UNIKASSEL
VERSITÄT

General Operating Instructions
for Laboratories at the
Universität Kassel

– Laboratory Rules and Regulations –

Faculty: .....

Institute/Technical Unit: .....

Applicable for Rooms: .....

Responsible Laboratory Head: .....

Telephone: .....

Deputy Laboratory Head: .....

Telephone: .....

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3 Scope, General Information

These general laboratory rules and regulations describe hazards which may occur for humans and the environment in a science or engineering laboratory, establish the general necessary protective measures and code of behaviour, provide information concerning particular hazards, and regulate the handling of hazardous substances.

They serve as operating instructions according to § 14 of the Gefahrsstoffverordnung (GefStoffV) [GefStoffV = Ordinance on Hazardous Substances] and must also consider risk assessment according to the hazardous substances assessment as per the Arbeitsschutzgesetz (ArbschG) [ArbschG = German Occupational Health and Safety Act] as well as the GefStoffV.

They must be adjusted or supplemented in **Appendix A 1** by laboratory management with site- and activity-based information for the particular laboratory-specific work areas and working practices applicable to the respective laboratories.

Relevant documents, legislation, regulations, guidelines and publications concerning activities in the laboratories as well as their bibliographies are specified on the homepage for the Gruppe Arbeits- und Umweltschutz [Group for Occupational and Environmental Protection] at:

http://www.uni-kassel.de/go/arbeit-labor

In addition to these laboratory rules and regulations, any further material-, workplace-, machine- and activity-related operating instructions are to be devised and observed, where applicable. For specialised laboratories (gene technology, usage of radioactive materials) development of specific operating instructions is mandatory.

Laboratory rules and regulations are considered binding for all employees and students of and visitors to the Universität Kassel who work or take residence in laboratories.

It is essential to know and recognise all laboratory employees. All equipment in the laboratory space must be open to inspection and visible at all times.

Orders issued by the laboratory management to personnel in a supervisory capacity and to authorised persons for hazardous substances, as well as, where applicable, information from specialists in occupational safety and from safety officers, all written instructions, as well as warning signs, prohibitive signs and mandatory signs are to be observed.

Any work or residence in the laboratories, including their adjoining rooms, i.e. storage or inspection rooms, requires the approval by the laboratory management. Intended uses are to be arranged with the laboratory management beforehand.

Laboratory rules and regulations as well as significant modifications to working conditions or new information (accidents, near-accidents, etc.) within the scope of instruction implemented during a minimum time frame of once per year are to be verified for their currency and adjusted if necessary.

The following documents must be permanently displayed and clearly visible in the laboratory:

- title page for laboratory rules and regulations
- Part A of the fire safety regulations
- relevant alarm and safety plan for respective circumstances (see Appendix A 2)

Information regarding occupational safety, handling of hazardous substances, personal protective equipment etc., as well as the associated legal fundamentals can be found on the homepage for the Gruppe Arbeits- und Umweltschutz [Group for Occupational and Environmental Protection] If you have any questions, please contact the staff or occupational safety officers:

http://www.uni-kassel.de/go/kontakt

4 Responsibility

Responsibility for all laboratory activities at the Universität Kassel is regulated by the "Richtlinie zur Organisation des Arbeits-, Gesundheits- und Umweltschutzes an der Universität Kassel (AGU-Richtlinie)" ["Guideline for Organising Occupational Safety, Health, and Environmental Protection at Universität Kassel (AGU Guideline)"]. Accordingly, obligations therein lie under the purview of all personnel with supervisory or management functions (professors, university lecturers, heads of institutions, departments, workshops or laboratory facilities) with respect to occupational safety, health, and environmental protection.

Responsibility extends respectively to the total department management scope and includes, among others, the ground work for all necessary measures, for example, development of all necessary risk assessments, basis for occupational health examinations, implementation of training, etc.

As per the aforementioned "AGU Guideline", the supervisory professor is deemed the responsible Laboratory Head. Within central institutions the Dean, Executive Director or Institution Head are designated as the responsible Laboratory Heads and are granted the right to appoint a Deputy Laboratory Head. Laboratory management and substitute representation are to be recorded by name and telephone number on the title page of the Laboratory Rules and Regulations.

Responsible members of the Executive can assign either individual duties or "comprehensive duties" in writing to the appropriate specialised personnel. A transfer of duties can also be cited in the employment contract. However, the organisational, selection and control responsibility remains independent of the ensuing delegation by the responsible assigning persons.

Laboratory employees likewise bear responsibility for their allocated occupational duties within the scope of their responsibilities in terms of personal decision-making and creative opportunities. They are obligated, according to their capabilities as well as by the guidance and instruction of responsible laboratory personnel, for their safety and health in the workplace and for safety and health protection of those who are affected by their actions or negligence.

Information regarding responsibility for occupational safety and environmental protection can be found at the following home page:

http://www.uni-kassel.de/go/agu-verantwortung

5 Risks to Humans and the Environment

Depending on the type of laboratory, there are not only potential risks by means of hazardous substances and ionising substances, but also mechanical, electrical, physical, biological, thermal as well as fires and explosions which can pose risks for the user.

The following are deemed as hazardous substances within the context of the Verordnung zum Schutz vor Gefahrstoffen (Gefahrstoffverordnung- GefStoffV) [Ordinance for the Protection from Hazardous Substances (Ordinance of Hazardous Substances – GefStoffV)]: solid, liquid or gaseous substances, including mixtures and solutions (preparations), if they can be affected by

- explosion and/or fire hazard
- a direct or indirect impairment to human health
- a risk to the environment

Intake of substances into the human body can occur by means of inhalation, absorption through the skin or mucous membrane or by swallowing. These substances can have a sensitising or toxic effect and cause illnesses. In many standard laboratory procedures fumes and dust particles exist whose exposure to humans can cause illnesses.

Improper handling, storage or disposal can release hazardous substances into the environment and cause damages.

Personnel handling these substances must be informed of their properties, effects, appropriate precautionary measures, behaviour in the instance of danger and possible first aid actions. Personnel must also be thoroughly informed regarding proper disposal of hazardous substances.

6 Safety Precautions and Code of Behaviour

Every laboratory user must act in a manner that does not endanger himself or others!

6.1 Instruction

Prior to any laboratory activity the laboratory management or representative must verbally provide thorough, pertinent workplace-related instruction for employees, doctoral candidates, students and interns as well as cleaning personnel regarding general and duty-related risks in the laboratory as well as measures to avoid these risks.

Instruction is mandatory prior to initial laboratory use and must be conducted at a minimum of an annual basis.

The Laboratory Head must familiarise laboratory users with the content of these laboratory rules and regulations (General Operating Instructions), operating instructions for hazardous substances, machines and activities, as well as fire safety regulations and the emergency and alarm plan at the Universität Kassel.

Instructions must be documented in writing and contain the following information: content and subject matter (keywords) as well as time frame and duration of training, signature of instructed personnel (confirmation) and name of the instructor.

6.2 Emergency facilities

All employees and students must be aware of the locations for the following emergency facilities and have instruction relevant to their functions:

- emergency shower (body emergency shower and eye emergency shower)
- equipment for first aid such as first aid kits, first aid log book, defibrillators
- location and use of emergency medication for activities involving hydrofluoric acid
- emergency switch-off devices for power, water, gas and/or electricity. The Laboratory Head must be informed immediately after any instance of an emergency switch-off.
- firefighting equipment such as fire extinguisher, wall hydrant, fire blanket, sand, manual fire alarm
- emergency exits, evacuation routes
- location of emergency kit (binders, metal shovel, broom, protective masks, if necessary)

Emergency facilities may not be restricted or obstructed. They must be clearly visible and easily accessible and must not be rendered inoperable.

Body emergency showers, eye emergency showers and safety cabinets are to be checked on a monthly basis for their functional capability by laboratory personnel (see list of Persons in Charge in Appendix A 5).

Fire extinguishers are to be filled after every usage. Please consult personnel at the Service Desk Building, Tel. -7777.

Contents of first aid kits are to be regularly checked for completeness and replenished, if necessary (see list of Persons in Charge in Appendix A 5).

Emergency fire doors are to be kept closed. The self-closing mechanism may not be blocked by wedges or any similar objects.

Any shortages or damages involving emergency equipment/facilities must be immediately reported to the laboratory management.

6.3 Handling of Hazardous Substances

Any activity involving hazardous substances can only be undertaken once a risk assessment has been performed and the required safety measures have been fulfilled. Further ongoing risk assessments are not explicitly required for individual experiments, if certain basic conditions have been met (cf. Section 3, DGUV Information 213-850 [DGUV = German Social Accident Insurance], "Sicheres Arbeiten in Laboratorien" ["Working Safely in Laboratories – Basic Principles and Guidelines"]. As a rule, it is recommended to assess whether a less hazardous substance is more suitable for intended use.

Identified specific risks (R phrases or H phrases and EUH phrases) and safety advice (S phrases or P phrases) are binding components of the general laboratory rules and regulations.

When handling substances that are not unambiguously classified as non-hazardous, they are to be treated in the same manner as hazardous substances.

Inhalation of fumes and dust particles as well as eye and skin contact with hazardous substances is to be strictly avoided. Substances which are very toxic, toxic, carcinogenic, mutagenic, teratogenic, hazardous to health, corrosive or flammable gases, fumes, aerosols or substances that can release dust particles, may only be performed with the use of a fume hood. The front fume hood's shields should be kept closed as often as possible.

For activities with fluoric acid the appropriate emergency medications (calcium gluconate) are to be in close proximity and updated regularly (observe the expiry date!).

Users are responsible for order and cleanliness in the work environment. Cleaning laboratory tables and other laboratory equipment is to be carried out by users at the end of any working process, work section or work day.

Pipetting by mouth is strictly prohibited without exception.

Eating, drinking and smoking in the laboratory is prohibited. Food may not be kept in the laboratory. No food or beverages may be heated in the drying oven or any other laboratory furnace.

With respect to impairment to work performance by means of alcohol, drugs or medication, working in or entry into the laboratory area is strictly prohibited.

6.4 Safekeeping, Storage, Transportation

All containers in the laboratory in which hazardous substances are kept must be labelled accordingly. Hazardous substances can comprise one or several characteristic groups. Both during and after the transition phase labelling may be organised according to material and preparation guideline as well as the Globally Harmonized System (GHS) regulation. A comparison of hazard symbols and pictograms are found in the DGUV Information 213-039 (previously BGI/GUV-I 8666). http://www.uni-kassel.de/go/gefahrstoffe

Containers with waste products must also be correspondingly labelled.

For each work area, including storage rooms, a list of available and utilised hazardous materials and their current status is to be maintained.

For this purpose, Universität Kassel employs the **Gefahrstoffkatastersystem** [hazardous substances inventory system], **CLAKS** [Chemical and Hazardous Substances Inventory Systems] with which all existing hazardous substances in the laboratory can be inventoried. Proper labelling of containers with the required hazard pictograms and information can be facilitated with the use of CLAKS.

http://www.uni-kassel.de/go/claks-info

Hazardous substances may not be stored or kept in containers whose form or labelling of contents therein could be mistaken for foodstuffs.

Flammable liquids requiring cold storage as well as highly flammable and easily flammable substances may only be kept in refrigerators or refrigeration units whose interior is protected against explosions.

Hazardous substances may not be stored in the laboratory. Only the required quantity of hazardous substances is permitted in the laboratory that is necessary for an activity's continuation. In particular, quantities of flammable liquids in the laboratory are to be restricted to only the absolute necessary amount. Flammable liquids with a flash point below 60°C for manual use may only be kept in containers with a maximum nominal volume of 1 litre. The total volume of 10 litres per laboratory should not be exceeded. In the instance larger quantities are absolutely necessary for an activity's continuation; respective substances are to be kept in safety cabinets.

Very toxic or toxic substances and preparations are to be kept under lock and key or in such a way that they are only accessible by technical professionals or their employees. Laboratory employees are to be informed in advance of specific hazardous substances prior to use.

All storage vessels are to be labelled with the name of the substance and accompanying hazard symbols/hazard pictograms; larger vessels (more than 1 litre) are to be extensively labelled, i. e. with hazard warnings and safety phrases. New containers must be labelled according to new hazardous substances labelling protocol; transition periods for previously applicable hazardous substances labels are to be observed. Double labelling on vessels is prohibited.

Any hazardous substances on hand in the laboratory are to be assessed for proper condition on a minimum of an annual basis. Hazards substances that are no longer necessary or rendered unusable are to be disposed of in an appropriate manner.

Transport of hazardous substances and other work materials is to be carried out with the appropriate equipment (i. e. gas cylinder trolley). Glass bottles may not be carried by the neck. Bottle baskets, buckets with handles are other suitable means of transport that can be used. Specific provisions for transporting hazardous substances in elevators are referenced.

For radioactive substances, specific standards from the Strahlenschutzverordnung (StrlSchV) [Radiation Protection Regulations] and instruction for radiation protection at the Universität Kassel apply.

For biological working substances,(i. e. infectious) specific regulations from the Vorschriften der Biostoffverordnung (BioStoffV) [Ordinance on Biological Agents] as well as the corresponding operating instructions apply.

For handling genetically altered organisms, specific regulations from the Vorschriften der Gentechnik-Sicherheitsverordnung (GenTSV) apply [Genetic Technology Safety Regulations].

6.5 Technical Equipment, Devices and Facilities

Electrical equipment, devices, facilities and tools etc. are to be checked by means of a visual inspection for external damage prior to commissioning. Defective or damaged equipment or devices may no longer be used and are to be brought to the attention of laboratory management. Repairs to electrical equipment may only be carried out by

qualified electrical technicians. Safety devices are not to be removed. Safety devices include hazardous substances extraction devices or shockproof panels for parts under voltage.

Laboratory management must monitor adherence to inspection intervals for recurring inspections as well as arrange all inspections.

Custodial work, maintenance, equipment servicing and repairs are only permissible upon consultation with laboratory management in order to prevent any hazards to laboratory property or personnel

Any modifications to the power, water and gas supply as well as corresponding repairs to equipment are only permitted by authorised personnel with the appropriate professional expertise.

6.6 Hoods (Fume hoods)

Hoods in the laboratory serve to prevent hazardous substances from entering inhaled air while working and to protect the user from being splashed from hazardous substances or airborne glass fragments.

Hoods are only fully effective while the front and lateral panes are closed. While working under the hood, the front slide should not be open any wider than necessary. The user's head should always be protected by the pane. The front panel must be closed upon completion of work.

The hood is to be examined for its functional capability prior to each use, i.e., by paper strips or wool thread (provided there is no electronic warning device available). Defective hoods may not be used and are to be marked accordingly. Any identified significant defects are to be rectified immediately. In this instance please consult technical building management or the authorised maintenance manager.

Only the amount of chemicals required for an activity's continuation is permitted for use under the hood. Shelving in proximity to the hood is not allowed.

Pollutants may be released inside the hoods in the event of malfunctions or while filling laboratory equipment. Excess reaction gases, fumes, aerosols or dust particles which exist under normal operations are to be collected by means of specific measures (i. e. via appropriate washing bottle assembly or special filter).

In the case of exhaust air system breakdown, malfunction or low function which is displayed on the monitoring device, all work procedures are to be discontinued. Devices are to be switched off (cooling water may continue running, if necessary) and a supervisor must be immediately informed.

Hoods may not be used as a storage site for hazardous substances. Any substances and equipment that are not directly necessary for continuing an activity are to be removed from the hood.

Hoods in their capacity as safety-related implements must undergo regular maintenance and be inspected and documented for their functional capability. Inspection must be conducted on a minimum of an annual basis by qualified personnel. Air exchange rates are to be inspected yearly by the technical building management.

6.7 Safety work benches:
Information regarding operation and potential risks specified in the operating instructions provided is to be studied and observed.

6.8 Drying ovens:
Safety thermostats for drying ovens are to be used at all times. They must also be regularly inspected for their functional capability.

6.9 Autoclaves:
Information regarding operation and potential risks specified in the operating instructions provided is to be studied and observed.

6.10 Centrifuges:
Accident prevention legislation DGUV Regulation 100-501, Ch. 2.11 (previously GUV-R 500) and specific operating instructions are to be observed. The maintenance stipulated therein is compulsory. A clearance of at least 30 cm around centrifuges must be heeded.

6.11 Lasers:
To ensure the safe operation of lasers, a laser officer must be appointed for the laser classes 3R, 3B and 14. The DGUV Standard 12 "Laserstrahlung" ["Laser Radiation"] (previously GUV-V B2) is to be observed. Operating instructions are to be posted in the laboratory and observed accordingly. Please ensure no unauthorised persons have access to the laboratory space during their operation.

6.12 Distillation units:
Ensure that in case of disturbances to the water feed that the heating unit will automatically shut off by means of appropriate mechanisms. Exercise proper measures to prevent boiling delays and observe the operating instructions provided.

6.13 Vacuuming:
To protect against airborne glass fragments caused by implosions, glass containers are to be secured with shrink film or adhesive film, protective guard, protective shield or protective curtains. The same measures also apply for working with rotary evaporators, and are to be exercised with a closed hood or behind a protective shield.

6.14 Compressed gas cylinders:
It is advisable to use the smallest possible bottles and to restrict their quantity to only the absolute necessary amount.

Storage of compressed gas cylinders in the laboratory is not permitted.

Compressed gas cylinders are to be secured on site with a steel bracket or chain to protect against accidents. Brackets are to secure only as far as the upper third of the bottle, not the valve.

Compressed gases are to be removed from the firmly installed work station connection points. If this is not possible, compressed gas cylinders may only be installed upon approval by the laboratory management.

Cylinders are to be housed in thermally insulated safety cabinets (alternatively: brought to the warehouse at the end of the work day/to thermally insulated safety cabinets) (Select appropriate option).

Compressed gas cylinders, whose contents are particularly high-risk (flammable, oxidizing, very toxic, toxic, hazardous to health, carcinogenic, mutagenic, teratogenic, or otherwise hazardous to health), may only be used in cylinder cabinets with forced air ventilation systems. Cylinders are not permitted to be stored in the laboratory hood, but must be brought into the warehouse / into thermally insulated cabinets at the end of the work day.

During the use of very toxic and toxic gases, the experimental set-up must also be aspirated (under fume hoods).

Compressed gas cylinders may only be transported by means of a specialised transport trolley and equipped with an unscrewed protective valve cap. Carrying cylinders is prohibited. Transport of cylinders in elevators occupied with passengers is prohibited.

If cylinder valves cannot be opened manually, they are to be brought to the warehouse/returned to the supplier. Use of pliers or other implements is prohibited.

6.15 Liquid Nitrogen:

Operating instructions are to be observed. Use the provided PPE body protectors (glasses / face guard, gloves). Ensure there is adequate ventilation when handling large quantities, as well as during their filling. Transport of gas cylinders and vacuum jugs with liquid hydrogen or helium in elevators occupied with passengers is prohibited.

6.16 Personal Protective Equipment (PPE)

It is mandatory to wear personal protective equipment for all activities in which wearing PPE is stipulated.

In laboratories where hazardous substances are handled, protective laboratory safety glasses are compulsory. Wearing a protective visor may also be required. Normal corrective glasses are not suitable for proper eye protection. Spectacle wearers must either have optically corrective protective glasses or wear over goggles over their corrective lenses.

Suitable work clothing must be worn for work in the laboratory. Work clothing is to sufficiently cover the body and arms and must be made of fabric whose flammability and melting behaviour does not pose a risk in the event of fire. A cotton laboratory smock fulfills these requirements. Regular street garments are not considered as appropriate laboratory clothing.

Only sturdy, closed-toe, and slip-proof footwear is to be worn.

The protective equipment specified in the operating instructions and in the safety phrases (S/P phrases) i .e. safety goggles, face guard and suitable gloves are to be worn in the laboratory. While handling very toxic, toxic or corrosive compression gases, respiratory protection with the appropriate gas filter must be kept on hand in the work area.

Gloves, i. e. disposable or chemical-resistant gloves may not be worn outside the laboratory and are to be removed while making telephone calls, opening doors, using water faucets, computer keyboards etc. In the case of (potential) contamination, gloves are to be changed immediately. Suitable gloves for handling chemicals are to be selected as per the safety data sheet and as cited in the operating instructions. Work clothing and PPE are to be kept separate from street clothing.

Skin protection products, cleaning agents and care products are to be used in accordance with the skin protection procedure displayed in the laboratory.

6.17 Regulation of working hours, prohibition of working alone

Work activity in the laboratory is permitted as a rule on the basis of a minimum of two persons simultaneously present, or upon prior consultation regarding the presence of other specialised personnel in close proximity.

Within the scope of risk assessment it can be ascertained - whether by virtue of the type of activities (no risk or minimal risk) or by means of additional technical and organisational measures - if working alone is permitted. If there are insufficient safeguards for working alone, this practice must not be carried out.

While conducting experiments which require constant supervision, the work station may only be vacated if another trained employee assumes supervision or by appropriate automatic effective protective measures can safely prevent any instance of dangerous conditions.

6.18 Maternity protection, youth protection

In the handling of dangerous substances, prohibition of employment and employment restrictions apply for pregnant women as well as for expectant and nursing mothers. Therefore, the responsible laboratory management is to be immediately informed of a pregnancy.

Continuing employment for expectant and nursing mothers at the Universität Kassel is feasible only according to individual case assessment (Gefährdungsbeurteilung) [Risk assessment] with the participation of the Gruppe VC Occupational and Environmental Protection and with the involvement of the company physician as well as the health and safety officer, if necessary. For information, see "Schema zum Ablauf bei Meldung einer Schwangerschaft" ["Procedure for Reporting Pregnancy"] at: http://www.uni-kassel.de/go/mutterschutz

Young persons may only work with hazardous substances under certain conditions and only under the supervision of specialised personnel (see Jugendarbeitsschutzgesetz - JArbSchG) [JArbSchG = Young Persons Employment Act].

6.19 Occupational health care

All employees are entitled to occupational health care. The "Beurteilungsbogen für Arbeitsmedizinische Vorsorge" ["Assessment for Occupational Health Care"] shall determine whether and in which scope compulsory or optional care is to be implemented.
If **mandatory health care** is required as per the assessment form, this stipulates that employees are only permitted to work at their workstation once they have been medically examined and provide the corresponding doctor's note. If the assessment form indicates **optional health care** is required, this category of care is to be provided to the employees. **Elective health care** is to be facilitated for appropriate activities in justified cases. Information at: http://www.uni-kassel.de/go/arbeitsmedizinische_vorsorge

6.20 External laboratory personnel:

Cleaning personnel are only permitted to work in the laboratory under the condition they were previously instructed by the laboratory management or qualified staff and have been informed of the risks in the laboratory. Instructions are not only to be carried out in clear form and language, but also frequently repeated and documented.

Cleaning of laboratory tables and other laboratory equipment by custodial staff is prohibited. This activity is only to be undertaken by laboratory users.

Cleaning personnel may not dispose of laboratory-specific waste of any form.

Corrosive and flammable liquids must be housed in such a manner (i. e. in cabinets) that they cannot be overturned by the cleaning personnel.

One or more telephone numbers are to be provided to cleaning personnel by which they can obtain professional information on appropriate procedures in case of an accident.

For all activities carried out in the laboratory by tradespeople, laboratory personnel must extensively clear the working area from chemicals to prevent any instance of danger. Tradespeople are not permitted to clean the area themselves.

Tradespeople are to be instructed with regard to potential risks and sufficiently supervised. Instruction to this end must be documented.

7 Behaviour in Dangerous Situations

7.1 General information

- keep calm and avoid precipitous action!
- personal safety takes priority over property protection.
- warn persons at risk and order them to vacate the area, if necessary. Provide first aid. Insofar as possible, attempt to safely transfer gas, power to a safe mode and shut off water supply, if necessary (cooling water and inert gas supply must continue operating!).
- call emergency numbers 112 and 2222, if necessary.
- inform laboratory management and/or supervisory staff
- serious accidents are to be reported to extension 2222 (internal University emergency number) by laboratory management or persons rendering assistance immediately after alerting emergency services and the fire department per emergency number 112 (Note: serious accidents consist of fires or the release of large quantities of hazardous substances, explosions, pressure vessels busts, malfunction of crane components).
- after the occurrence of serious accidents, changes to the accident scene up to the arrival of emergency services and/or police may only be carried out when casualties are protected from additional injuries and greater material damage is prevented.
- consult specific information from substance-related operating instructions
- for injuries, discomfort, skin reactions as well as injuries from contamination with infectious material, call emergency services and immediately locate a doctor – even when first aid has already been administered (for accident insurance consultant information see Emergency and Alarm Plan).
- verify information for emergency services or physician. If necessary, provide either emergency services or the physician information regarding chemicals from the safety data sheet, individual operating instructions, or bottle label.
- for information pertaining to first aid measures, consult the “Merkblatt Erste-Hilfe”[“First Aid Instructions”] placard in the laboratory as well as Chapter 8.

7.2 Fire:

In the case of an outbreak of fire follow instructions according to the defined regulations cited in Brandschutzordnung der Universität Kassel. [Fire Safety Regulations at the Universität Kassel]

7.3 Leakage of dangerous gases:

Whenever possible, close valves and/or, insofar as self-endangerment can be ruled out, ensure proper ventilation. Avoid ignition sources in the presence of flammable gases, do not operate electric switches.

7.4 Leakage of dangerous liquids:

Absorb fluids using suitable binders (in emergency kit). Binders and emergency kit are available in Room ..... Properly dispose of absorbed liquids.

7.5 For combustible liquids:

Avoid ignition sources, do not operate electric switches, and ensure efficient ventilation as long as this poses no personal risk. Absorb with appropriate vacuum implements or binders (in emergency kit), bring into an open air space or use tightly sealed collection containers and inform supervisory staff. Properly dispose of absorbed liquids.

7.6 For corrosive liquids:

Keep area well-ventilated, absorb with appropriate binders and inform supervisory staff. Ensure proper disposal. In case it is necessary to vacate the premises, switch off devices when feasible (except for cooling water).

For particularly crucial experiments, special regulations may be required due to potential instances of false alarms. These regulations are to be established by laboratory management in writing prior to commencement of experiments and cited with these laboratory rules and regulations in Appendix A 1.

8 First Aid Principles

8.1 General Information

- call the emergency number 112 as soon as possible. Ensure your own safety while assisting individuals. For additional emergency numbers as well as information regarding first aid and first aid material, refer to the section, Emergency and Alarm Plan.
- move individuals from danger areas into open air. Exercise proper safeguards for your self-protection (protective gloves, respiratory protection).
- extinguish fires to clothing by using the body emergency shower and/or fire extinguisher. If possible, also wrap non-flammable clothing in a blanket, or roll the injured person onto the floor. Cool burns with water. Cover burns with sterile materials.
- obtain the assistance of trained first-aiders.
- in case of contamination with chemicals: remove wet clothing; in an emergency, strip completely. Use shower, if necessary. Cleanse unaffected skin with water.
- for acid burns to the eyes, rinse eyes from the inside (bridge of the nose) to the outside while the eyelid is widened for a minimum of 10 minutes or longer with either the eye wash connected to drinking water, a portable eye wash device, or with tap water. Consult an eye doctor.
- for accidents involving fluoric acids, use the emergency medications antidote gel and Ventolair compressed gas inhalation (instruction by company doctor is essential!). Inform the emergency physician accordingly and have vials of calcium gluconate readily available for the emergency physician.
- check and monitor breathing and circulation.
- place objects under the legs (elevation angle of 20-30°) for conscious casualties or those in a state of shock.
- for unconscious casualties with sufficient breathing, bring into the recovery position, tilt the head back and bring into the recovery position once breathing resumes. If casualty is not breathing, clear breathing passages and keep them open. Initiate cardiopulmonary resuscitation (CPR) and send for a defibrillator. Carefully monitor breathing if poisonous substances are in proximity of the accident site.
- use disposable gloves to staunch bleeding or apply bandages.
- inform emergency services (ambulance and emergency physician, if necessary) and bring to injured person/persons. Do not leave injured persons unattended until the emergency rescue team have arrived.
- ensure accurate information for emergency services/physician. For documents regarding chemicals provide references for the physician from safety data sheets, appropriate textbooks, or date banks, if necessary.
- record all first aid activities in the first aid log book. Once the last entry has been recorded, the log book must be retained for another 5 years.
- for less serious injuries an accident insurance consultant is to be notified (for accident insurance consultants, see the Emergency and Alarm Plan displayed in the laboratory).
- all injuries are to be immediately reported to laboratory management.
- a physician must always be consulted in the incidence of an electrical shock

8.2 Accident reporting

Accidents involving students, which result in medical treatment or an incapacity for work for more than three days are to notify Student Services, Tel. 804-2800. Student Services will complete the accident report form and forward it to the die Unfallkasse Hessen [occupational accident insurance agency in Hessen].

Accidents involving employees, which result in medical treatment or an incapacity for work for more than three days, are to report to Human Resources at Universität Kassel within three days with an accident report form. Human Resources will forward the accident report form to the appropriate occupational health insurance agency (Unfallkasse Hessen, Gruppe VC, occupational health practitioners, etc.). Accident report forms can be found on the Intranet: http://www.uni-kassel.de/go/unfallanzeige

9 Proper disposal methods

Hazardous substances and hazardous waste may not be disposed of into sewage or with domestic waste under any circumstances. If hazardous substances unintentionally leak into the sewage, immediately inform laboratory management as well as the Service Desk Building at Tel. 7777.

Quantities of chemicals und solvents used are to be restricted to the smallest possible amount. The guideline "Verwertung vor Entsorgung " ["Recycling Prior to Disposal"] applies.

Reactive residual products, i. e. alkali metals, peroxides, hydrides, are to be properly used for less hazardous substances.

Products and preparations which are self-combustible, have a highly reactive or highly oxidizing effect or cause severe reactions with water, are subject to a separate consultation prior to their disposal.

The following are excluded from the inventory of accepted materials:

- unfamiliar or undeclared waste products
- explosive materials (solid picric acid waste, silver fulminate, ammunition, explosives, or similar)
- radioactively contaminated waste products
- infectious waste products
- fire extinguishers and fire extinguisher powder
- gas cylinders

In the case of breakage of chemically contaminated glass, employees must only use the suitable disposal containers already designated for hazardous waste.

Chemical waste products are to be collected in closed, clearly labelled containers and disposed of in the warehouse for chemical waste products. Contact: Mrs. Ebert, Tel. 804-3812.

Each delivery of dangerous waste products requires a written disposal request application. Further information and request forms can be found at: http://www.uni-kassel.de/go/entsorgung

10 Entry into Force

These laboratory rules and regulations replace safety regulations for the Universität Kassel dated November 2008 and shall enter into force on the day following their publication in the Mitteilungsblatt der Universität Kassel [Newsletter of Universität Kassel].

Kassel, June 2015

UNIVERSITÄT KASSEL

- PRESIDENT -

Signed on 06/10/2015

(Prof. Dr. Rolf-Dieter Postlep)

Appendix

Appendix A 1 **Special Regulations for the Work Area**

If applicable, laboratory rules and regulations must be supplemented in Appendix A1 as documen which are specific to the respective area of operations! Otherwise please designate the documents as "not applicable".

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Appendix A 2 **Emergency and Alarm Plan**

Forms to be found on the homepage of Gruppe Arbeitssicherheit und Umweltschutz:
www.uni-kassel.de/go/notfallorganisation

Appendix A 3 **Applicable Documents**

Applicable documents for laboratory rules and regulations can be found on the homepage "Arbeiten im Labor" ["Working in the Laboratory"] *and are available for downloading.*
http://www.uni-kassel.de/go/laborordnung

- Emergency and Alarm Plan at the Universität Kassel
- Fire safety regulations at the Universität Kassel
- Sicheres Arbeiten in Laboratorien (DGUV Information 213-850, previously BGI/GUV-I 850-0, German and English) ["Working Safely in Laboratories – Basic Principles and Guidelines"]
- Sicherheit im chemischen Hochschulpraktikum (DGUV Information 213-026, previously BGI/GUV-I 8553) ["Safety in University Chemistry Courses"]
- Tätigkeiten mit Gefahrstoffen in Hochschulen (DGUV Information 213-039, bisher BGI/GUV-I 8666) ["Activities Involving Hazardous Substances in Universities"]
- Grundsätze der Prävention (DGUV Standard 1, previously BGV A1) ["Principles in Prevention"]
- GHS – Global Harmonisiertes System zur Einstufung und Kennzeichnung von Gefahrstoffen (DGUV Information 213-034, previously BGI/GUV-I 8658) [Globally Harmonized System for Classification and Labelling of Chemicals]
- Hazardous substances regulations (GefStoffV) and technical regulations for hazardous substances (TRGS) [Technical Rules for Hazardous Substances].

Appendix A 4 Safety Officers, First-Aiders, Fire Marshalls

Safety Officers	Room No.	Telephone No.

First-Aiders	Room No.	Telephone No.

Fire Marshalls	Room No.	Telephone No.

Appendix A 5 Persons in Charge

Persons in Charge of:	Name	Room No.	Telephone No.
Inspection of Body and Eye Emergency Showers			
Inspection of First Aid Kits			
Inspection of Safety Cabinets			
Inspection of			
Inspection of			
Inspection of			
Inspection of			