenty of water using the body safety showers.

**11.1.6** In the event of serious personal injury, make an emergency call: **Dial 112**

**If you call and say "This is an emergency call", the trained staff of the emergency call centre will interrogate you and ask any detail they need for their operation.**

**11.1.7** After the emergency doctor has been alerted, employees must be posted at the access routes to the university (main entrance and side entrance delivery) to show the rescue personnel the shortest route to the accident site. Do not leave injured persons alone until the doctor arrives.

**11.1.8** In the event of acute poisoning, advice can be obtained from the poison control centres:

**Poison emergency call centre: 0551-19240**

**11.1.9** The responsible leaders must be informed immediately in the event of accidents (if necessary, an accident report must be submitted). In the case of minor injuries, these must be entered in the first aid book. After accidents, only consult accident doctors (D-doctors). A list of all D-doctors can be found at

**Staff unit AGBS of the CvO University of Oldenburg.**

**11.1.10** All cases of injury, chemical burns, poisoning and electric shock must be reported immediately to the responsible head of the work group concerned. The latter will decide whether the person concerned can then continue to work in the laboratory.

## **12 Behaviour in case of fire and fire alarm**

**12.1** Fire safety instructions are displayed in all corridors and stairwells, knowledge of which is also a prerequisite for working in the laboratories.

**12.2** Everyone who starts laboratory work must be informed about the presence, location and handling of fire extinguishers, fire blankets, emergency showers, fire alarms and bandages.

**12.3** Incipient fires must be extinguished with a fire extinguisher or sand. Ensure your own safety when doing so. Fire extinguishers, fire blankets and sand buckets are only suitable for fighting small incipient fires. In the event of larger fires, the fire brigade must be alerted as quickly as possible.

**12.4** In the event of clothing fires, the emergency shower or fire extinguisher must be used immediately, or the injured person must be covered with a fire blanket.

**12.5** In the event of major fires and fire alarms, immediately secure the workplace (switch off gas and electricity; cooling water must continue to run) and leave by the shortest escape route, avoiding the use of lifts. The appropriate assembly point must be visited immediately.