Pannon Egyetem
University of Pannonia

OCCUPATIONAL SAFETY AND HEALTH REGULATION

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INTRODUCTION

The Occupational Safety and Health Regulation (hereinafter referred to as: "**OSHR**") issued by the University of Pannonia (hereinafter referred to as: "**University**") on the basis of the University's Organisational and Operational Rules (hereinafter referred to as: "OOR"), Part I Organisational and Operational Rules of Procedure (hereinafter referred to as: "OORP") approved by the Senate of the University of Pannonia and adopted by the Foundation for the University of Pannonia acting as the operator exercising founders' and ownership rights (hereinafter referred to as: "**Operator**") and on the basis of the resolution by the Board of Trustees on the rules of procedure for adopting the regulations of the University of Pannonia by the Board of Trustees as well as on the basis of Act XCIII of 1993 on Labour Safety (hereinafter referred to as: "**LSA**"), MüM Decree No. 5/1993 (XII. 26.) on Implementation of Certain Provisions of Act XCIII of 1993 on Labour Safety (hereinafter referred to as: "**D.**"), NM Decree No. 33/1998 (VI.24.) on medical examination and opinion on fitness for work, professional and personal hygiene, EüM Decree No. 50/1999 (XI.3.) on the minimum health and safety requirements for work with display screen equipment are as follows:

Chapter I

GENERAL PROVISIONS

1. §

Regulation Purpose

(1) The purpose of the OSHR is to define the occupational safety and health tasks necessary for the performance of the University's operational activities prescribed by law. It aims to establish personnel related, material and organisational conditions for a safe and healthy workplace. Furthermore, the purpose of the OSHR is to enhance the protection of the health and working capacity of persons in organised employment, to improve their working conditions, thereby preventing accidents at work and occupational diseases, and to define the responsibilities, rights and obligations of the University as an employer and of the employees working for the University.

2. §

Scope of the Regulation

(1) The scope ratione materiae of the Regulation:

The OSHR fully regulates – in accordance with legal and technical requirements – labour safety and safe working conditions of the University's operations, so that they do not endanger health.

The OSHR establishes the rights, responsibilities and obligations of employees (managers and subordinates), the University's internal health and safety regulations, requirements and procedural rules on the basis of the provisions of the LSA and the ministerial decrees issued for the implementation of the LSA.

(2) The scope ratione personae and territorial scope of the Regulation:

The OSHR applies to all organisational units of the University, as well as to the University's own employees (employed under employment contracts and on an agency or work contract basis) or employees engaged in other work related legal relationship with the University and working on the University's premises and other workplaces, to employees employed on the basis of a contract with the Hungarian Academy of Sciences, to PhD students of the University, to people with student status at the University, to employees working on the premises or workplaces (offices, plants, warehouses, etc.) managed or rented by the University, as well as to visitors and guests.

The OSHR does not cover premises and establishments leased out to or permanently managed by other companies.

Chapter II

DUTIES AND POWERS

3. §

Structure of the Occupational Safety and Health Organisation

(1) The Chancellor is responsible for ensuring the personnel related, material and organisational conditions for safe and healthy working at the University, for directing the activities aimed at this, for defining the tasks and for monitoring their implementation.

(2) The Chancellor delegates responsibility for the execution of these duties in Veszprém to the Technical and Operational Director, and in the case of Zalaegerszeg and Nagykanizsa to the Directors General of those University Centres.

(3) The direct management of these responsibilities is assigned to the Head of the Department of Facility Management and Security (hereinafter referred to as: "DFMS") operating within the organisation of the Technical and Operational Directory in Veszprém, and to the employees appointed by the Directors General of the University Centres in Zalaegerszeg and in Nagykanizsa.

(4) In Veszprém, the operational tasks of occupational safety and health are carried out by the DFMS through its security technology specialists, while in Zalaegerszeg and in Nagykanizsa they are carried out by employees and outside providers with work contracts appointed by the Directors General of the University Centres.

(5) The DFMS works in close cooperation with the occupational safety and health service providers at the University Centres.

4. §

Powers With Regard to Occupational Safety and Health

(1) The primary responsibilities of the Chancellor are the following:

a) As the responsible manager of the University, the Chancellor is responsible for organising the institution's occupational safety and health.

b) The Chancellor ensures that occupational safety and health duties are carried out.

c) The Chancellor shall ensure that a budget is set aside for the performance of occupational safety and health duties.

d) He/she decides on the compensation to persons who have suffered an occupational accident or occupational disease, on the basis of a proposal from the manager of the occupational safety and health activity and the Department of Legal Affairs and Procurement.

e) The Chancellor delegates his/her other OSH management and control powers to the Technical and Operational Director, while retaining his managerial responsibilities.

f) In collaboration with the Rector, the Chancellor makes disclosures or releases statements to the public regarding events covered by the OSHR.

(2) The primary responsibilities of the Rector are the following:

a) As the head of the University, the Rector is responsible for creating safe and healthy working conditions in the organisational units under his/her control, and for compliance with the OSHR.

b) In collaboration with the Chancellor, the Rector makes disclosures or releases statements to the public regarding events covered by the OSHR.

(3) The primary responsibilities of the Technical and Operational Director are the following:

a) Managing occupational safety and health activities under the powers bestowed upon him/her by the Chancellor.

b) Participating in the annual planning of OSH activities in order to secure the necessary financial resources for the operation and development of OSH activities.

c) The Technical and Operational Director shall delegate the operational management of OSH works and the supervision of activities to the Head of the DFMS.

d) Initiating action against those who break the rules of occupational safety and health and those who cause damage.

e) Requesting reports annually from the Head of the DFMS on the OSH activities carried out.

(4) The primary responsibilities of the Director General of the University Centre are the following:

a) Ensuring the availability of personnel and material resources for the occupational safety and health organisation of the University Centre.

b) Preparing and submitting to the Senate for approval the University Centre's Occupational Safety and Health Regulation.

c) Participating in the annual planning of the University Centre's OSH activities and in the provision of the necessary financial resources to carry out and develop these activities.

d) Supervising the implementation of occupational safety and health measures, and requesting reports from those involved in occupational safety and health.

e) Initiating action against those who break the rules of occupational safety and health.

(5) With the exception of the Dean and the head of the University Centre, the head of the comprehensive organisational unit is responsible in particular for the following:

a) As the responsible head of the faculty and the comprehensive organisational unit, directing the OSH activities in the areas of his/her competence and enforcing the provisions of the OSHR in the areas of his/her competence.

b) Each year, the head of the comprehensive organisational unit requests reports from the heads of the organisational units under his/her supervision on their OSH activities.

c) On the basis of proposals from the heads of the organisational unit, he/she appoints the OSH officers and notifies the DFMS of their assignment.

d) Additional responsibilities are the same as those of the heads of organisational units.

(6) The primary responsibilities of the heads of the organisational units are the following:

a) Creating safe and healthy working conditions in the area under his/her control, and for the preservation of the health and physical integrity of employees and students.

b) Nominating the person to be the organisational unit's OSH officer.

c) Continuously monitoring and checking that the working conditions of employees and students in teaching, research and other activities are safe and without risk to health.

d) In the event of an imminent risk of an accident, suspending work and taking measures to eliminate the risk of accident.

e) Ensuring that employees and students are provided with the appropriate quality and quantity of protective equipment necessary for safe work that does not endanger their health, and that they use these in accordance with their intended purposes.

f) Ensuring that the necessary technological, operational, handling and maintenance instructions are available for activities within the organisational unit.

g) Ensuring that employees under his/her supervision only carry out activities appropriate to their qualifications.

h) Notifying the DFMS in writing if the organisational unit intends to install or put into service newly acquired, refurbished or modified work equipment, technology or workplace subject to commissioning procedure under 'D'.

i) For the commissioning and start-up procedure, obtaining, preparing and issuing the technological, operational, handling and maintenance instructions for the work equipment, technology, workplace to be put into service and started up, and ensuring the training and instruction of an appropriate number of operating personnel. Ordering the construction of buildings, technologies, machinery and equipment and their starting up following renovations.

j) Ensuring that students have constant supervision during laboratory practicals.

k) Ensuring that at least two persons at the organisational unit are assigned to carry out works involving increased risk of accidents (e.g. laboratory experiments, repair works, etc.). If necessary, putting into place an on-call system.

l) Supervising and checking that no machines, equipment, instruments, etc. are operated within the organisational unit, which do not comply with the applicable health and safety regulations and standards.

m) Participating in health and safety inspections in the organisational unit. Arranging for appropriate proxy if not able to attend to his/her duties.

n) Once a year, carrying out an inspection together with the unit's OSH officer and the security technology specialist of the DFMS and documenting the inspection in a report.

o) Ensuring that the occupational safety and health training required by the OSHR is carried out.

p) Arranging special OSH training and appointing the persons responsible for holding it.

q) Ensuring that the employees under his/her supervision have the professional qualifications required for their job and for the handling of the machinery.

r) Notifying the DFMS the Human Resource Management (hereinafter referred to as: “HRM”) of any mass illness in the unit and of any occupational disease affecting staff members while working in the university or abroad.

s) Ensuring that all accidents at work, including those that do not result in absence from work, are recorded in the Accident Logbook and reported immediately to the DFMS verbally and later in writing.

t) Assisting in the investigation of occupational accidents and occupational diseases involving employees or students under his/her supervision.

u) Ensuring that only persons with appropriate training in occupational safety and health are assigned to work independently in the organisational unit. Before the employee has received OSH training he/she may only work under supervision.

v) Determine the number of first aid providers required in consultation with the DFMS. Ensuring that sufficient first aid personnel and equipment are available during work and training.

w) Designating the required number of poison control officers if substances classified as toxic are used or stored in the unit under his/her control.

x) He/she is obliged to cooperate with the staff of the DFMS in the event of an emergency, and provide the necessary personnel and equipment for rescue and damage repair until the threat is neutralised.

(7) The primary responsibilities of the Head of the Department of Facility Management and Security are the following:

a) He/she is responsible for the operational management of the University's occupational safety and health activities through the security technology specialists and the OSH officers. He/she shall prepare OSH reports.

b) Preparing improvements in the field of occupational safety and health in accordance with current occupational safety and health legislation.

c) Reviewing the OSHR annually and, on the basis of legislative changes, or submitted proposals, initiating the necessary amendments and, if justified, the publication of a new OSHR.

d) Aggregating trends in accidents and occupational diseases. Developing effective measures to eliminate the causes of accidents and occupational diseases and monitoring their implementation.

e) Organising occupational safety and health inspections. Taking action to remedy deficiencies.

f) Initiating action to eliminate unsafe and unhealthy working conditions on the basis of reports prepared by security technology specialists.

g) Approving any measure ordering suspension of work, activity or operation of equipment and reporting it to his/her superior, following the chain of command. In circumstances where measures can prevent damage to persons and/or property, then he/she has the right to requisition assets of other organisational units, but he/she must report the disposition orally to his/her superior immediately after handling the extraordinary incident and in writing within 48 hours.

h) Facilitating and controlling that the occupational safety and health training required by the OSHR is carried out.

i) Reporting to the competent occupational safety and health authority any fatal or mass occupational disease occurring at the University, and any occupational disease suffered by a Hungarian employee working abroad.

j) Contributing to determining the number of first aid personnel and equipment and the number of poison control officers required.

k) Helping to determine the personal protective equipment needed.

l) Contribute to the preparation of occupational risk assessments.

(8) The primary responsibilities of a security technology specialist are the following:

a) Coordinating the implementation of the University's OSH activities in the area defined by the Head of the DFMS.

b) Monitoring the implementation of the provisions of the OSHR.

c) He/she is involved in the investigation of occupational accidents and occupational diseases, as well as in the investigation of the circumstances of near misses, and carries out the related record-keeping, reporting and claims handling tasks.

d) Keeping a record of occupational accidents resulting in sick leave of employees and checking it monthly against the accident records kept by the Social Security Administrator in the HRM.

e) Constantly checking that the requirements for safe and healthy work are met. In the event of a deficiency or default, initiating action to remedy the deficiency or default or to hold the person responsible accountable.

f) Providing or arranging for the appropriate OSH training for newly appointed OSH officers.

g) Participating in the technical handover, putting into service and start-up procedures, and submitting written observations or providing comments orally to be included in the minutes.

h) Providing assistance in producing any missing operating, handling and maintenance instructions, machine manuals or in preparing their occupational safety and health chapters.

i) Organising periodic safety inspections of dangerous machinery and equipment on the basis of the indication of the organisational units and the records kept.

j) Organising putting new, refurbished or relocated lifting equipment into service in accordance with the relevant national standards and the Lifting Equipment Safety Regulation, based on the indication of the organisational units and the records kept.

k) Cooperating with the occupational health service provider in the development of safe and healthy working conditions and the improvement of existing ones.

l) Developing the material for general theoretic OSH training. Sharing the training syllabus with the OSH officers.

m) Participating, together with the heads of organisational units, in the putting into service and start-up procedures of newly acquired, refurbished or converted machinery, equipment, instruments, etc.

n) After an accident, taking measures to prevent similar accidents and proposing technical measures.

o) In the event of an imminent risk of an accident – based on the prior indication received – suspending work and taking measures to eliminate the risk of accident.

p) Carrying out occupational risk assessments with the involvement of the organisational unit's OSH officer.

(9) The primary responsibilities of an occupational safety and health officer are the following:

a) In his/her area of operation, contribute to creation of safe working conditions that do not endanger health, and monitoring compliance with occupational safety and health regulations.

b) Participating in periodic occupational safety and health inspections carried out by management. Organising and documenting the periodic occupational safety and health safety inspection carried out by the head of the organisational unit. Sending a copy of the report to the security technology specialist of the DFMS. Monitoring the correction of safety deficiencies identified during the inspection and the compliance with the deadlines set. Informing the head of the organisational unit and the DFMS if the implementation is delayed.

c) Recording any accident of which he/she becomes aware, including an accident involving a student during a practical session in the Accident Logbook and reporting it immediately to the DFMS. Assisting in the investigation of the accident. Ensuring that the accident site remains closed off until investigation is launched. Making a drawing, photograph or video of the location if the location needs to be changed for any reason. Ensuring that the incident can be reconstructed later.

d) Checking whether first aid boxes belonging to his/her area are adequately filled, the personal protective equipment and devices are available and how they are used, carrying out the tasks relating to the purchase, issue, disposal and registration of personal protective equipment as set out in Chapter VIII.

e) Providing employees in his/her area with preliminary training including special, local knowledge for their position, as well as with recurrent and special training in occupational safety and health. Documenting the trainings in the OSH training logbook. If necessary, the DFMS shall assist in providing the training.

f) Cooperating with the poison and chemicals control officer in its area. Controlling the storage of chemicals and toxic substances. In case of improper storage, taking measures to correct the shortcomings and informing the head of the organisational unit and the competent poison and chemical control officer of the incident.

g) Notifying the DFMS, before introducing a new machine, technology or hazardous substance in the area under his/her purview.

(10) The primary responsibilities of the poison and chemical control officer are the following:

a) Keeping accurate records of the acquisition, storage and handover of toxic substances.

b) Ensuring that toxic substances and chemicals are stored and handed over in accordance with relevant provisions.

c) Arranging for the proper disposal of unused toxic substances, the collection of hazardous chemical waste and depositing of hazardous waste in the warehouse.

The poison and chemical control officer is appointed in writing by the head of the organisational unit.

(11) The primary responsibilities of the Laboratory's professional head are the following:

a) The Laboratory’s professional head is appointed by the head of the organisational unit. The Laboratory’s professional head directs and supervises the occupational safety and health activities in the laboratory and preparation room under his/her responsibility.

b) Participating in occupational safety and health inspections in the area under his/her control, assisting in the investigation of occupational accidents and incidents.

c) Ensuring that employees in the laboratory, irrespective of their employment status, are provided with the required type, quality and quantity of personal protective equipment and devices.

d) Ensuring that those involved in laboratory work receive the OSH training required for them in the OSHR and that the training is properly documented.

e) Ensuring that the operating instructions for machines and equipment are drawn up, the operational instructions for the laboratory work is created and communicated to those concerned. The instructions must include the potential harm, hazards and methods of protection against them during the experiments to be carried out.

f) The primary responsibilities of the person in non-managerial position coordinating the professional work (maintenance, operations team leader, etc.) are the following:

g) Creating safe and healthy working conditions in the area he/she coordinates, in accordance with the instructions of the head of the organisational unit.

h) Making sure before start of work that:

- the subordinates are in a condition that enable safe working,

- the condition of machinery, equipment, tools, etc. is safe, the protective equipment is operational /by inspecting them/,
- there are appropriate personal protective equipment /if necessary, arranging for their replacement/,
- there is order in the workplace and materials are stored properly.

i) Knowing the safety and health regulations applicable to his/her subordinates in sufficient detail to be able to assist and monitor their activities.

j) Immediately reporting any occupational accident to his/her supervisor and ensuring that all injuries, including those not resulting in loss of working time, are recorded in the Accident Logbook.

k) In the event of an accident, he/she must:

- ensure that the injured person receives medical care as soon as possible,
- notify the head of the organisational unit,
- arrange for the scene of the accident to be secured or, if the scene has to be altered for any reason – to prevent another accident or major damage to property, etc. – the scene be recorded (drawing, photo, video) in such a way that the incident can be reconstructed during the investigation.

l) Ensuring that subordinates are provided with the required personal protective equipment, cleaning products and protective drinks in a timely manner. Performing the tasks related to the purchase, issue, disposal and registration of personal protective equipment.

m) Checking that the first aid boxes are adequately filled and ensuring that they are restocked if necessary.

n) Carrying out the practical OSH training prescribed in the OSHR and documenting it appropriately.

o) Participating in the occupational safety and health inspections in the work area and taking measures to remedy any shortcomings.

p) Ensuring that subordinates do only the work assigned to them and only assigning them work for which they are qualified.

q) Participating in the preparation of operating, maintenance and technological instructions for activities within the organisational unit.

r) Reporting any anomalies reported by employees to their supervisor immediately. At the same time as reporting, taking action or requesting action.

(12) Powers of the labour safety interest representation body:

a) Employees shall have the right to choose a representative or representatives (hereinafter referred to as: 'OHS representative') from among themselves to represent their rights and interests in relation to safe and healthy working conditions, as follows.

b) Elections of an OHS representative must be held at all workplaces with at least fifty employees covered by the Labour Code. It is the employer's duty to organise and provide the settings for the election.

c) The election and activities of OSH representatives, the workplace labour safety committee and the common OSH representative body shall be carried out in accordance with the LSA.

d) The detailed rules on the labour safety interest representation and reconciliation are set out in the LSA.

e) Employees must be informed about the elected OSH representatives.

f) Employees, OSH representatives (committees) and managers exercising the employer's rights must cooperate to ensure safe and healthy working conditions, exercise and fulfil their rights and duties in accordance with their respective functions, in particular provide each other with the necessary information in a timely manner.

g) During the meeting, the University shall be represented by a person who has the authority to take action in matters of occupational safety and health. A balanced participation between employees and representatives of the University and also that employees and OSH representatives can exercise their right to make proposals shall be ensured.

h) The OSH representative is entitled to verify:

- that the condition of workplaces, work equipment and personal protective equipment is safe;
- how measures to protect health and prevent occupational accidents and occupational diseases are implemented;
- the training and readiness of employees to work safely and without risk to their health.

i) In the context of the exercise of his/her responsibilities, the OSH representative may:

- enter workplaces in the area of operation during working hours and obtain information from employees;

- participate in the preparation of University decisions that may have an impact on the health and safety of employees, including the compulsory employment of occupational safety specialists, the planning and organisation of occupational safety and health training and decisions on the establishment of new jobs or positions as well;
- request information on any matter concerning safe and healthy working conditions from representatives of the University;
- give an opinion and request the employer to take necessary measures, and the employer must take action or respond within 8 days to such request;
- take part in the investigation of occupational accidents and the circumstances of occupational diseases upon the initiative of the party entitled to conduct such investigations;
- petition the competent occupational safety and health administration in justified cases;
- give an opinion to the person conducting the regulatory inspection.

j) The manager exercising the employer's rights must ensure that the conditions are in place to enable the OSH representative to exercise his/her rights and not suffer any disadvantage from doing so.

Chapter III

PERSONNEL REQUIREMENTS

5. §

General Safety and Health Requirements for Employment

(1) A person can only be employed by the University if he/she:

a) has the necessary qualifications to do the job,

b) is medically fit for work.

(3) An employee should only be entrusted with work:

a) for which he/she is professionally and medically suitable,

b) if he/she has received appropriate training to be able to do the work safely,

c) if he/she was informed about occupational hazards, dangers the work may entail and about the ways of protection against them,

d) if he/she has received appropriate training on the proper procedures in an emergency and the necessary measures to respond to an emergency.

6. §

Medical Assessment of Fitness for Work

(1) At the beginning and during the period of employment, employees shall be sent for medical examinations of fitness for work in accordance with the provisions of NM Decree No. 33/1998 (VI. 24.) on the medical examination and assessment of fitness for work, profession and of personal hygiene aptitude. When an employment relationship is established, the competent administrator of the Human Resource Management initiates a preliminary medical examination on the basis of a proposal from the competent head of unit.

(2) The validity of medical fitness examinations is recorded by the HRM. The HRM will notify the person concerned of the inspection due by e-mail and will also inform the head of the organisational unit concerned. The competent administrator of the HRM shall send the employees to the periodic, extraordinary and final examinations. The medical examinations are carried out by a doctor from the occupational health service provider under contract to the University.

(3) The employees, when sent to the pre-employment assessment, the assessment before the change of workplace or job, or to the extraordinary or final assessment ordered for other reasons, must bring with them the form on the first page of *Annex 4* titled 'Referral for an Occupational Medical Examination' filled in, signed and stamped by the competent administrator of the HRM, and when sent to the periodic assessment of fitness for work, the employees must bring with them the form on the second page of *Annex 4* titled 'Referral for an Occupational Medical Examination'.

(4) For the medical examination all the circumstances of the job that may affect the question of fitness (e.g. noise, monotony, air pollution, working at height, etc.) must be disclosed. During the examination the results of the risk assessment carried out by the DFMS should also be taken into account. It is the responsibility of the competent administrator of the HRM to indicate the conditions, hazards and potential harm.

(5) The frequency of periodic occupational medical examinations shall be determined in accordance with the relevant NM Decree No. 33/1998 (VI. 24.).

(6) Employees must be sent for an extraordinary medical examination in the cases listed below:

a) before the introduction of a new technology,

b) before any substance hazardous to health is introduced,

c) occurrence of occupational disease or increased exposure,

d) a significant change in working conditions,

e) if the employee has been involved in an occupational accident and the investigation establishes that the occurrence of the accident is related to the state of health (e.g. incidents due to the employee suddenly experiencing sickness),

f) the employee is off work for more than 6 months for any not health related reason,

g) after 30 days of incapacity to work,

h) if there is a change in an employee's medical condition that makes it unsafe for him/her to carry out his/her duties.

(7) An extraordinary medical examination is ordered on a case-by-case basis. The examination may be initiated by the employee, the work supervisor, the general practitioner, the metropolitan and county government office as the occupational safety and health authority, and the occupational health doctor under contract with the University.

(8) On the basis of the indication of the head of the organisation exercising the authority to manage the work, the competent administrator of the HRM shall send the employee for a final examination after ten years of exposure to carcinogenic substances as defined in specific legislation, after four years of exposure to benzene or ionising radiation, and after termination of activity or employment, or in the case of work involving a risk of chronic occupational disease.

(9) If the employee refuses to take part in the final medical examination, the competent administrator of the HRM will record this fact in writing on the Employee Exit Form.

(10) The occupational health service may require the employee to undergo further medical examination, which must be available to the employee during working hours.

(11) The occupational health doctor must inform the employer in writing of the fact of fitness, the conditions of fitness or the fact of unfitness. The employee's attendance at the final medical examination must be indicated on the Employee Exit Form.

(12) If the employment is subject to special conditions imposed by the occupational health doctor, the employee may be employed or continue to be employed in the job in question only if all conditions are met.

(13) The competent administrator of the HRM must inform the employees in a timely manner, but at least two weeks before the examination, of their obligation to participate in the examination and the head of the organisational unit must ensure that they are given the opportunity to participate.

(14) Employees are required to participate in the preliminary, periodic, extraordinary and final medical examinations and occupational fitness assessments required for their job.

(15) Employees who, through their own fault, fail to attend the examination required of them must be excluded from work. No wages will be paid for the time of the exclusion.

(16) An employee who has been declared 'unfit for the job' may not continue to perform the work in that particular position.

(17) The employee is entitled to know the results of his medical examination. On request, the occupational health service must provide the information requested.

7. §

Order of OSH Training

(1) Pre-employment OSH training of employees

a) All employees are required to learn the requirements for safe and health-safe work and pass a test of their knowledge. The University is obliged to inform employees of the conditions of safe and healthy work and to ensure that they have acquired proper knowledge and that they have this appropriate knowledge throughout their employment. The training on general knowledge is given by the DFMS, and the practical training on specific, local knowledge is given by the OSH officer of the organisational unit.

b) New employees and employees who have been absent from their workplace for more than 6 months (due to sickness, maternity leave, posting abroad, etc.) must receive preliminary training in occupational safety and health.

c) Preliminary theoretical OSH training must include general information on OSH (concepts, fitness for work, rules of conduct, what to do in the event of an accident at work, etc.), the parts of the OSHR relevant to the employees, with particular focus on the obligations and rights relating to OSH.

When the employment relationship is entered into, the employee shall receive a detailed safety information booklet from the HRM, which contains the necessary theoretical knowledge of occupational safety and health, as well as basic knowledge of fire safety and security. By signing the register

kept by the HRM, the employee certifies that he/she has received the safety and security information, has read and understood its contents and accepts it as binding.

The OSH officer of the organisational unit must ensure that the employee who returns to work after a long-term absence receives prior OSH training and that the training is documented in the OSH training logbook. If necessary, the DFMS shall assist in providing the training. The competent administrator of the Human Resource Management shall inform the DFMS of employees returning from long-term absence.

d) The preliminary practical safety training provided to the employees must include:
   - the practical health and safety requirements for their work and how to comply with them,
   - the specific health and safety requirements for the technologies, machines, tools and materials used in their work,
   - the dangers, hazards, potential harm and ways to protect against them at work,
   - the practicalities of emergency and rescue,
   - rules for the use and maintenance of collective and personal protective equipment.

e) Practical OSH training must be provided by the OSH officer of the organisational unit or the workplace manager directly supervising the employee's work.

f) The trainer must record the practical OSH training in the training logbook and ensure that the document is kept for at least 5 years.

g) Until the employee has received OSH training, he/she may only be employed in his/her job under supervision.

(2) OSH training for university students

a) Full-time students of the University shall be informed of the compulsory OSH training and their responsibilities in relation thereto in the letter notifying them of their successful admission to the University.

b) The student learns detailed preventive occupational safety knowledge, the most important general and work-related skills and rules during enrolment.

c) Newly enrolled students with accommodation in dormitories must receive OSH training for the first time within 15 days of moving in. The subject of the training is the rules of the dormitory and the occupational safety and health regulations to be observed in the dormitory.

d) The dormitory director is responsible for providing occupational health and safety training to the students or ensuring that such training is provided by the teachers. A record of the training must be kept, as provided for in the sections pertaining to the training of employees.

e) All first-year students should be provided with access to electronic information material at the time of enrolment, which includes the most important rights and obligations of students in relation to occupational safety and health, the main hazards, and basic rules of conduct. It must be ensured that the opening of the document by the student is confirmed by a read receipt.

f) Regardless of the year of the students, OSH training must be given at the first session in all workshops, laboratories and practical workplaces. It is the lecturer's (instructor's) responsibility to conduct the training. The training shall cover general rules of conduct and the professional and safe handling of materials, tools, instruments and machines used during sessions. The instructor is obliged to check by means of quizzes that the students have learnt the material and the document of said quizzes must be retained.

g) During practicals outside the university area, the students must comply with the safety and health regulations of the site of the practical. The head of the organisational unit assigning the students and the head of the training centre are jointly responsible for informing the students of the safety and health requirements of the site of the practicals.

(3) Training of employees of other employers

a) Employees of other institutions and companies who work on the University's premises are required to know the hazards that may affect them.

b) When working on the University's premises, they must comply with the University's safety and health regulations, in addition to those required by technical specifications and legislation.

c) The employee of the University in managerial position who is responsible for the activities of employees of other employers must ensure that the safety and health regulations to be observed on the University premises are made

known to these third party employees in a documented manner before the commencement of work.

(4) Training of visitors

a) Visitors must be escorted on the premises by a university employee. Visitors should be provided information about the risks they may encounter during their visit, what to do in the event of an emergency and how to behave.

b) The employee escorting the visitor must give the instructions or ensure that these are given.

(5) Recurrent training for employees

a) In order to ensure that employees employed by the University have the necessary knowledge of occupational safety and health throughout their employment, so as to ensure that they are able to work safely and without risk to their health, regular occupational safety and health training must be provided.

b) Recurrent training is compulsory for all employees. Repeat training must be held for those employees who are absent within 30 days of the end of the reason for their absence.

c) The training must take place during working hours. The head of the relevant organisational unit is responsible for organising and delivering the training. If necessary, the DFMS shall assist in providing the training.

d) The training shall be given as follows:

- once every two years for the required period for non-manual workers;
- once a year for employees who work in manual jobs, are engaged in technical and maintenance activities, or are responsible for instructing and supervising students in the laboratories of the University;
- the training must be recorded in the training logbook.

e) The DFMS is obliged to provide further training or refresher training in occupational safety and health for the safety and health officers as required, but at least once a year.

(6) Extraordinary training of employees

An extraordinary OSH training must be provided:

- after the occurrence of accidents, incidents or near misses with serious or unusual causal links,

– following substantial changes to the legislation on occupational safety and health,
– in the event of a new threat emerging,
– if the conclusions of regulatory inspections justify it,
– if the workplace or job of the employee concerned changes,
– if the conditions for safe and healthy working change,
– if the work equipment used is modified,
– when new work equipment is introduced,
– when a new technology is introduced.

The head of the relevant organisational unit is responsible for organising, conducting and documenting in the training logbook the extraordinary OSH training. If necessary, the DFMS shall assist in providing the training.

(7) Jobs requiring special qualifications

a) As required by law and regulations, only persons who have the required valid qualifications may carry out activities that require certain qualifications, licences or training.

b) The head of the organisational unit is responsible for initiating enrolment in courses leading to the required qualification.

Chapter IV

PROCEDURES FOR THE PROVISION OF PERSONAL PROTECTIVE EQUIPMENT, PROTECTIVE DRINKS AND GLASSES TO ENSURE SHARP VISION

8. §

Procedures for the Provision of Personal Protective Equipment

(1) Personal protective equipment must be provided for employees, students, as well as for persons within the range of hazards or harm (inspectors, visitors, third party employees, etc.) in all cases where the hazards, harm and harmful effects occurring during their work cannot be eliminated by technical and organisational measures to such an extent that their health and safety can be ensured.

(2) The responsibilities of the DFMS in relation to the provision and use of personal protective equipment:

– Verifying that work-related hazards and potential harm are assessed, evaluated, documented and the results regularly monitored by the organisation units.
– Contributing to determining the personal protective equipment, which can provide adequate protection against the hazard/hazard.

It cooperates with the occupational health service in these activities.

9. §

Responsibilities of the Head of the Organisational Unit

(1) Contributing to the assessment of occupational hazards/harm in the organisational unit he/she manages. Ensuring the conditions for carrying out the various investigations.

(2) Ensuring that the allocation of personal protective equipment in the organisational unit is determined based on the job function and work processes, in accordance with the sample form in *Annex 3*. Cooperating with the DFMS and the organisational unit's OSH officer in determining the necessary protective equipment.

(3) Regularly checking compliance with the rules on protective equipment and in case of non-compliance, taking the necessary measures.

(4) Initiating the purchase of the necessary amount of personal protective equipment. Ensuring that personal protective equipment in appropriate quality is available in the organisational unit at all times.

(5) Ensuring that in the technical, operational, handling and maintenance instructions he/she prepares, the personal protective equipment required for the activity is specified by name, type and necessary degree of protection, and that changes affecting the protective equipment are incorporated in the instructions.

(6) In the case of the construction of new technology or equipment, immediately notifying the DFMS and request the identification of the risks related to the technology or equipment and the determination of the necessary personal protective equipment.

10.§

Employees' Responsibilities

(1) Learning how personal protective equipment provided to them has to be used and using the equipment in accordance with its intended purpose.

(2) Ensuring that the protective equipment retains its protective capacity.

(3) Report to their supervisor when the protective equipment is worn out and hand such equipment over to the OSH officer.

(4) Making sure that the protective equipment is cleaned regularly.

11.§

Determining the Need for Personal Protective Equipment

(1) The risks and hazards associated with the work must be assessed during the installation, putting into service and modification procedures.

(2) Measurable parameters (e.g. lighting, noise, vibration, air quality characteristics, etc.) must be measured with certified instruments.

(3) The risks and hazards identified by the assessment should be evaluated. Where there are occupational exposure limit values set by standards or legislation (lighting, noise, climatic factors, air quality, etc.), these should be taken into account in the evaluation.

(4) The necessary personal protective equipment must be determined in cooperation with the DFMS by organisational unit and by job, broken down by work process. The list of personal protective equipment thus defined shall be drawn up in accordance with the sample form set out in *Annex 3*.

(5) The following criteria should be taken into account when choosing personal protective equipment:

- the protective equipment must have a valid EC declaration of conformity or EC type examination certificate, an information booklet/manual in Hungarian and EC markings and symbols,
- must be fit for the necessary protective function,
- must be durable and fit the physical dimensions of the employee,
- its use must not pose a health risk.

12.§

Procurement of Personal Protective Equipment

(1) Personal protective equipment is procured by the Department of Legal Affairs and Procurement. The procurement shall be subject to prior technical-professional consultation with the DFMS.

(2) On receipt and purchase of the ordered protective equipment, it must be checked that the certifications are valid, and the equipment has the safety

markings and the information booklet/manual. Quality control should be carried out by visual inspection, based on the user manual.

(3) Defective products (items) that are not properly documented must be rejected.

(4) The protective equipment purchased must be received and logged in the inventory by the organisational unit that initiated the purchase.

13.§

Records of Personal Protective Equipment Provided to Employees

(1) For both personal and collective protective equipment provided for use:

a) the forms used for record-keeping must be completed by hand in legible handwriting, or filled in by a computer and subsequently printed out, and signed.

b) the protective equipment shall be identified by the corresponding designation in the list drawn up in accordance with *Annex 3*.

c) the protective equipment must be marked with a number on the protective equipment itself or on its packaging that can be used to identify it.

(2) The registration of personal protective equipment provided for personal use is the responsibility of the **OSH officers** appointed by the heads of the organisational units, and they are required to carry out the following tasks in relation to the protective equipment:

a) Assessing and recording the needs of the organisational unit, taking into account the list drawn up in accordance with *Annex 3* of the OSHR, and reporting these needs to the head of the organisational unit.

b) Receiving the protective equipment from the Logistics Group and documenting the receipt in the records.

c) Issuing the protective equipment to the eligible employees. Training the employees in the correct use of the protective equipment. Recording the fact of handing out equipment on the form '**Records of Personal Protective Equipment Provided to Employees**' (*Annex 1*). Having the receipt of the protective equipment and the completion of the training signed by the employees concerned.

d) Taking back worn-out personal protective equipment that has lost its protective capacity from the employees, recording the reason for their return, collecting them and initiating their disposal in accordance with the regulations pertaining to sorting out equipment.

e) Documenting in a report and taking action against employees handing back or requesting replacement of protective equipment that has clearly been tampered with or handled incorrectly.

f) Retaining records on the issuance of protective equipment and presenting these records during inspections.

g) Receipt of personal protective equipment provided for personal use must be confirmed by the signature of the employee to whom the equipment is issued.

h) The return of personal protective equipment must always be confirmed by the actual recipient's signature on the registration form.

(3) Records of protective equipment provided for shared use

a) The **OHS representative** of the organisational unit shall keep and store the forms on '**Records of Personal Protective Equipment Provided for Shared Use**' (*Annex 2*).

b) The organisational unit's **OSH officer** shall

- assess emerging needs and initiate procurement with the head of organisational unit,
- hand out the protective equipment for shared use and have the recipient sign the form titled '**Registration of Protective Equipment Provided for Shared Use'**,
- retain the records and present them during inspections,
- monitor the condition, wear and tear of protective equipment provided for shared use,
- train the employees concerned in the correct use and cleaning of protective equipment,
- gather worn-out personal protective equipment which has lost its protective capacity and initiate their disposal in accordance with the regulations pertaining to the disposal of equipment.

14.§

Training in the Use of Protective Equipment

(1) The procedures for proper use of protective equipment must be taught in the context of occupational safety and health training and when the protective equipment is handed over.

(2) The training should cover:

– the risks and hazards of the activities and how to protect against them,

– how to use the protective equipment provided for the activity,
– the content and limitations of their protection capacity,
– the consequences of not using protective equipment,
– what to do if the protective equipment fails during use,
– rules for the maintenance, care and disinfection of protective equipment.

(3) The training must be conducted by the OSH officer of the organisational unit or in case of practicals the instructor in charge of the workshop before the student workshops.

15.§

Use of Personal Protective Equipment

(1) The personal protective equipment provided for work must be used as intended by employees and by others in areas with hazardous activities and must be available in the event of an actual emergency.

(2) Managers and OSH officers who are authorised to carry out workplace inspections must take action against those who do not use the obligatory protective equipment or use it incorrectly

(3) An employee, who misappropriates, loses or intentionally damages the protective equipment, must be subject to liability proceedings.

(4) The head of the host organisational unit is responsible for the provision of protective equipment to visitors, students and public officials legally present at the workplace.

(5) Employees and students of the University are obliged to use the protective equipment specified in the list in *Annex 3* for the jobs and work processes in a given organisational unit.

(6) Personal protective equipment that loses its protective capacity must be replaced immediately. If the necessity of replacement is disputed, the continued usability of the protective equipment shall be decided by the security technology specialist authorised to carry out the occupational safety activity. Until a decision has been made, the protective equipment may not be used!

16.§

Rules for Disposing of Protective Equipment

(1) If the protective equipment has lost its protective capacity or has expired, it must be disposed of. The equipment to be disposed of is collected and disposed of by the OSH officer of the relevant organisational unit.

(2) If the protective equipment or part of it is hazardous waste, it must be treated in accordance with the procedures for the treatment of hazardous waste.

17.§

Provision of Protective Drinks

(1) It is the University's responsibility to secure all conditions for the provision of protective drinks.

(2) Warm protective drinks should be provided:

- for employees who spend more than 50% of their working time outdoors when the average daily temperature is less than + 4°C,
- for work indoors, if the temperature is below + 10°C for more than 50% of the working time.

(3) Sweetened tea at 50°C should be provided as a warm protective drink in a quantity of 0.5 litres per person per day.

(4) The sugar content of tea must not exceed 4% by weight. Artificial sweeteners may be used for flavouring.

(5) Drinking water or mineral water at a temperature of 14-16°C must be provided in unlimited quantities, on demand, but at least every half hour, if the temperature in the workplace, whether outdoors or indoors, exceeds the corrected effective temperature of 24°C.

(6) The preparation, dispensing and storage of protective drinks and warm teas must comply with public health requirements.

18.§

Procedure for the Provision of Glasses To Ensure Sharp Vision for Work in Front of a Screen

(1) Taking into account the provisions of the relevant legislation (EüM Decree No. 50/1999 (XI.3.) on the minimum health and safety requirements for work with display screen equipment), the University provides financial support for acquiring glasses for the provision of sharp vision for employees working at workplaces with screens.

(2) The heads of the organisational units, with the assistance of the DFMS where necessary, shall define the jobs for which employees spend at least four hours of their daily working time in front of a screen. Employees in these jobs can, if necessary, apply for a pair of glasses to ensure sharp vision, the cost of which is subsidised by the employer at a predetermined rate. The rate of the subsidy shall be reviewed annually.

(3) By first time application, the request must be submitted in writing to the DFMS, signed by the head of the organisational unit (certifying that the employee spends at least four hours in front of a screen). The security technology specialist checks eligibility and, depending on the result, gives the employee a referral. With the referral, the worker goes to an occupational health doctor who, after an examination, decides whether the worker needs glasses to ensure sharp vision. The employee then needs to visit an optician for an eye examination and, depending on the results, order the glasses to ensure sharp vision. The amount of the subsidy will be transferred to the employee on the basis of the referral certified by the ophthalmologist, the invoice issued by the optician with the University of Pannonia as buyer on the invoice and the employee's declaration.

(4) The earliest an employee can reapply for glasses to work in front of a screen is two years after he/she received the previous pair.

(5) Employees must safeguard the glasses they have had made, keep them at work and use them when working in front of a screen. It is the employee's responsibility to maintain and clean the glasses.

(6) Employees performing work in front of a screen for more than four hours a day must undergo a medical fitness examination in accordance with *NM Decree No. 33/1998 (VI. 24.)*. The medical fitness examination includes a vision test.

(7) When the employment relationship is terminated at the employee's initiative, the employee must repay the remaining pro rata part of the amount of the subsidy determined for two years.

Chapter V

GENERAL AND SPECIFIC RULES ON WORK

19.§

General Rules

(1) The employee must show up at the workplace in a condition that enables safe working and carry out his/her work in a safe manner. Accordingly, the employee must be well rested and free from the influence of alcohol, drugs or narcotics. The employee must report it immediately to his/her manager at work if his/her condition is different from the above or if he/she feels unwell.

(2) The employee must carry out his/her work in accordance with the requirements in law and standards applicable to the specific work and in accordance with internal instructions.

(3) Any work or activity for which the use of personal protective equipment is prescribed must be carried out only with the proper use of appropriate personal protective equipment.

(4) The employee must carry out his/her work with the discipline and care required by the nature of the work in terms of entailed hazards and the safety of the work, while adhering to disciplinary guidelines in the workplace.

(5) The employee may leave the workplace only with permission.

(6) If an extraordinary or emergency situation (malfunction) is detected, work must be stopped immediately and the emergency must be reported to the workplace manager without delay. To the extent that he/she can be expected to do so, the employee is obliged to actively participate in responding to the emergency situation and mitigating the aftermath.

(7) An employee must report any work-related injury he/she suffers or notices to his/her supervisor without delay.

(8) The employee is obliged to ensure the safe condition of the machines, equipment and tools provided to him/her and used by him/her in the manner that can be expected of him/her, and to use them in accordance with their intended purpose in accordance with the University's Occupational Safety and Health and Fire Safety Regulations, and to carry out the maintenance tasks required of him/her.

(9) The employee is obliged to undergo the medical examinations and occupational safety and health training provided for in Chapter III and to cooperate with the manager and the external experts of the authorities in order to ensure that the conditions for safe and healthy work are met.

(10) In any work where the wearing of rings, necklaces, watches, high heels, etc., while working may cause an accident, these must be removed before starting work or entering the hazardous area.

(11) In all workplaces where there are hazards due to rotating, moving parts potentially pulling in or twisting up items, people with long, hanging hair must wear a hat, scarf or hairnet.

(12) Eating and smoking is only allowed in designated areas.

(13) Visitors are allowed on University premises only with special permission and only with an employee escorting them. Visitors must be provided with the necessary personal protective equipment if they are likely to be within the range of a hazard or harm. The provision of protective equipment is the responsibility of the head of the host organisational unit.

(14) Work requiring professional qualifications, courses or certification may only be entrusted to employees who have the required qualifications and certifications.

(15) Flammable, explosive, corrosive or toxic substances must be stored and used as prescribed.

(16) Do not work in soaked clothing or footwear.

(17) Do not keep sharp, pointed tools in the pockets or waist belts of protective clothing or work clothing.

(18) Employees may only carry out activities at their place of work which have been assigned to them.

(19) The employee may only be at another workplace with permission or authorisation.

(20) Work equipment that is defective or malfunctioning must not be used and use must be ceased immediately.

(21) Each employee is responsible for correcting any malfunction or abnormal operation. If the necessary action exceeds his/her authority, he/she shall immediately inform his/her superior and, if necessary, the DFMS.

(22) The operator of machinery, equipment or devices is responsible for ensuring that no persons other than authorised persons are present within the operating area of the equipment he is operating.

(23) Unless otherwise stated in the work instructions, it is forbidden to leave the working equipment unattended!

(24) Disabling or compromising the effectiveness of protection and warning devices is prohibited!

(25) Materials and products may be moved only by suitable means appropriate to the properties of the material or product, in the designated place and in the specified manner, taking into account weight and size restrictions.

(26) Garbage and rubbish should only be stored in designated places.

(27) Production waste and municipal waste must be stored separately.

(28) Hazardous waste must only be collected and stored according to specific regulations.

(29) The organic waste receptacle must be disinfected daily and its surrounding area disinfected weekly.

(30) Production waste must be removed from the workplace to the collection point at least once per shift.

(31) The speed limit for vehicles on University premises is 20 km/h on open roads and 5 km/h in enclosed areas (buildings, warehouses).

(32) Employees are entitled to demand the following:

a) compliance with the requirements for a safe and healthy working environment,

b) implementation of all essential safeguards required by rules on safety and health at work for the employees' activities,

c) to be provided with the knowledge and training necessary to work safely and without risk to health,

d) to be provided with the tools, work and protective equipment, the required protective drinks, cleaning products and sanitary facilities necessary for the performance of their work.

(33) No employee shall be penalised for acting to ensure the matters listed in the preceding paragraph or for reporting in good faith any alleged failure to act on the part of the University.

(34) An employee may refuse to work if to do so would directly and seriously endanger his/her life or safety. If the execution of the instruction received would directly and seriously endanger the life or safety of others, the employee must refuse to carry it out.

(35) In particular, the failure or lack of safety and protective equipment constitutes a direct and serious risk.

20.§

Special Rules

(1) If the work is to be carried out by two or more employees at the same time, the manager in charge of the workplace must, if he/she does not personally lead the work, delegate the task of leading the work to one of the employees. The other employees must be informed of who is in charge of the work. The controller must be provided with all the information necessary to enable the person leading the work to perform his/her duties reliably and safely in foreseeable situations.

(2) Jobs where working alone is not permitted:

a) laboratory experimental work,

b) work at height (e.g. roof maintenance, repairs, works on scaffolds, window cleaning),

c) work underground (working in trenches, manholes, pouring foundations, etc.),

d) work on or near live electrical equipment,

e) all workplaces where working alone is prohibited by operating documents, technology descriptions, standards or legislation (e.g. cleaning the interior of tanks).

(3) At such workplaces, the person directly leading the work must ensure that a person knowing the work process and trained to intervene is within sight and hearing distance of the person carrying out the work at all times. It must be laid down in the work instructions (process, operational, handling, maintenance instructions), where work must not be carried out alone or other restrictions apply to the work.

(4) The conditions ensuring safe work and healthy working environment for employees and students of other universities on the premises of the University shall be specified in the contract.

(5) If work is carried out on the University's premises by one or more external employers, the work must be coordinated and the responsibilities and procedural issues must be set out in the contract. The contract must also stipulate how the employees and students of the University are protected from the hazards and harm the work entails. The work area used by external employees must be fenced off or demarcated. When the work area is vacated by the external employees, it must be ensured that the area is in a proper condition with regard to occupational safety and health.

(6) In certain workplaces and work processes, wearing garments with synthetic fibres may increase the risk of an accident or the severity of injuries in case of an accident. For this reason, wearing garments made with synthetic fibres should be avoided in the workplaces and work processes listed in *Annex 5*.

CHAPTER VI

RULES OF PROCEDURES FOR OCCUPATIONAL SAFETY AND HEALTH

21.§

Construction Procedure

(1) The University carries out all tasks related to the construction procedure within the scope of its activities with the assistance of the DFMS.

(2) The provisions of this Chapter shall apply to the construction of a new facility, plant, workplace or machinery, whether or not it is used for production or non-production purposes after its deployment.

(3) For construction the following rules of procedure must be observed for the purposes of occupational safety and health:

a) the contracts with the architect, engineer or contractor must specify responsibilities, the method of contact, the persons authorised to inspect and take action, and the content of the engineering documentation,

b) at the same time as the contract for the preparation of the construction or the drawing up of the construction implementation plan, the architect/engineer must be provided in writing with all the available information necessary to establish safe work conditions and healthy working environment,

c) where sufficient data are not available, data collection and hazard analyses should be commissioned,

d) the rules of procedure for the plan review board, plan amendment and plan approval shall be defined,

e) the supervision of construction work, the inspections to be carried out during construction and the procedures for alterations,

f) the contracts concluded shall also lay down the safety and health requirements for the handover, taking into account *Annex 8*,

g) it shall be specified what other documentation (e.g. hazard analysis and references, measurement reports, etc.) the architect/engineer and the contractor are required to provide in addition to the engineering documentation and contractor's declarations.

(4) The new facility may only be taken into operation once the technical handover procedure has been completed. The competent 1st instance Building Authority has issued the Decisions on the occupancy permit, which includes the approval of the authorities, and the decision has become final.

(5) The below people must participate in the handover procedure:

a) the person responsible for conducting the construction (technical inspector),

b) the responsible manager,

c) the representative of the contractor(s),

d) the manager responsible for operating the installation,

e) the manager responsible for the maintenance of the installation,

f) the security technology specialist of the DFMS.

(6) Minutes shall be taken of the handover procedure and shall include the following:

a) the place and time of the handover,

b) the name and position of persons present,

c) the object being handed over,

d) a statement by those present, defining who is responsible for remedying the deficiencies and the deadline for doing so.

(7) During construction procurement and handover may be conducted only for work equipment which:

a) complies with the relevant safety requirements and is certified as part of the general quality certification by the manufacturer or, in the case of imports, by the importer, or by a third party commissioned by the manufacturer or the importer,

b) has an OSH certificate of conformity for work equipment classified as dangerous,

c) has the necessary official permits, if it is required for the given equipment.

22.§

Commissioning Procedures

(1) The commissioning of a facility, technology or work equipment considered dangerous must be ordered in writing during the OSH commissioning procedure.

(2) The following installations should be considered dangerous:

a) medium-risk and high-risk installations and workplaces,

b) work equipment listed in Annex 1 of D.,

c) work equipment and installations subject to official authorisation procedures,

d) workplaces where workers would be at risk of serious accidents or long-term exposure without adequate protection.

(3) The classification as dangerous is carried out by the security technology specialist of the DFMS, who decides on the basis of the relevant regulations and the opinion of the occupational health service.

(4) The head of the competent organisational unit shall, on behalf of the University, issue a written order for the OSH commissioning of an installation with the content in accordance with the sample form in *Annex 7*.

(5) Prerequisites of ordering the OSH commissioning of an installation:

a) an OSH preliminary examination with satisfactory results and documented in a report,

b) for work equipment, the certificate of conformity in accordance with the regulations in force,

c) the necessary official permits,

d) documented OSH training for staff in accordance with the new conditions.

(6) 1 copy of the order shall be given to the operator and 1 copy to the security technology specialist of the DFMS.

(7) Pending the OSH commissioning of the dangerous technology, the University may, unless excluded by law, authorise the operation of the dangerous technology on a trial basis for a maximum period of 180 calendar days, subject to compliance with the requirements of section '(e)' of this Chapter.

(8) Carrying out a preliminary inspection from an OSH point of view is a specialised occupational safety and occupational health activity.

(9) The organisation and implementation of the inspection and, if necessary, the involvement of persons, organisations and institutions in the inspection fall under the responsibilities of the DFMS.

(10) The DFMS is responsible for verifying beforehand whether those involved in the inspection are eligible to carry out specialised occupational safety and occupational health activities.

(11) The inspection shall be carried out by the date of the order for the commissioning.

(12) The findings of the inspection shall be documented in a report.

(13) OSH commissioning should only be ordered if the installation is given a 'satisfactory' rating in the assessment.

(14) A master copy of the minutes shall be retained by the DFMS.

(15) The restarting of a dangerous installation, workplace, technology or work equipment must be ordered in writing and in accordance with the procedure for OSH commissioning.

(16) The restart is conditional on the dangerous production equipment complying with, as a minimum, the safety and health requirements in force at the time it was previously put into operation.

(17) For the purposes of this Regulation, a restart is the re-commissioning of work equipment or technology – previously commissioned from an OSH aspect –

which, for technical reasons, has not been in operation for more than 30 consecutive days or on which a work process involving complete dismantling has been carried out.

23.§

Periodic Safety Inspection

(1) Periodic safety inspection of a dangerous technology and work equipment must be conducted, if:

a) its commissioning requires an official permit,

b) it is required to be certified for OSH conformity,

c) its inspection is prescribed by law, standard, operational documentation,

d) it has undergone major repairs or reconstruction involving complete dismantling,

e) it has been identified as dangerous by the University at its own discretion.

(2) The work equipment and technologies subject to said inspection, with an indication of the inspection cycle time, are listed in *Annex 8*.

(3) *Annex 8* shall be reviewed annually by the DFMS taking into account any changes and amended if necessary.

(4) An extraordinary safety inspection must be carried out, irrespective of whether the technology or work equipment is classified as dangerous, if the technology, work equipment or protective equipment has directly endangered the health and safety of employees during its normal use or operation or application, or has caused an accident in connection with its operation.

(5) An extraordinary safety inspection shall be initiated and carried out by the DFMS and until it is completed, further operation shall be prohibited.

(6) The manager responsible for the operation (head of organisational unit) must ensure that the review is carried out.

(7) Periodic security interviews are initiated by the DFMS, on the basis of its records, and conducted with a representative of the relevant organisational unit. A report of the periodic safety inspection shall be drawn up.

(8) If, during the inspection, it is established that there is an imminent risk of an accident or damage to health due to discovered deficiencies, the use of the work equipment or the operation of the technology must be suspended until the deficiencies have been remedied. In the case of minor defects, a deadline should be set for rectification. The head of the organisational unit is responsible for meeting the deadline.

(9) Work equipment or technology that has been suspended for health and safety reasons may only be returned to service after a re-inspection with favourable results.

24.§

Further Inspection

(1) Periodic inspections of lifting equipment

Periodic inspections of lifting, tying and hoisting equipment shall be carried out by the DFMS on the basis of indications from the heads of the organisational units in accordance with the relevant legislation and standards.

(2) Periodic inspections of electrical equipment

a) The DFMS is responsible for the organisation of inspections of heavy current electrical equipment for compliance with contact protection standards and for electrical safety from the fire safety aspect, as well as for the organisation of inspection of lightning protection equipment of installations and facilities for compliance with standards.

b) It is the responsibility of the head of the maintenance team to take action to remedy any deficiencies found during the inspections.

c) The annual mechanical inspection of power tools is carried out by the maintenance team leader on the basis of an annual programme. The head of the unit operating the hand tool must cooperate in the documented execution of the inspection.

(3) Periodic inspection of motor vehicles

Periodic inspections of vehicles must be carried out by the leader responsible for the operation of the vehicles.

25.§

Occupational Safety and Health Inspections

(1) The aim of the OSH inspections is to determine whether the personnel and material conditions ensure safe work and healthy working environment at the University and are in compliance with the OSH requirements set out in legislation, national standards and the work instructions issued by the University.

(2) The forms of control are:

a) Continuous control by management

b) Individual control by the manager

c) control by the security technology specialist of the DFMS

d) Breathalyser checks

(3) Continuous control by management

a) All employees of the University who are entrusted with leading the work of others and are thus responsible for their health and physical safety during the work, shall, in their own responsibility, constantly ensure that the conditions allow for safe work and healthy environment for working and that the safety and health regulations are observed by the employees under their supervision.

b) The employee who personally supervises the work is responsible for ensuring that safe working practices are observed and implemented at all times.

c) In a situation where a defect is discovered, it is up to the operator to take action to eliminate the hazard or harm. If the necessary action exceeds the authority of the person in charge, the action must be requested from the immediate superior. In case of imminent danger or risk to life the work must not be started or continued!

(4) Individual control by the manager

a) The inspection involves:

- implementation of corrective actions to remedy the deficiencies identified during the previous inspection,
- the execution of the health and safety duties of the manager of the audited unit,
- inspecting workplaces and production equipment, as well as working conditions so that these are safe and not hazardous to health,
- the presence, suitability and proper use of the necessary personal protective equipment,
- carrying out the necessary technical safety inspections (periodic inspections).

b) The inspections are recorded in a report by the security technology specialist of the DFMS. The report must include:

- the exact place and time of the inspection,
- the name and position of those present at the inspection,

- any deficiencies found, with responsible parties and deadlines for implementation of remedies,
- other findings deemed important,
- the names and positions of the signatories of the report.

c) The following persons must be present at the inspection:
- the head of the organisational unit and the occupational safety and health officer,
- the security technology specialist of the DFMS
- where required, the representative of the occupational health service.

d) The representative of the Works Council and the Trade Union Committee responsible for occupational safety and health may participate in the inspection with the right to give an opinion.

(5) Control by the security technology specialist of the DFMS

a) Depending on the OSH situation and the development of current tasks, the security technology specialist of the DFMS shall carry out an OSH inspection of an organisational work unit on an ad hoc basis, but at least once every six months.

b) The inspection is carried out without prior notice, but in the presence of the manager supervising the activity or his/her delegate.

c) Following the inspection, a report shall be drawn up with the deficiencies found, with deadlines for their rectification and the names of those responsible.

d) The security technology specialist shall take action to remedy the deficiencies identified. In the event of a serious hazard or immediate risk of accident, he/she shall immediately prohibit the use of the equipment or suspend work.

e) The security technology specialist must ensure that the reports of the inspections are received by the heads of the organisational units and check that the deficiencies found have been remedied by the prescribed deadlines.

(6) Breathalyser checks

a) All employees are prohibited from consuming alcohol or other intoxicating substances on University premises during working hours, and may only work in a state free of alcohol or other intoxicating substances.

b) Direct superiors at the workplace must regularly check compliance with the prohibition of being under the influence of alcohol.

c) If an employee is suspected of having consumed an alcohol-containing food or beverage, they are obliged to initiate a test to check whether the person is under the influence of alcohol. The check must be carried out in the presence of witnesses, in the presence of a representative of the DFMS, preferably in a separate room, while respecting the personal rights of the employee undergoing the check.

d) If the result of the breathalyser check is positive and the person subjected to the test does not acknowledge alcohol consumption, a laboratory blood test must be instigated. The cost of the check is to be borne by the employee if the test reveals that the employee is under the influence of alcohol.

e) In the event of a positive result of a breathalyser check or blood test, or if the person subjected to the test acknowledges having consumed alcohol, the employee shall be exempted from work and from being on duty for the day. The same shall apply to any person who refuses to cooperate in the test.

CHAPTER VII

REPORTING, INVESTIGATING AND RECORDING OCCUPATIONAL ACCIDENTS AND OCCUPATIONAL DISEASES

Occupational accidents and diseases, including cases of increased occupational exposure to substances, must be reported, investigated and recorded.

26.§

Basic Concepts of Occupational Accidents

(1) Concepts of occupational accidents shall be construed as set out in Chapter VIII of the LSA.

27.§

Employees' Reporting Obligations

(1) All employees must immediately report any accident to their immediate supervisor (in the case of a student accident, the student must report the accident to the lecturer, instructor, teacher, etc.).

a) The reporting obligation covers accidents involving the employee:

- at his/her workplace,
- during work or in connection with his/her work (employment),

- on his/her way to or from work (to or from his/her home/accommodation),
- if he/she claims certain social security benefits (in connection with an injury or occupational disease),
- during his/her posting/secondment.

b) An accident must also be reported if it occurs as a result of a breach of the employee's job duties (e.g. working without authorisation or legal employment, breach of work discipline).

c) The reporting obligation also extends to incidents not causing personal injury (near misses) that occur in the course of work and for which an investigation is necessary to prevent repeated occurrences.

(2) If the injured person is prevented from reporting his/her accident, the obligation to report the accident extends to any employee or student who has knowledge of the accident.

(3) Parallel to reporting the accident, the person who noticed the accident or the person directly supervising the work must provide first aid to the injured person and, if necessary, notify the first aid provider at the workplace, the occupational health doctor or ambulance.

It is forbidden to leave the injured person alone until appropriate medical care has been provided (medical staff, occupational health doctor, ambulance arrives).

(4) An accident (incident) must be reported immediately by the immediate supervisor or, in his/her absence, by the person who witnessed the accident or by the injured person:

a) to the competent head of the organisational unit;

b) to the OSH officer of the organisational unit;

c) to the Head of the DFMS.

(5) The person directly supervising the work must immediately enter the details of the accident in the 'Occupational Accident Logbook', filling in the logbook fields as appropriate.

28.§

Securing the Scene of an Accident

(1) The site of an accident (incident), its surroundings and the work equipment (machine, equipment, etc.) that caused the accident shall be safeguarded and secured by the workplace manager directly supervising the work until he/she receives instructions to the contrary from the competent, responsible head of

the organisational unit or the member of the occupational safety and health organisation conducting the investigation.

(2) The only exception to this is if the intervention is necessary in order to avoid further accidents or significant material damage.

(3) In the event of changes at the location, such changes must be recorded in the accident logbook in order to allow for the reconstruction of the original scene.

(4) If the workplace, personal protective equipment, work equipment or technology has directly endangered the health and safety of the worker during its intended use or if an accident at work has occurred in such a context, its compliance must be subject to an immediate assessment by the operating employer – an occupational safety and health professional. Its operation or use should be prohibited until the assessment is carried out.

29.§

Classification of Accidents

(1) The employer must determine whether an accident reported to the employer or brought to the attention of the employer is to be considered an occupational accident. Therefore, on the basis of the available information about the accident, the responsible head of the unit or the head of the DFMS must clarify whether the accident is to be classified:

a) as an accident (road accident), under the purview of the head of the DFMS, qualifying for accident insurance benefit from the social security:

'The injured person is injured while travelling from his/her home (accommodation) to his/her place of work or from his/her place of work to his/her home (accommodation), unless the accident occurred while travelling in an employer-owned vehicle or in a vehicle hired by the employer.'

b) as an occupational accident:

'The injured person is injured in the course of work or an activity related to work (e.g.: work-related catering, occupational health care or other social care or services provided by the employer).'

c) as a serious accident.

An occupational accident is to be considered **serious**, when it caused:

- the death of the injured person (it is also to be construed as a fatal occupational accident when the injured person is medically certified to have died as a result of the accident within one year from the accident),

the death of a foetus or newborn, or a permanent impairment that hinders the ability to lead an independent life;

- loss of or significant impairment of a sensory organ, sensory ability or reproductive capacity,
- medically certified life-threatening injuries or detriment to health,
- severe mutilation, loss of the bigger part of a thumb or of two or more fingers on one hand or of two or more toes on one foot (and more severe cases),
- loss of speech or noticeable impairment, paralysis or a mental disorder.

30.§

Reporting Occupational Accidents

(1) A serious occupational accident must be reported immediately by telephone, email or in person, by including the available details, to the competent regional body of the authority responsible for OSH supervision in the area where the accident occurred.

(2) In the event of a serious or fatal accident or an occupational or student accident involving more than two persons, the competent department of the Ministry responsible for supervision must be notified without delay, in addition to the above-mentioned supervisory authority, providing the information available.

(3) The notification shall be made by the head of the DFMS, or in case of his/her absence, by the responsible head of the organisational unit concerned or a member of the OSH organisation.

(4) The notification must also be confirmed in writing on the next working day.

(5) If a life endangering criminal offence or intentional self-harm is suspected, it must also be reported to the appropriate police authorities.

31.§

Investigation of Accidents

(1) The employer must always determine whether an accident reported to the employer or brought to the attention of the employer is to be considered an occupational accident. If it does not consider it to be an occupational accident, it must inform the injured person or, in the case of a fatal accident, the next of kin, of this and about legal recourse available.

(2) The classification of the accident, based on the investigation and the available data (interview report, etc.), is the responsibility of the head of the DFMS, who

informs the head of the organisational unit concerned or, in case of non-admissibility, the injured party, in writing.

(3) If the accident is classified as an occupational accident:

a) It must be investigated immediately, if it caused death or incapacity to work or involved students.

b) The investigation of accidents is carried out by the competent security technology specialist of the DFMS, who is qualified in occupational safety and health, and whose work is assisted by the persons involved in the investigation (workplace manager, staff, students, etc.).

c) If the competent security technology specialist, who is qualified in occupational safety and health, is prevented from investigating the accident:

- the accident must be investigated by a person qualified in occupational safety and health.

d) The OSH representative may be involved in the investigation of any accident and their observations should be taken into account as far as possible.

e) The findings of the investigation shall be recorded in such detail (e.g. witness interview report, scene layout, photograph) as required by Annex 3 of 'D.', in order to be suitable for the investigation of the causes of the accident and, in the event of a dispute, for the clarification of the facts. The data and facts acquired during the investigation shall be recorded in the 'Report of Occupational Accident' as set out in the Annex to the Regulation. If the condition of the injured person or the nature of the accident does not allow the investigation to be completed by the time the data has been gathered, the reasons for this must be stated in the report. A report must be drawn up separately for each injured person.

f) A student accident report shall be drawn up in accordance with *Annex 9* for student accidents occurring during activities other than practicals.

Such an accident must also be reported immediately to the DFMS. Investigations of student accidents are carried out by the security technology specialist of the DFMS. The investigation must be carried out in such detail that the causes and circumstances leading to the accident can be established and the findings and conclusions can be used to take the necessary measures to prevent similar accidents. The persons involved in the accident (injured student, witnesses, head of organisational unit, OSH officer) must cooperate in the investigation.

32.§

Sending Reports of Occupational Accidents

(1) The employer is obliged to send the report upon completion of the investigation, but no later than the 8th day of the following month

a) to the injured person, or in case of a fatal accident, to the next of kin,

b) to the competent regional body of the OSH authority in the area where the accident occurred, if the occupational accident caused death or incapacity to work for more than three days,

c) with regard to the occupational accident described in point b) and involving the Hungarian employee of an employer with seat in Hungary in the case of a foreign posting or foreign service, to the regional body of the occupational safety and health authority with territorial jurisdiction for the employer's seat,

d) to the social security disbursement administrator or, if aforementioned is not applicable then to the competent health insurance fund (branch).

(2) The head of the DFMS is responsible for sending the report of the occupational accident on time.

33.§

Records of Occupational Accidents

(1) The employer shall register all occupational accidents immediately after their occurrence, taking into account the content requirements of Section 5 (1) of the ‘D’.

(2) The competent security technology specialist of the DFMS is responsible for keeping the records.

(3) In order to facilitate the implementation of this task, an Occupational Accident Logbook should be created and maintained at each organisational unit. The person directly in charge of the work must record all accidents (including accidents involving students or visitors) of which he/she becomes aware in the Occupational Accident Logbook, regardless of the extent of the injury and whether or not the injured person was incapacitated to work. The fact that an entry has been made in the Occupational Accident Logbook must always be communicated to the competent security technology specialist of the DFMS.

(4) Occupational accident records must be checked monthly against the "Accident Record Register" of the social security disbursement administrator.

(5) The persons keeping the records are responsible for carrying out the above check of the records. If an occupational accident is discovered during the above review (e.g.: the injured person did not report it, but it is revealed by his/her sick leave certificate), the accident discovered must be investigated promptly.

(6) The reason for the delay must be recorded in the occupational accident report.

34.§

Responsibilities in Connection with Occupational Diseases

(1) According to the relevant NM Decree No. 27/1996 (VIII.28.), the reporting of occupational diseases is the responsibility of the doctor who detects them.

(2) Irrespective of the notification by the doctor, if fatal or mass occupational disease has occurred at the workplace, it must be reported immediately to the competent occupational safety and health authority in the area where the disease occurred.

(3) It can be considered mass occupational disease when 5 or more employees are affected by the same acute illness at the same time.

(4) The University is obliged to report occupational diseases suffered by employees of Hungarian nationality while working abroad to the competent occupational safety and health authority within 24 hours of becoming aware of the disease.

(5) Notification under paragraphs (3) to (4) shall be the duty of the head of the organisational unit responsible for the employee's job, with simultaneous notification to the Deputy Head of the DFMS.

(6) On the part of the University, the security technology specialist of the DFMS qualified in occupational safety and health and the head of the organisational unit concerned shall participate in the investigation of occupational diseases and increased exposures, based on the notification to the competent authority/upon notification by the competent authority.

(7) Information and data on the workplace and working conditions related to the employee's illness or increased exposure should be made available to the investigator-in-charge. This is the responsibility of the heads of the organisational units concerned.

35.§

Notification and Evaluation of Claims Arising from Occupational Accidents and Occupational Diseases

(1) The head of the DFMS shall notify in writing all employees who have suffered an occupational accident (and in the event of death, their next of kin) of the possibility to submit a claim, and shall send them the form 'Notice to Make a Claim for Occupational Accident' in accordance with *Annex 10* and the 'Claim Form' in accordance with *Annex 11*.

(2) The Chancellor decides on the settlement of claims received on the basis of a proposal from the Director of Economic Affairs and the Director of Legal Affairs and Procurement.

CHAPTER VIII

36.§

First Aid Provision

(1) The aim of first aid is to ensure that a sick or injured person in need of medical care receives prompt and professional care to restore his/her health or to prevent it from deteriorating further, or to treat his/her injuries, until the necessary medical care can be provided.

(2) Depending on the number of employees and the nature of the workplace, a sufficient number of trained first-aiders must be present at the workplace during working hours.

(3) First-aiders should be appointed primarily on a voluntary basis. The training of designated first-aiders shall be organised by the DFMS by commissioning the person authorised to conduct the training. A FIRST AID CERTIFICATE must be issued and handed over to the employee who has successfully passed the first aid test. The DFMS shall keep a register of first-aiders in each organisational unit.

(4) The doctor at the occupational health service should be involved in determining the equipment needed. First aid equipment and supplies should be positioned so that they are easily accessible and ready for use when needed. Procurement of first-aid equipment (stretcher, first-aid box, etc.) is initiated by the head of the organisational unit by sending a request to the Department of Legal Affairs and Procurement based on requests from the designated first-aider in the organisational unit.

(5) The first aid post must be clearly marked with a sign saying ‘FIRST AID POST’. The name of the first-aider(s) shall also be indicated on or near the sign in the same way. The first aid post should preferably be centrally located, easily accessible and appropriate for first aid.

CHAPTER IX

PROVISIONS WITH REGARD TO ENTRY INTO FORCE

(1) By virtue of Resolution No. 234/2022. (XII. 8.), this Regulation has been adopted by the Senate.

(2) This Regulation shall enter into force on 1 January 2023.
Upon entry into force of this Regulation, the Occupational Safety and Health Regulation adopted by the Resolution No. 49/2016. (III. 31.) of the Senate shall cease to have effect.

CHAPTER X

TRANSITIONAL AND FINAL PROVISIONS

(1) The provisions of the Regulation shall apply to any procedures launched after the Regulation enters into force.

Veszprém, 8 December 2022

dr. András Gelencsér
Rector

Csillag Zsolt
Chancellor

Annex 1: Records of Personal Protective Equipment Provided to Employees

Records of Personal Protective Equipment Provided to Employees							
Employer:	University of Pannonia			Org. unit:			
Name of the Employee:				Position:			
Article number of protective equipment:	Description of the protective equipment:	Issue date:	Employee's signature attesting handover:	Person handing out the equipment:	Hand-back date:	Reason for handing back the equipment:	Person receiving the equipment handed back:

I declare that I have received the training on the proper use and cleaning of the personal protective equipment received by me at the same time as I received the equipment, that I understand the instructions provided during the training and that I accept these as binding.

Annex 2: Records of Personal Protective Equipment Provided for Shared Use

Records of Personal Protective Equipment Provided for Shared Use									
Employer:	University of Pannonia								
Organisational unit:					**Work area:**				
Article number of protective equipment:	**Description of the protective equipment:**	**Issue date:**	**Amount/number of equipment handed over:**	**Employee's signature attesting handover and employee's position:**	**Person handing out the equipment:**	**Hand-back date:**	**Amount/ number of equipment handed back:**	**Reason for handing back the equipment:**	**Person receiving the equipment handed back:**

I have received the instructions for use of the protective equipment provided for shared use. The instructions on proper use and cleaning must be taught to employees within the framework of preliminary practical OSH training and recurrent OSH training. For students in practicals, this should be done during the training before the practicals are started. The training documentation should also include information that has been provided orally about the personal protective equipment.

Annex 3: Determining Personal Protective Equipment based on Job And Work Processes sample form

Organisational unit:																	Position:	
Work process		Hazards	Parts of head						Upper limbs		Lower limbs		Other body parts			Whole body	Personal Protective Equipment	
			scull	ears	eyes	airways	face	whole	hands	arms (parts)	feet, soles	legs (parts)	torso	abdomen	parenteral routes			
Cutting, welding, heat treatment, locksmithing	Of physical origin	**Mechanical hazards:**																
		falling from a height																
		hit, shearing, cutting or severing, impact, crushing																
		stabbing or puncture, friction or abrasion																
		vibration																
		slips, trips and falls																
		Thermal hazards:																
		flame																
		contact or radiant heat																
		cold																
		Electrical hazards:																
		electrocution hazard																
		electric arcing hazard																
		Radiation hazards:																
		non-ionising																
		ionising																
		Harmful noise:																
	Of chemical origin	**Air pollution**																
		Dust, fibres																
		Smoke																
		Steam																
		Liquids																
		Submersion																
		Splashing, spraying																
		Gases, fumes																

Annex 4: Referral for an Occupational Medical Examination

.....

Employer's name, stamp

Referral for an Occupational Medical Examination*

(To be filled in by employer!)

Name of the Employee:..... Place and Date of Birth: ....., year..... month .....day.....

Registered address: .....

Position: ..... Social security number (TAJ): .....

Reason for examination: before starting work, before change of job (place of work), extraordinary, final examination **

Main health risks of the job (workplace)

Risks		Working time		Risks		Working time	
Item No.	Name	during the entire time	during part of the time	Item No.	Name	during the entire time	during part of the time
1. 1.1. 1.2. 1.3.	Manual handling of material 5 kp–20 kp >20 kp–50 kp >50 kp			14.	Powders, named		
2.	Increased risk of accidents (work at height, electrical work, working with live electricity) Other:			15.	Chemical substances, named:		
3.	Forced postures and body position (hunching, squatting)			16.	Priority job of epidemiological interest		
4.	Sitting			17.	Risk of infection		
5.	Standing			18.	Increased psychological stress		
6.	Walking			19.	Working in front of a screen		
7.	Straining climate at work (warm, cold, wet, alternating)			20.	Night shift work		
8.	Noise			21.	Psychosocial factors		
9.	Ionising radiation			22.	Strain from personal protective equipment		
10.	Non-ionising radiation			23.	Other:		
11.	Localised vibration						
12.	Vibration affecting entire body						
13.	Ergonomic factors						

Place and Date: ..... , ... year ..... month ..... day

.....

Employer's signature, stamp

* The referral on the second page of this form shall be used for the periodic medical fitness examination.

** Underline the appropriate text.

*** Use ink to fill in the appropriate fields for the risks associated with the job in question.

Referral for an Occupational Medical Examination

Second page

Employer's Name: .....

Referral for an Occupational Medical Examination

Name of the Employee: ..... Place and Date of Birth: ....., year .....month ..... day.....

Registered address:
.....

Position: ..... Social security number (TAJ):
.....

I request an opinion on the above person's fitness to work in indicated position.

The reason for examination: periodic examination.

Place and date: .....

Stamp

.....

employer's signature

Annex 5: List of Workplaces Where Wearing Clothes Made with Synthetic Fibres Is Prohibited

It is prohibited to wear clothes made with synthetic fibres in following workplaces:

- welding jobs
- work in a vehicle inspection pit
- work involving electric arcing hazard
- laboratory
- electrical control rooms
- battery charging rooms
- laboratory preparation rooms
- painting, varnishing, lacquering rooms, warehouses (fire risk)

Annex 6: Safety and Health Requirements for Handover After Construction

1. The necessary measurements and operational tests shall be carried out before the handover procedure.
2. An operational test must be carried out for all machinery and electrical equipment.
   a. Prior to the required operational tests of the electrical equipment, before the equipment is connected to the mains, the required insulation tests shall be carried out, and after connecting it to the mains the contact protection measurements shall be carried out.
   b. The operational tests shall be carried out by the contractor in the presence of a person authorised by the University and the technical inspector.
   c. A record shall be kept of operational tests and shall include:
      – the subject of the test
      – time of the test
      – the names of the inspectors and those present during the inspection
      – a detailed list of the tests carried out, how they were carried out and their evaluation

      (suitable/not suitable for safe operation when used for intended purposes

      it is suitable for safe operation only after the deficiencies listed under point(s) ..... have been remedied).
3. The documents listed below are a prerequisite for concluding the handover procedure; they may not be the supplied later:
   – documentation corresponding to the actual construction
   – appropriate OSH declaration by the contractor
   – report on the insulation tests (resistance measurement) of electrical equipment
   – operating documentation for the machinery in Hungarian
   – lighting measurement records
   – report on inspection of compliance with the standards for contact protection
   – measurement report for lightning protection equipment
   – the necessary supporting documents for machinery and equipment subject to regulatory control
   – the necessary official permits
   – report on the operational tests

Annex 7: Order for OSH Commissioning

Order number:

The dangerous installation (workplace/technology/work equipment):

- Name
- Registration number
- Location
- Fire safety classification

Name and registration number of the documentation supporting the order *:

- architect/engineer's declaration on occupational safety and health
- contractor's declaration on occupational safety and health
- occupational health and safety certificate of conformity
- declaration of the responsible maintenance provider
- report on the preliminary examination for occupational safety and health purposes
- official permits
- measurement and test reports
- declaration by the Department of Facility Management and Security

On the basis of the documents annexed to this order, I am ordering the OSH commissioning of ..... (name of technology, work equipment, etc.) as of .....

Date: 20.....year .....month .....day

.....

Annexes:
Copies to be received by:

- responsible operator
- responsible maintenance provider
- Department of Facility Management and Security
- repository

* The permit must include the necessary ones from the list.

Annex 8: Work Equipment Subject To Obligatory Periodic Safety Inspections

Description	Frequency
Pursuant to Annex 1/a and 1/b to MüM Decree No. 5/1993.(XII. 26.):	
1. Circular saws for working with wood	*
2. Surface planning machines for woodworking	*
3. Thicknessers for woodworking	*
4. Band-saws for woodworking	*
5. Combined machinery for working with wood	*
6. Tenoning machines for woodworking	*
7. Portable chainsaws	*
8. Hand-fed vertical spindle moulding machinery for woodworking	*
9. Presses, press-brakes	*
10. Injection or compression plastics-moulding machinery	*
11. Injection or compression rubber-moulding machinery	*
12. Nail guns	*
13. Cranes	**
14. Lifts	**
15. Cableways	**
16. Mobile and other devices for the lifting of persons	**
17. Loading equipment	*
18. Agricultural and forestry tractors	*
19. Special equipment for unloading and moving vehicles	*
20. Vehicle servicing lifts	**
21. Self-propelled forklifts	**
22. Electric wire rope hoist	**
23. Work equipment used in an area with explosion hazard	*
24. Welding equipment	***

* every 5 years

** Depending on the inspection group number of lifting equipment in operation

*** Flame welding equipment quarterly

Electric welding equipment annually

Name of the work equipment, technology	Frequency
Lifebelts	every six months
Boilers	pursuant to NGM Decree No. 2/2016. (I.5.)
Pressure vessels	pursuant to NGM Decree No. 2/2016. (I.5.)
Chemical technologies and jobs	at every restart, but at least every 5 years
Electrical installations (fire safety)	pursuant to MSZ 10900:2009 standard
Electrical installations (contact protection) (power tools)	pursuant to MSZ HD 60364 and FMM Decree No. 14/2004. (IV. 19.)
Vehicles not involved in road traffic	every 5 years
Gas cylinders	every 5 years
Respiratory protection equipment	pursuant to manufacturer's specifications
Lightning protection	pursuant to BM Decree No. 54/2014. (XII. 5.) (National Fire Safety Code – OTSZ)

Annex 9: Student Accident Report

STUDENT ACCIDENT REPORT

(accidents that occurred during activities other than practicals)

1. Name, place and year of birth of the injured person: .....

   .....

   Mother's name: .....

2. Permanent address: .....
3. Date and time of accident: (use 24 hour format)

   20..... year ..... month .....day .....hour
4. Location of the accident (e.g. classroom, gym, courtyard, corridor, field trip, etc.) .....
5. The nature of the injury, the injured body part: .....
6. A detailed, accurate description of the accident: .....

   .....
7. Measures to prevent similar accidents, deadlines for implementation, responsible person: .....
8. Participation of the students' union representative, other comments and remarks: .....
9. The student agrees or disagrees with the record (underline appropriate).

Place and date: .....

.....

student's signature

.....

Signature of the occupational safety and health professional

.....

Signature of the head of the higher or the name and signature of his/her proxy

Annex 10: Notice to Make a Claim for Occupational Accident

Registration Number: .....

NOTICE TO MAKE A CLAIM FOR

OCCUPATIONAL ACCIDENT

Name, position, address:

Pursuant to Chapter XIII of Act I of 2012 on the Labour Code, I am calling on you

to send your claim to the Department of Facility Management and Security of the University of Pannonia as soon as possible using the attached 'Claim Form', if you have suffered an injury in connection with an occupational accident that occurred on .....day .....month 20.....year at .....hour .....minutes.

Please note that the Chancellor will decide on your claim within 30 days of receipt of your Claim Form.

Please do not delay unduly in submitting your claim, as claims are time-barred after three years from the date of eligibility.

You should file your claim for a work accident annuity within six months at the latest, as you can only claim an annuity for a work accident that happened longer time ago if your delay to file a claim is through no fault of your own.

Date: 20.....year .....month .....day

Annex: 1 piece

Stamp

.....

Department of Facility Management and Security

head of department

Annex 11: Claim Form

University of Pannonia
Department of Facility Management and Security
8200 Veszprém
Egyetem u. 10.

Subject: Submission of claim

In response to the notice with registration number ..... dated 20.....year .....month .....day ....., I hereby give notice that I have suffered the following damage in connection with the accident that occurred on .....day .....month 20.....year at .....hour .....period:

a) Lost income (lost wages, other):

.....
.....
.....

b) Material damage (clothing, etc.)

.....
.....
.....

c) Non-material damage (care costs, etc.):

.....
.....
.....

Total: ..... HUF

I ask for compensation for the above damage. Grounds for my request:

.....
.....
.....

Date: 20.....év .....hó ..... nap

.....

signature

General Safety Regulation for Laboratories

UNIVERSITY OF PANNONIA

2022

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1. Introduction

The traditional profile of the University of Pannonia is engineering education, of which laboratory practice and research is a key part. The multiplicity of forms of training and the increased number of students make it much more difficult to comply with health, safety and environmental standards during practical training. In addition to this, legislation and requirements have been significantly tightened, in order to comply with those in the European Union.

This has necessitated the drafting of a new General Safety Regulation, issued as an annex to the Occupational Safety and Health Regulation, applicable to all laboratory training and research activities at the University. The Regulation is based on current legislation, of which the following are the most important:

- Act XCIII of 1993 on Labour Safety;
- Act XXXI of 1996 on Fire Protection, Technical Rescue and Fire Brigades;
- Act CLIV of 1997 on Health;
- Act XXV of 2000 on Chemical Safety.

The head of the organisational unit (head of department, head of unit, head of pilot plant), together with the acting head of the laboratory, is responsible for the preparation of the documentation system for each laboratory, pilot line and pilot plant of the organisational unit and for the enforcement of this Regulation. Compliance with this Regulation is constantly monitored by the Department of Facility Management and Security. If, during the inspection, the work process carried out or the research activity is considered to be hazardous to health, safety or the environment, the DFMS may take immediate action proportionate to the level of risk, e.g. shutdown or suspension of the operation, work process, laboratory or pilot plant until the deficiencies are remedied.

For those organisational units where not all operations, processes and chemical handling are covered by the instructions, they are required to prepare more detailed instructions for the areas concerned. The Radiological Protection Code shall deal with for example radioactive substances, radiation, instruments for measuring radioactivity and the conditions under which measurements are carried out, and with the health, safety and environmental regulation of radioactive laboratories.

Veszprém, ... 2022

.....

dr. András Gelencsér
Rector

.....

Csillag Zsolt
Chancellor

2. Construction of New Laboratories

When designing or modifying a laboratory, representatives of several professions must work together to ensure that the requirements set out by law and standards are fully met. European Union standards were transposed into national practice by making it mandatory to involve safety and health experts in the design process.

The design of laboratories will always depend on the activity to be carried out in the laboratory, but its location should also be chosen so it is ensures that the surroundings do not interfere with the work being carried out in the laboratory. Design activity can only begin once the activities to be carried out in the laboratory, the materials to be used, the tools and equipment to be used, the number of staff and the legal requirements have been clearly defined. The minimum width of the passageways in the laboratory and adjacent corridors is 120 cm. In corridors wider than this, passageways must be left clear so that the required width is measured from one side of the corridor. No objects, devices, lighting fixtures or fire extinguishers may form any kind of obstacle in the passageways.

Walls of laboratory rooms shall, where the activities so require, be covered with a washable surface, which may be tiles or washable paint. The floor shall be of non-slip construction, without cracks and gaps. In rooms with a high fire risk, floor coverings should not allow sparks to form. The floor must be nearly flat and level, non-trip, non-slippery and resistant to mechanical stress.

In addition to an adequate thermal insulation performance, windows and doors must also open in the appropriate direction. Doors should be sized in such a way that when they are being opened or stand open they do not constitute a hazard or obstacle. The exit door should be easy to open and preferably open outwards. If it is necessary for protecting materials, equipment used or the subject of the research, the doors should be lockable. The positioning of windows should take into account the need to provide the room with adequate natural light and ventilation.

The lighting in a laboratory for permanent work shall be appropriate to the nature of the work if the nominal illumination, colour temperature, colour rendering and glare-free levels in the workstations, taking into account the function of the room and the activity carried out there, meet the values and general requirements laid down in the relevant standards and legislation or are ensured by other at least equivalent solutions.

The need for emergency lighting (which may be stand-by or safety lighting) should be determined on the basis of health, safety and environmental considerations. Stand-by lighting should be used in laboratories where, in the event of a power failure or a fault in the lighting of workplaces, etc., the work process or technological procedure cannot be completed in the dark without endangering health, safety or the environment, i.e. the risk of accidents increases significantly. The power supply to stand-by lighting shall be

constructed in such a way that it is not possible to switch on the lighting of workplaces until the emergency lighting is switched on or, the stand-by lighting is switched on automatically in the event of a deficiency. A simple solution for safety lighting is the exit sign.

In the vicinity of the laboratories, there should be a space for relaxation – to consume food, drink coffee.

Laboratory and workstations should be selected to take account of the properties of the chemicals to be used, so that the tabletops are not damaged by spillage, are easy to clean and hot vessels do not cause deformation of the surface. These requirements are met by tiles or acid-resistant coating. When positioning workstations, it is important that they are easily accessible and that the aforementioned passageways remain unobstructed. The height of the chairs should be adjusted to the table, but adjustable chairs are the most practical. For easy cleaning chairs should not be upholstered. Furniture must not have sharp edges or corners.

When selecting the type of heating and installing it, the fire safety requirements set out in the laboratory design should be taken into account. Auxiliary heating (radiators, oil heaters, etc.) may be used in the laboratory only with the permission of the security technology specialist.

When installing shelves for chemical substances and cabinets, it must be ensured that the work can be carried out accident-free and their load capacity must be indicated on them. The shelves must be loaded only up to the permissible load and they must not deform under the load.

The chemical storage room must have artificial ventilation. Lighting should be designed to provide the required brightness everywhere in the storage area. As far as possible, unobstructed and easy access and movement between storage room, preparation room and laboratory must be ensured.

One of the most important pieces of occupational and fire safety equipment in a laboratory is the chemical fume cupboard, also known as a fume hood. In places where materials are handled which give off, or are likely to give off, toxic fumes or gases, air exchange must be ensured by artificial ventilation. The most effective, however, is a fume hood. Emergency showers should be installed in laboratories, not only for fire safety reasons, but also to mitigate the consequences of accidents when working with corrosive preparations. The emergency shower is usually located at the front door and the water supply is provided from the mains water supply. Their closing mechanism shall be designed to allow rapid opening and closing. Under the shower, the paving or tiling should ensure that water can drain away.

Gas cylinders should preferably be stored outside the laboratory in a dedicated container and only the required amount should be piped in. It is strictly forbidden to store gas

cylinders in the laboratory! Only gas cylinders that are considered to be in continuous operation should be allowed in the laboratory.

The main shut-off devices (taps) for the energy network (gas, oil, electricity) and water supply used in the laboratory must be appropriately labelled and located outside or inside near the entrance of the laboratory, and always in a clearly visible and accessible place. For each type of network, it must be possible to disconnect a room from the network by means of one main shut-off device in such a manner that the room cannot be reconnected to the network by an unauthorised person.

Safety (property, fire and health) equipment should be determined in the light of the activity to be carried out in the laboratory and the equipment and materials used in the laboratory.

It is important that the laboratory design takes into account the practicalities of tidiness, waste disposal, dishwashing and essential safe functioning conditions once in operation. Where possible, each activity should also be spatially separated according to its place in the process.

3. Documentation System for Laboratories

3.1. Structure of Laboratory Documentation

The basic document for laboratories is the *Documentation of the Rules of Procedures for the Operation of the Laboratory'*(Annex 18/1), which must be prepared by the head of the laboratory. Operational rules of procedures should be developed for each laboratory, which is located on separate premises or which have a different function or different research area, and should be kept on the premises. A laboratory may consist of several rooms if these are accessible from the corridor through a common door.

The *operational rules of procedures of the Laboratory* shall be made up of specific sections and shall specify the location where it is kept, the person responsible for retaining the *operational rules of procedures*, and the leadership of the laboratory. The level of detail in the development of the documentation will be determined by the Department of Facility Management and Security to match the severity of the hazards and risks. The greater the risks and hazards associated with the work in the laboratory, the more detailed the documentation and regulations (e.g. pressure vessels) should be, covering all risk factors.

The *operational rules of procedures of the Laboratory* consist of the following sections:

1. General Information

    1.1. Description of the Characteristics of The Room

1.2. The Name of the Person In Charge of the Laboratory

1.3.Persons Authorised to Work in The Laboratory

1.4. Personnel Requirements

2. Short Profile Description of the Laboratory
3. Location of Instruments, Equipment and their Operation Manuals in the Laboratory
4. Materials and Groups of Materials Used in the Laboratory

4.1. Solid Materials

4.2. Liquid Substances

4.3. Gaseous Substances

5. Process Description or Technological Instruction
6. Occupational Safety and Health

6.1.Protective Equipment Used in the Laboratory

6.2. Safety Equipment in the Laboratory

6.3. Installation of the Main Shut-off Devices To Cut Off Gas, Water and Electricity Supply to the Laboratory

7. Fire Safety

7.1. Fire Safety Equipment in the Laboratory

8. Environmental Protection

8.1. Chemical Handling Instructions

8.2. Waste Management Instructions

9. Hazards, Emergencies and Responses

Annex 18/2 includes the properties of chemical substances commonly used in laboratory practice

The laboratory may be inspected by the OSH and fire safety officers appointed by the organisational unit and the Department of Facility Management and Security. A regulatory inspection may only be carried out in the presence of a member of the Department of Facility Management and Security. The results of the inspection shall be documented in a report, a copy of which shall be filed in the central documentation system of the organisational unit, together with the measures taken to remedy any deficiencies found.

3.2. Definitions

Procedure: A prescribed way of carrying out an activity or process.

Process: A series of related or interacting activities that transform inputs into outputs.

Process description: A summary description of processes, which, unlike a technology description, does not cover all the substances (only groups of compounds and highly dangerous substances), work process, equipment used and nor their handling (only dangerous equipment and large instruments), but nevertheless specifies the work processes, the types of materials used and the technologies for their use.

Maintenance: All activities carried out on technological equipment to maintain or restore the equipment to its original technical condition or production capacity. Maintenance includes preventive maintenance activities and the repair of breakdowns. Maintenance does not include any activities aimed at improving the technical performance of the technological equipment. The supply of auxiliary materials for machinery and regular servicing activities are not considered maintenance activities; these are operational tasks.

Work instructions: Any instruction that describes the tasks required to perform a specific job.

Technology: A body of knowledge about the methods and means of processing materials.

Technology description: A technology description is a document -- at engineering level -- containing all the technical knowledge needed to produce a product.

Technological instructions: Any instruction that describes the manufacturing process of a product. An instruction for the operator, based on the technology description, by which each stage in the production of a product, or the whole technology, can be safely operated and the product can be produced in the required quality by following the instructions. The flow chart, the material balance and the safety data sheets constitute annexes to the technology instructions.

4. Personnel Requirements

Only the technician in charge of the laboratory, a graduate researcher or a PhD student carrying out research in the laboratory with a licence may work independently in the laboratory, provided that they have received the necessary training in occupational safety and health, fire protection, environmental protection and the specific training conducted by the person in charge of the laboratory and documented in a report.

Only employees who know the properties and hazards of the work to be carried out and of all the substances used in the work, the conditions recorded in writing for working safely with them, and who are medically fit for the work, may be employed in a laboratory.

Only persons with operator and instrument knowledge are allowed to work with the laboratory's instruments and equipment. Knowledge includes accurate knowledge of instrument specifications, operating instructions, safety data sheets for chemicals used, collection of waste generated, risks of operation and hazard avoidance.

Laboratory work may be carried out outside working hours only if at least two persons are present on the premises of the organisational unit and each is aware of the activity being carried out by the other. For those organisational units where this would cause disruption, an out-of-hours monitoring system should be set up.

Out-of-hours monitoring duties may be carried out by a lecturer, researcher or PhD student. The out-of-hours monitoring duties must be defined in advance and ordered in writing. It is the duty and responsibility of the head of the organisational unit to define the out-of-hours monitoring duty roster. The person on out-of-hours monitoring duty must be informed at least two working days in advance of the time when he/she shall be on monitoring duty. The person on out-of-hours monitoring duty must keep a logbook in which he/she records the date and circumstances of closing the laboratory and whatever he/she observed during his/her duty (if he/she did not observe anything, he/she must record this fact).

Students are only allowed to work in a laboratory under supervision. An exception is made for PhD students. Students must take a test regarding their knowledge of laboratory safety rules prior to the practical training, course or research. Before each practical, the student is required to draw up a measurement sketch, which, in addition to a description of the measurement procedure, includes a sketch of the device, the H and P statements for the materials used and the necessary protective equipment. The H and P statement should be part of the test.

A student who fails to achieve the required level of safety knowledge in the preliminary test will not be allowed to participate in the practical training until the deficiencies in his/her knowledge have been rectified.

No person under the influence of alcohol, narcotics or drugs may enter or be in the laboratory. In such cases, the procedure specified in the Security Services and Property Protection Regulation must be followed. If intoxication is caused by the effects of the substance used in the laboratory work, the incident must be recorded and the occupational health doctor should be contacted. It is dangerous to do laboratory work on an empty stomach because substances that are harmful to health are much more easily absorbed and take effect.

4.1. Medical Fitness for Work

Employees and students must be mentally, physically and medically fit for work and practical training.

Only employees and students who have been certified as fit for work by an occupational health doctor at a preliminary medical examination may be allowed to work in the laboratory.

Because of the harmful effects of the substances used in laboratories, employees must undergo periodic medical examinations at the frequency laid down in specific legislation. If an employee fails to attend a prescribed medical examination through his/her own fault, he/she shall be suspended from work by the person in charge of the laboratory, the head of the laboratory or the head of the organisational unit until the examination has been carried out.

The doctor's referral and the certificate returned by the doctor must be kept by the designated person in a place determined by the head of the organisational unit, in such a way that the personality rights of the individual are not violated. It is the duty and responsibility of the head of the organisational unit to send employees for medical fitness examination and periodic examinations.

5. General Rules

Due to the nature of laboratory work, it is very important that the employee, the student, is well disciplined and attentive in carrying out the task assigned to him/her. It is the responsibility of the person in charge of the laboratory to arrange for the removal of any employee or student whose behaviour endangers the safety or health of others.

Visitors are NOT allowed in the laboratory without permission!

Employees and students are only allowed to do the work that the head of the laboratory has assigned to them or agreed to in advance. It is FORBIDDEN to do any work or experiments other than the assigned work!

Work should be distributed between the different rooms so that administrative or computer work is not carried out in the hazardous environment of the laboratory. No desks are allowed in the laboratory.

Persons working in the same room should always be aware of the materials and operations being carried out in the room and be aware of the hazards involved and how to avoid them.

The person in charge of the laboratory must ensure and require that

- the premises are kept clean and tidy;
- the equipment, machinery and instruments used are left in the laboratory in a clean and tidy condition once the work is finished;
- chemical containers are put back in their place and unused chemicals are handed back for storage (in the laboratory, chemicals may be stored only in small quantities and on an as-needed basis, as specified in the chemical handling instructions);
- the tabletops are left clean and cleared;
- the people working in the laboratory ensure that instruments and devices are safe before using them;
- no one works in a closed equipment, except for operations under pressure.

The laboratory shall be equipped with outward opening or swinging doors. An emergency shower and/or fire blanket should be placed near the entrance. The first-aid post and the name of the person responsible should be clearly indicated. The organisational unit needs, pursuant the relevant legislation, a category 1 first aid kit if it consists of 1 to 29 people and a category 2 first aid kit if it consist of 30 to 50 people. First aid kits must be stored in the first aid post. In addition to the first aid kit, the tools and materials specified in the Occupational Safety and Health Regulation must be provided on site.

Passageways, entrances, fire safety equipment and electrical cabinets must be kept clear of obstacles and be accessible at all times and clearly marked with visible identification markings.

Escape routes (corridor, emergency stairs) must be left clear of obstacles and clearly marked as required by law.

In laboratory rooms where flammable and explosive gases or fumes may be present, artificial ventilation of the room must be installed. In these rooms, only explosion-proof electrical equipment may be used, open flames are prohibited!

Before leaving the laboratory, everyone must make sure that all instruments and equipment have been switched off, gas, water and electricity supplies have been switched off, and doors, windows and cupboards have been closed. No equipment or appliances that could present a hazard should be left unattended.

Laboratory work and research in new work areas may be initiated only with the knowledge and permission of the head of the organisational unit. The head of the laboratory and the fire safety and OSH officer must be consulted in advance to ensure that the laboratory premises meet the safety requirements laid down in the legislation and standards.

5.1. Electrical Systems, Equipment

Safety training for people working in laboratories should include training on the hazards of electrical equipment in the laboratory and how to protect against them, including first aid for electric shock (described more in detail in Chapter 5.4).

For laboratory electrical networks, circuits in each room should be arranged so that there is a main switch at the main entrance and switches to isolate each individual room at the entrance to the laboratories.

The electrical network of a building or laboratory is considered to be de-energised if the supply network has been disconnected at all possible points, the network wiring has been short-circuited and earthed and reconnection is prevented.

For electrical equipment (e.g. drying ovens, annealing ovens, refrigerators, etc.) operating unattended at night, it is advisable to design an automatic safety device or circuit breaker to provide adequate protection, which will switch itself off and give an alarm in the event of fire or failure. The connections of electric heaters and other heating/cooling electrical equipment shall be fitted with an indicator lamp.

It is prohibited to place flammable and explosive liquids, liquefied gases in refrigerators powered by electric motors or absorption refrigerators. If a container does not close perfectly or leaks due to a malfunction, even a small amount of vapour from a flammable and explosive liquid can create an explosive concentration in the small air space of the refrigerator, which can cause an explosion or fire when the electrically controlled temperature sensor is switched on, when the light switch is activated or the bulb is powered when the door is opened.

Where refrigeration of flammable and explosive material is required, only refrigerators or containers of a design approved by the competent fire authority may be used.

Repairs to heavy current electrical equipment must be carried out by a qualified electrician.

Only a person who knows how to operate the given equipment is allowed to work with it. People working in the laboratory must be able to recognise visible faults in electrical equipment (e.g. broken or damaged electrical wiring, loose or hanging switches, plug sockets, broken plugs, broken or missing insulation, etc.) and report these immediately to the head of the laboratory. Work may be carried out only with impeccable equipment.

During the inspections of the electrical system carried out for checking compliance with standards at specified intervals, it is the responsibility of the head of the laboratory to ensure that all electrical equipment and measuring points have been checked.

Electrical equipment in laboratories must be fitted with the contact protection required by the relevant standards. Only systems and equipment with contact protection are allowed to be installed!

It is the duty of a qualified electrician to install appliances and equipment that are newly acquired or have been out of service for a longer period of time.

Special attention should be paid to places where the properties of the technology or the chemical properties of the material used require protection against electrostatic charge.

It is forbidden to lead extension wire from one table to another. Cables lying on the floor of the laboratory pose an accident hazard. The use of patched cables or cables, sockets and plugs with damaged, cracked or worn-out insulation is prohibited in the laboratories!

Chemicals should not be placed in such a way that they could spill onto electrical wiring or equipment in the event of an incident.

Electrical fires can be extinguished with powder extinguishers or CO_2 extinguishers.

5.2. Laboratory Fume Hoods

Laboratory fume hoods (also known as chemical fume cupboards) are one of the most important pieces of occupational and fire safety equipment in a laboratory. Work involving the generation of strong fumes or toxic gas or the use of solvents with low boiling point should only be carried out under a fume hood!

It is forbidden to work under a fume hood with poor or inefficient exhaust ventilation (good exhaust ventilation requires an air flow of at least 1.5 m/s or an exhaust rate of 300 m^3/h for a 1 m^3 fume hood), broken glass pane or a sliding window that cannot be pulled down or fixed in the raised position. Before using the fume hood, it must be checked that the hood is operational by means of an indicator light or by manually ascertaining the exhaust ventilation when the sliding window is pulled down. When working under the fume hood, it is necessary to ensure that the exhaust air is replenished, so that when the sliding window is pulled down, a gap of a few centimetres is left from fully closed.

If a separate exhaust fan is installed in the laboratory room, it will interfere with and thus reduce the efficiency of the extraction by the fume hood; therefore the exhaust fan in the room should not be in operation while the fume hood is being used. This is also important because if the exhaust fan in the room is more powerful than the fume hood, then contaminated air from inside the fume hood will flow into the laboratory air. If ventilation of the room is still necessary, air must be blown into the laboratory room.

Work involving the risk of explosion or splintering may be carried out in a fume hood only if the glass pane of the fume hood is made of shatterproof glass or non-flammable transparent plastic. If this is not the case, the window glass should be covered with a dense wire mesh of appropriate size and strength.

It is forbidden to use a gas flame for heating under the fume hood if there might be fumes or dust that could cause a fire or explosion.

When operating an individual vacuum pump while working with toxic or flammable materials, the discharge end of the pump must be routed into the suction duct of the fume hood.

Electrical equipment placed under the fume hood must be placed on a board with electrically insulating properties in order to prevent, that solutions or liquid chemicals spilled flow into the device. Should such incident happen, the device must be disconnected from power as the first thing.

The control panel of the fume hood shall be furnished with labels in accordance with standards.

5.3. Work With Glassware

Laboratory equipment is usually mounted on racks. The racks can also hold the solutions needed to perform the various tests at the appropriate height. For the storage of liquid-filled cylinders, an appropriate spill tray should be placed under the rack. The size of the tray should be chosen so that the total amount of spillage can be contained in the event of glass breakage.

Protective gloves must be worn when unpacking glassware from the transport packaging material, when assembling equipment and while handling it.

It is forbidden to place equipment that is not being used on the floor! It is also forbidden to store damaged glassware in the laboratory outside the designated collection container. These should be repaired or placed in a glass collection container.

The end of the glass tube used in the installation must never be sharp; it must be rounded by melting.

Rubber plugs or rubber hoses should be installed on glass tubes or apparatus after wetting them with glycerine or paraffin oil.

Glassware is most securely assembled on a mounting rack. When assembly is taking place on a laboratory stand that has feet, the feet of the rack must be fixed to the tabletop. The total weight of both the equipment mounted on the rack and the material it contains must be compatible with the anchorage and not jeopardise stability.

The equipment should not be fixed too rigidly, the clamps should not come into direct contact with the glass; to this end cork or rubber cushioning should be used.

A ladder with a guard rail shall be provided for the inspection of equipment installed on the top of a high appliance.

The unobstructed operation of moving parts of mixers or blenders must be ensured before any material is filled into the equipment.

Particular attention should be given to equipment that is to be filled with corrosive, toxic or flammable substances. Their sealing must be in perfect condition, and care must be taken to ensure that any gases generated are extracted and pressure is equalised with outside air.

Sealants and lubricants applied to the ground glass joints should be chosen so that they do not react with the contents of the equipment. When dismantling the equipment, the stuck ground glass joint and glass stopper must be carefully separated from the equipment. Gentle heating or the use of a humectant may be effective.

Boiling chips should be placed in the distillation vessel before the operation starts. Care must be taken to ensure that the system is not completely closed to allow for pressure equalisation. It is most efficient if the system is open at the top of the cooler. The length of the cooler should be adapted to the properties of the material to be distilled, but longer coolers are preferable. Care must be taken to avoid condensation of high temperature vapours. The distillation vessel should only be filled to 65-70% of its maximum capacity.

Distillation of substances, which have a high boiling point and are likely to undergo decomposition, can be carried out in vacuum. Such equipment shall be equipped with a capillary and vacuum controller, and wire mesh protection shall be provided. The vessel should preferably be spherical and the operator should wear safety goggles.

Vacuum desiccators should be enclosed in a strong woven filter material or wire mesh protective cover before suction. Hot crucibles should not be placed in the desiccator; they should be allowed to cool down placed on an insulating material. In the case of a motorised vacuum system, a coolant (e.g. liquid air or a mixture of dry ice and acetone) should be applied before the engine to prevent vapours escaping through the engine into the air.

Before vacuum filtration (Nutsche filtration), the filter bottle shall also be placed behind a protection during suction. During work it should be behind a protective cover and the worker should wear safety goggles. When vacuum filtering a hot solution the suction block should be flushed with the solution before the operation so that it is at a temperature close to that of the solution.

If the equipment is used at high temperatures, thermal insulation (e.g. fiberglass fabric) should be used. This both prevents burns on contact and helps to maintain the required temperature.

For equipment with rubber hoses, care should be taken to position the rubber hoses so that they are not damaged by heat or chemical action when heated.

Material hardened in glassware, that can be poured out if heated, can be removed as follows: heat the block of material in the vessel while constantly moving the vessel, and simultaneously taking care to heat only the top edge of the vessel first. The heating of the bottom of the vessel is only recommended once the material has melted on the surface along the flask wall. This operation should be carried out while wearing safety goggles, gloves and a protective lab coat.

When working with explosive materials in glassware, in addition to the use of protective equipment, the glassware must also be protected (wire mesh cover or transparent screen made of shatterproof glass or plastic).

Only a wide glass tube (with a minimum diameter of 6 mm), bent without reducing the cross section, should be used as a gas outlet for breakdown reactions in a gas generator, as the gas formed when heating dusty materials often traps and carries solid particles. This can easily clog a poorly bent, broken or too narrow glass tube, which can result in the gas formed not escaping from the vessel and potentially exploding. Before generating gas, the worker must make sure that the gas produced has a free path.

Only preheated crucibles may be placed in an annealing oven. For chlorine combustion, a wire-mesh-coated burner glass should be used.

5.4. Porcelain Dishes

The resistance of porcelain rivals that of glass and is even more resistant to bases. If the heating of porcelain and the cooling of the glowing hot porcelain is done slowly, it can be annealed without it cracking or breaking. There are two types of porcelain dishes: those that can be annealed and those that cannot. Dishes that can be annealed are: annealing crucible, filter crucible, annealing boat, combustion tube and porcelain bowl. Dishes that cannot be annealed are: grinding bowl or pestle and mortar, Büchner funnel. The rules for storing and handling porcelain dishes are the same as for glassware.

5.5. Metal Labware

Various metals have the advantage over glass and porcelain that they can withstand sudden temperature changes and are less brittle. They are also good conductors of heat and electricity. Laboratory metal vessels are usually made of iron, nickel, copper, silver or platinum. The range of applications for vessels and utensils made of different metals also depends on the chemical properties of the metal they are made of.

Because of its chemical resistance, platinum tools are widely used. Platinum objects should not be heated with a sooty flame. It is not advisable to anneal materials, which can easily reduce to metal in a platinum crucible, and care should be taken to ensure that the

annealed platinum object does not come into contact with other metals. Platinum is a soft metal, so mechanical cleaning and scrubbing should be avoided.

5.6. Thermometers

For laboratory work, we usually use the so-called stick thermometers, which are made of glass and have a capillary filled with mercury or alcohol.

Special attention should be given to using a thermometer with the correct measuring range, because if the thermometer gets too hot, the charge can explode, the glass part can break and cause an accident. From an occupational safety and health point of view, the breakage of mercury filled thermometers is a source of danger. If the thermometer breaks, there is a double danger: on the one hand, glass splinters or sharp surfaces can cause cut injuries, and on the other hand, the mercury droplets that are dispersed pose a poisoning hazard. Mercury is one of the dangerous poisons. Spilled mercury droplets should be immediately sprayed with sulphur dust and thoroughly cleaned up. Sulphur reacts chemically with mercury to form a non-toxic compound.

Airborne fumes of unneutralised mercury can cause severe poisoning.

When not in use, thermometers should be stored in a case or wooden container designed for this purpose.

5.7. Rules for Heating Materials

Modes of Heating:

Direct heating: The most commonly used is the Bunsen burner fed from the municipal gas network. Materials in glassware should be heated directly with an open flame only in very exceptional cases, and then either by constantly moving the flame or the vessel. It is forbidden to use this procedure when working with flammable and explosive materials!

Water bath: Water heated up to 80 °C by gas or electricity can be used as a heat exchanger. It is forbidden to heat the water in the bath with open flame when it is used for heating flammable or explosive substances (e.g. ether, petroleum ether, carbon disulphide, etc.)

Oil bath: The temperature to be reached determines which oil should be used. It can be used up to a temperature that is at least 50 °C below the flash point of the oil. Paraffin baths are usually used up to 180 °C. Any residue of water must be removed before using the oil bath. If water gets into the oil bath and causes it to foam, the heating must be stopped immediately and the foamed out oil must be sprinkled with sand. During use the oil bath should be placed on a spill container (tray) and should not be fixed to the rack. When finished, the oil has to cool down to below 60 °C before it may be covered with a lid. When

using an oil bath as a heat exchanger, a thermometer should always be placed in the oil bath.

Sand bath: It is mainly used to heat materials that are not flammable. Relatively high temperatures can be achieved.

Air bath: Wire mesh, porcelain mesh or other flame spreaders should be used between the flame and the flask.

When using an infrared lamp, its glass bulb must be covered with a protective screen, as it can cause serious injury if broken. The screen also protects against the damaging effects of infrared radiation on the eyes.

Salt baths, which are mixtures of various inorganic salts in different proportions (e.g. Rose's and Wood's metal), are also used. They can be used as a bath when melted, usually to distil substances with a boiling point above 150 °C.

If the heating operation requires high temperatures, heat-resistant gloves must be used. Organic solvents should only be heated in ball flasks with a cooling system, using boiling chips.

Assembly work on equipment containing flammable liquids may only be carried out if the heating of the equipment is switched off in addition to the non-explosion-proof devices being turned off and removed.

Only water or an aqueous solution of non-flammable substances should be heated in an open container.

When working with an open flame, long hair should be securely tied up and covered with a cap or scarf.

The prescribed temperature should not be exceeded in any operation.

It is forbidden to throw any material that induces boiling (boiling chips, activated carbon, clay, etc.) into a liquid that is heated up to a temperature close to its boiling point, bend over it or reach into it. Similarly, it is forbidden to create vacuum in a vessel with these parameters! A boiling chip may only be used one time.

Concentrated sulphuric acid should not be used as a heat transfer fluid for the determination of the melting point in glassware. It is mandatory to wear protective equipment!

It is forbidden to use tools made of asbestos in the laboratory!

For steam-heated heating installations with flexible connections, special attention is to be given to ensure that workers are not exposed to direct steam or burnt in the event of a

failure in the pipework. Only reduced pressure steam may be used for this purpose. Flexible connections shall be clamped to the steam pipes.

All laboratory workers should be aware which heating equipment is to be used by him/her and which heat source is to be used for heating the different baths. In case of doubt, instructions must be requested from the person in charge of the laboratory. A thermometer must be installed in both the bath and the heated equipment.

When carrying out operations with flammable liquids (pouring, measuring out, shaking, extraction, etc.) no open flame or live electrical fittings of non-explosion-proof design should be within a radius of at least 3 metres. Lighting a flame or connecting electrical equipment of non-explosion-proof design to the power supply is only allowed once the room has been thoroughly aired out after the operation has been completed. Assembly work on equipment containing flammable liquids should only be carried out after both the heating of the equipment has been switched off, and also the flames in the surroundings have been put out, switched off or moved at least 3 metres away.

The heating or distillation of flammable or explosive substances should be carried out only by means of a closed electric heater and indirect heat transfer (water or oil bath). Work involving the heating of particularly flammable and explosive liquids (ether, gasoline, carbon disulphide, etc.) should only be carried out in a separate laboratory room, a so-called explosion-proof laboratory or a fume hood.

5.8. Distillation

Distillation is an operation to separate liquid mixtures. The separation is based on the fact that the volatility of each component differs, so that when the mixture is boiled, the composition of the resulting vapour differs from that of the liquid in equilibrium: the more volatile component will have a higher concentration of vapour than liquid.

When distilling, the liquid mixture is boiled at a constant pressure and the vapour is liquefied by extracting the vapour. This product is called a distillate.

Two types of distillation can be distinguished: atmospheric and vacuum distillation.

5.8.1 Atmospheric Distillation

For distillation at normal pressure only vessels with well-sealed, ground glass joints should be used. If more distillation equipment is to be placed side by side, the equipment must be spaced apart so that there is sufficient space for assembly and operation, and a fire cannot spread from one setup to another.

Spherical flasks are to be used for distillation. The flask may only be filled up to 65-70% of its capacity. It is forbidden to use a flask with feet or an Erlenmeyer flask for distillation! Equipment must be thoroughly checked before assembly, and broken or cracked glassware should not be used.

A high-resistance cooler (e.g. a spiral cooler) should not be used for the distillation process because it generates too much pressure.

In order to prevent superheating, the liquid to be distilled should be mixed with a boiling chip before heating, similarly to activated charcoal and clay. For vacuum distillation, a vacuum capillary is used.

The length of the cooler to be used should be selected on the basis of the properties of the material to be distilled and the distillation rate. The temperature difference between the vapours entering the cooler and the cooling water should not exceed 100 °C, and a countercurrent cooler should be used. A clamp shall be used to secure the rubber tube connections. For materials that may freeze in the cooler, hot water cooling (in this case heating) should be provided.

The liquid to be distilled should be heated slowly, as rapid heating may cause superheating. Cooling water should be added to the cooler at or before the start of the heating process. If the distillation equipment is assembled for use while containing flammable, explosive or toxic substances, a sealed collecting vessel should be connected to the cooler, with the air vent connected by a rubber hose to the fume hood or lead to the open air.

5.8.2 Vacuum distillation

It is recommended to use vacuum distillation for distillation of liquids with boiling points higher than 130-140 °C. The same equipment is used as for atmospheric distillation, but a vacuum adapter and a closed collection vessel are required at the cooler end.

If the vacuum distillation apparatus is set up on a laboratory desk or rack, a transparent, non-flammable plastic protective screen must be placed in front of it or the operator should wear unbreakable glass or plastic safety goggles or a laboratory mask. These devices protect the worker in the event of an accident should the equipment break or burst during the operation. If someone else is working at the same desk, the vacuum equipment must be separated from the other workstation by a transparent protective screen.

For vacuum distillation, spherical or thick-walled moulded glass vessels can be used.

The equipment used as part of the vacuum distillation apparatus should be carefully inspected before assembly, as the apparatus with even a hairline crack can easily break under vacuum.

The vacuum capillary serves to avoid superheating as well as to mix the components. The capillary is a thin glass tube with a piece of rubber tubing attached to the upper, thick end, and the air delivery can be controlled by a Hoffmann clamp. The capillary should extend to the bottom of the flask. A safety vessel must be placed between the collection vessel and the vacuum pump to prevent oil or water from entering the collection vessel and to prevent chemicals from entering the vacuum pump, which can be achieved by using a coolant.

A pressure gauge should be installed between the collection vessel and the vacuum pump to measure the vacuum. After the vacuum distillation apparatus has been assembled, it must be tested without being filled with liquid. The apparatus should only be filled behind the protective screen.

If a vacuum is used, chemicals should only be added to an apparatus that has been tested after assembly. Vacuum should be established slowly and carefully, as a sudden pressure change can break the apparatus. The bubbling of air through the system must be adjusted by the Hoffmann clamp so that the bubbling is slow and continuous. The vacuum should be established before the material is heated. Pressure should be reintroduced to the apparatus only after the material has cooled down.

At the end of the distillation, the vacuum is terminated as air is gently let into the apparatus to equalize the pressure. Abrupt pressure equalisation can cause the distillation apparatus to explode.

5.9. Evaporation

Evaporation is the process of separating solutions and emulsions by adding heat to the solution so that part of it evaporates. The concentration of the residual solution increases, allowing the solvent to be separated from the solute.

From both a safety and a technical point of view, it is best to do the evaporation procedure at the lowest possible temperature. The operation can be performed in open or closed equipment. The simplest method of evaporation in open equipment may only be carried out with substances that are harmless to health. The solvent to be removed must not be flammable or explosive. Closed cycle evaporation is essentially distillation.

The evaporation equipment usually consists of a vessel with a mixer, a cooler and a collector. The apparatus can operate at different pressures depending on the quality (type) of the solvent used. Glass vessels equipped with a mixer should be tested after the mixer is installed. The mixing shaft and its sleeve should be lubricated with a lubricant that does not react with or is insoluble in the chemicals that will be placed in the flask (e.g. grease, paraffin oil, etc.). Anti-slip safety rings must be fitted to the mixing arm, without which the mixer may slip off, knock out the bottom of the flask and the chemical pouring out may cause an accident or fire.

The evaporation residue may solidify as it cools, so pour it out into the appropriate collection container while it is still warm, wearing protective goggles and gloves.

5.10. Filtering Operations

Separation of materials in different phases. In the laboratory, solids are most often separated by running the suspension through a porous layer. Filtration has two products: sludge and filtrate. In the laboratory, filtration is carried out by using a funnel filter or vacuum filter.

In the case of low volume of solids and high volume of liquids, filtration can be carried out with pleated filter paper placed in a glass funnel. If the volume of solids is high and the volume of liquids is low, filtration is carried out using a vacuum filter (Nutsche filter).

A suction flask with a capacity of more than two litres used for vacuum filtration must be enclosed in a protective cover made of a dense woven wire mesh. When using smaller capacity flasks during Nutsche filtration, the operator must wear goggles or a protective mask.

When vacuum filtration is used, a rubber ring or a rubber bung fitting in size to the filter funnel stem and the neck of the suction flask shall be used for assembling the equipment. The suction flask must be secured to prevent it from tilting. Before filtering a warm solution, heat or rinse the suction flask and funnel with a liquid of a comparable temperature.

In some laboratories, pressure filters are used for the filtration operation. They must be pressure tested before use and at the prescribed intervals. Only a pressure filter that has passed the pressure test should be used.

The pressure filters are equipped with a manometer and a safety valve. Flexible connections should be secured with clamps at each assembly. Inert gas must be used for filtering of flammable and explosive liquids.

5.11. Drying

Drying is the removal of moisture from solid materials by removing moisture below the boiling point. The drying method and temperature should be chosen so that the solvent evaporates well, but the material does not decompose.

The drying oven must be equipped with a control thermometer, even if it has the feature of automatically measuring temperature.

Simple drying ovens may only be used to dry materials that are non-toxic, non-flammable and non-explosive. Drying of substances that generate hazardous dusts, explosive or toxic

vapours or gases should be carried out in a vacuum drying oven, optionally in an inert gas stream.

Cabinets operating at higher temperatures should be well insulated. When drying is complete, heat-resistant protective gloves must be used to remove the material. When setting up such cabinets, care must be taken to ensure that the heated cabinet or the material removed from the dryer cannot cause a fire or explosion.

The drying process can also be carried out at room temperature, in a closed space called a desiccator. The desiccator is a thick-walled glass jar with a tight-fitting, ground glass lid. The most commonly used drying agent is anhydrous calcium chloride in lumps.

The drying operation is carried out more efficiently using a vacuum desiccator. During operation, the vacuum desiccators shall be protected by a cover made of strong fabric or wire mesh. Suction and the equalisation of pressure, after drying is complete, should be carried out carefully and slowly. The desiccator may burst if suction or pressure equalisation is done abruptly.

5.12. Recrystallisation

Recrystallisation is the most important purification method for solid organic compounds. Recrystallisation consists of dissolving the organic material at elevated temperatures and crystallising it by cooling. Since solvents are generally able to dissolve larger amounts of organic material when they are warm compared to when they are cold, the material to be cleaned is dissolved in a warm solvent, preferably to obtain a saturated solution. With cooling, the solvent can hold less material in the solution and, consequently, some of the organic material is separated from the solution in crystalline form.

The most important criterion for the selection of a suitable solvent is that the solvent should hold the compound well while it is warmed, but the solubility should decrease as quickly as possible when the temperature is lowered. It is also very important that the solvent does not chemically react with the material to be recrystallised.

An electric heater or Bunsen burner should be used for heating. When using a Bunsen burner, a bath (water bath or oil bath) can be used to ensure even heating. When heating organic materials with low boiling points, it is always advisable to use a water bath due to the increased risk of fire. Only glass containers, which can withstand temperature changes and are in perfect condition, should be used.

Activated carbon should never be added to the hot solution, as the solution can easily foam and spill over.

The next step following the preparation of the solution is filtration. It is advisable to filter warm solutions as quickly as possible. In the case of slow filtration, crystallisation may

already start in the funnel. Before performing the operation, the worker must think through what he/she wants to do and conduct the filtration procedure without rushing. It is important to make sure the vessel is not hot and to use protective equipment to prevent accidents from burning, splashing and spilling.

If vacuum filtration is used, the requirements of section 5.10 must be observed.

The filtered clear solution must be cooled to start the precipitation of crystals. For crystal growth, it is usually best to leave the solution at room temperature until crystals appear. Ice water cooling can then be applied.

The precipitated crystals are filtered by suction through a Büchner funnel or a sintered glass filter. At the end of the filtration process, the crystals should be washed with small proportions of the original solvent to remove impurities.

Before washing, the vacuum should be equalised, then the solvent should be added and then the vacuum should be reestablished. After the final wash, as much of the solvent as possible should be removed by sucking air through the wash.

It is a special type of recrystallisation, when water is the solvent. In this case, recrystallisation can be carried out in an Erlenmeyer flask, because water is not a flammable solvent and the vapour is not toxic.

5.13. Centrifugation

Centrifugation can be used to separate particles from a solution. In a rotating system, in a centrifugal force field, materials of different densities are arranged by inertia so that materials with higher densities are farther from the axis of rotation and materials with lower densities are closer to the axis of rotation. This phenomenon is used in centrifugal operations. The substances to be separated can be suspensions and emulsions. The centrifuge is considered to be equipment under pressure during operation.

Even in the simplest, so-called angle or bottle centrifuges, care must be taken to ensure that the tubes are always placed in opposite holders and that the two tubes are of equal weight. Under unequal load, the centrifugal force causes the shaft to break. If only one tube should contain material to be separated, a counterweight must be placed in the opposite tube.

It must be ensured that laboratory centrifuges can only be loaded or emptied in upright position, and that rotating parts are covered by a lid or grid. An empty test drive must be performed and the brake system must also be checked. The centrifuge may only be loaded afterwards. It is important to make sure that only the permitted amount of material is used, as overfilling is dangerous.

If the centrifuge does not run smoothly after starting, it must be turned off immediately. It is forbidden to reach into the centrifuge during operation! Modern equipment often has a safety feature that prevents it from being started if its lid is open. For open centrifuges without lids, an indicator light warns of operation.

5.14. Instruments, equipment

Instruments are devices that are used to detect, measure and calculate a value, and to relay information about these values.

When purchasing instruments, special attention must be paid to ensure that the appropriate documentation is also obtained, e.g.: warranty certificate, maintenance contract, in the case of explosion-proof instruments, proof of the instrument being explosion-proof, pressure test certificate, (if possible in Hungarian) operation manual, software, etc. If possible, the instrument should be installed by technicians from the instrument manufacturer or distributor.

Each piece of instrument must have an inventory number, a person responsible for it, a location suited to its operation, as required by the health, safety and environmental regulations in force, and the necessary protection technology. Instruments which do not fulfil any of these conditions must not be put into service.

The person responsible for the instrument (instrument supervisor) must have a thorough knowledge of the content of the instrument's operation manual, its wiring, the sample preparation and measurement procedures, and the conditions of installation and use. The instrument supervisor is also responsible for determining and training the users of the instrument.

The electronic connections under the protective covers of the instruments should only be touched if this is permitted by the operation manual for repair or maintenance purposes. In the latter case, however, special attention must be given to ensure that the instrument is not connected to the power network, is not under pressure, filled with explosive or flammable material, or the activity should not void the warranty. It is important that the employee performs only those operations on or in the instrument for which he/she is authorised and trained. In other cases, it should be arranged that the necessary operations or repairs are carried out by competent professionals.

The instruments used in laboratory work fall into two broad categories, although the line between these two groups is not indisputably clear. One group contains small instruments, the other contains large instruments.

Large instruments are those that take the signal generated during a measurement, convert it into a measurement result, allow it to be saved in a file, or are capable of testing multiple components.

Small instruments are laboratory instruments that do not belong to the group of large instruments.

For each major instrument, an operation logbook must be kept, labelled with the name of the department and laboratory and the instrument supervisor, showing the historical data on:

- the sequential numbers of measurements or measurement series,
- the file names under which the measurement results have been saved,
- the description of the sample (so it is identifiable who the specific measurement activity was conducted for),
- the measurement parameters,
- the dates when the measurements were conducted (so that the operating time can also be traced),
- the names of persons who conducted measurements (only if more people are authorised to use the instrument for measurement).

The operation logbook must be numbered and stapled in such a way that no page can be removed or no pages can be deleted without leaving a trace.

An operation logbook must be kept for small instruments where there is a risk of highly hazardous, highly toxic, carcinogenic substances being released into the environment during measurement or harming the health of the person performing the measurement. However, here the operation logbook should only contain:

- the sequential number of the measurement,
- the date of the measurement,
- the person performing the measurement,
- the designation of the measurement.

The disposal of instruments and computer equipment, including accessories, must be carried out in a documented form. Documentation of disposal of assets must be retained for at least five years.

The operating and control units of the instruments used in the laboratory must be appropriately labelled.

Home-made instruments or equipment must be checked by the OSH, fire safety and environmental protection officers of the organisational unit before the instruments are put into service.

5.14.1 Pressure Vessels and Equipment

The head of the laboratory is responsible for the safe operation of pressure equipment during laboratory experiments, unless otherwise required by the authorities.

The requirements for pressure vessels and equipment are laid down in the Decree

on safety requirements and certification of conformity for pressure equipment and systems For pressure vessels and equipment not covered by the above-mentioned safety regulations, the following provisions apply.

If the hazard index of the experimental pressure vessel or equipment is greater than 4, the construction and operation of the experimental equipment must comply with the technical specifications of the standard. In such a case, the responsibility for safe operation may be delegated to the head of the operating research team, provided that he/she is qualified to do so.

For the installation, operation, periodic inspection and maintenance of any pressure vessel or equipment not covered by the Decree on safety requirements and certification of conformity for pressure equipment and systems, the manufacturer's instructions for the vessel or equipment in its operation manual shall apply and any deviation from them is strictly prohibited.

Pressure vessels and equipment designed, constructed and assembled by university employees shall be subjected to a strength calculation prior to putting it into service. The strength calculation shall result in the determination of all parameters (e.g.: design pressure, maximum allowable operating pressure, operating pressure, nominal operating pressure, test pressure, operating temperature, content volume, material quality) which have a significant effect on the safe operation of the pressure vessel or equipment.

In the event of damage or in a permanently out-of-service condition, pressure vessels and equipment must not be put back into service after maintenance, until a documented safety check (e.g. pressure test) has been conducted. The head of the laboratory is responsible for conducting this procedure.

Damage to pressure vessel or equipment: damage to the structural parts of a pressure vessel or equipment which has occurred during manufacture, assembly or operation, which prevents or endangers safe operation or necessitates suspension of the operation of the pressure vessel or equipment.

Any anomaly or deformation which, although not causing a forced stoppage, causes personal injury or significant damage to property or the risk thereof shall also be classified as damage. (Among these belong: damage, blowouts, extensive corrosion, damage to the lining, etc.).

The documentation of the pressure vessel, equipment shall include:

- technical drawings,
- calculations,
- technical description,
- production time,
- operating instructions,
- the date of putting into service,
- operation logbook.

5.15. Scales

Scales can be used in different measuring ranges. Before starting the weighing, the operator must make sure that the weight of the object or material to be weighed is within the weighing range of the scales, so that the scales are not damaged. In case this is not obvious, the scales that can weigh heavier weights shall always be used to determine the ideal weighing range. The accuracy of scales is particularly sensitive to the handling of the scales, with rough, uncoordinated handling resulting in inaccurate scales.

In the case of digital scales, only scales that comply with the electrical safety requirements of the relevant standard may be put into service. Digital scales other than these must be taken out of service.

5.16. Storage and Handling of Chemicals

In the laboratory, chemical substances (chemicals) and preparations may only be stored in the quantities required for use during the work process on the day and in the chemical cabinets or shelves provided for this purpose. Toxic substances are to be stored separately from other chemicals. Flammable and explosive chemicals should be stored only in the quantities that are absolutely necessary to carry out the work in the laboratory at any one time.

There should be a clear separation between storage, preparation and laboratory (user) workflows. Larger quantities (a few kilograms or litres) of the chemicals for daily operation picked up from the storage room can be stored in the preparation room of the laboratory.

The chemicals shall be dispensed under close supervision and properly documented, to properly informed and licensed staff in the laboratories. The Chemical Handling Instructions going into more detail on procurement, storage and disposal, are applicable for the storage of chemicals.

Glass and plastic vessels which are used for chemicals should be handled with care, even when empty. When carrying them by hand, the bottom of the glass vessel should be held with one hand and the top with the other. Larger vessels should be transported in a basket with handle or on a trolley/cart.

Storage and Handling of Acids and Bases Preparing Solutions

Concentrated acids and bases are highly corrosive. Even small drops of these liquids can cause serious damage to the skin or eyes. Therefore, when working with these, a plexiglass mask, goggles and rubber gloves should be used. This applies in particular when working with hot acids and bases or when melting alkaline hydroxides (KOH, NaOH). The protective gloves should always be chosen for the specific operation, as their resistance to different materials is different.

Concentrated acids and bases can be poured out using a so-called carboy cradle. The worker should make sure that when using the carboy cradle he/she stands alongside the cradle, so that any corrosive material that may spill out does not get on his/her body. The transport and pouring of concentrated acid must always be carried out by two people!

Everyone should be very careful when pouring concentrated acids and bases. The liquid bottles should only be filled to three-quarters full to ensure an even pour when pouring. A funnel must always be used when transferring concentrated acid or base into a narrow-necked bottle. When pouring, the bottle should always be held in such a way that any liquid running down the wall of the bottle does not corrode the label.

Storage of Bases

Storage of bases can vary depending on the phase they are in. Solid bases are stored in plastic containers. The alkaline solutions are stored in glass vessels, carboys or metal drums. When storing alkaline solutions in drums, it is important to ensure that the filling opening is upwards.

Never pipette caustic and toxic liquids by mouth! Safety pipettes should be used for this purpose.

Dilution of Concentrated Acids:

Protective equipment must always be used when diluting concentrated acids. The main rule when diluting is to pour the more concentrated into the more dilute fluid, never the

other way round. So when one dilutes with water, he/she should pour the acid into the water. In order to avoid overheating, proper mixing and cooling must be ensured.

Splashed acid should be neutralised first with soda ash, powdered limestone or ammonium hydroxide and then wiped up with a cloth. Spilled nitric acid is first to be diluted with plenty of water and then neutralised. Nitric acid should not come into contact with organic materials (e.g.: rags, soil, sawdust), because these materials will develop nitrous vapours from the nitric acid and rags may spontaneously combust.

Oleum can be diluted with monohydrate or sulphuric acid, but not with water!

When working with chlorosulphonic acid or oleum, the worker must make sure that the vessel in which the acid is poured is free of water. Both acids react violently with water. Operations with them shall be carried out in a closed apparatus and under a fume hood, using protective equipment of course.

Preparation of Alkaline Solution by Dissolving Solid Base:

The solid base should first be added to a relatively small amount of water at a maximum temperature of 60-70 °C. Overheating should be avoided by cooling, while making sure that the temperature does not fall below 40 °C, as bases are difficult to dissolve when cold. After the total amount has been added, the calculated amount of water should be poured in.

When boiling alkalis the worker must be especially careful, as superheating can cause overheating and the material can easily spill. To prevent this, a few boiling chips shall be added into the solution before heating.

5.16.2 Storage and Handling of Alkali Metals

Alkali metal is stored in anhydrous petroleum. The container should be placed in sand. Thin-walled containers should not be used to store alkali metals. Alkali metals should be stored well away from all other materials.

In laboratories, metallic sodium is the most commonly used substance, therefore the associated procedures and safety requirements are described in more detail as an example. Similar requirements apply to the work with other alkali metals.

The metallic sodium should be removed from the petroleum using arm length rubber gloves and tongs and the required amount should be cut in a porcelain bowl with a knife. When handling it one should be careful not to drip water or sweat on it, because it reacts very violently with water. When cutting sodium in the laboratory, flammable materials should not be used, and it is safest, if possible, to carry out the above procedure in the preparation room.

The crushed sodium should only be placed in a completely dry apparatus. If it is added to an organic solvent, it is imperative to always check that the solvent is anhydrous. Rubber gloves and safety goggles must be worn when working with metallic sodium.

Rubber gloves or tongs contaminated with metallic sodium should be wiped off with a cloth (rag) that has been stored in petroleum jelly and afterwards the cloth must be put back in the petroleum jelly. Clothing or textiles contaminated with metallic sodium should only be washed in alcohol.

A metallic sodium induced fire should only be extinguished with a dry powder fire extinguisher, dry sand or gas extinguisher.

5.16.3 Storage and Handling of Flammable Materials

Laboratory work often involves the use of flammable substances (e.g. solvents). Only small quantities of these – the required daily amount – should be stored in the laboratory. Larger quantities should be stored in so-called Fire Hazard Storage Rooms. The fire classification of these warehouses is generally 'A', i.e. high risk of fire and explosion, due to the hazardous nature of the materials stored in them. Accordingly, the electrical network of the storages and the lighting shall be explosion-proof. Chemical containers shall be placed on shelves or racks made of non-flammable materials. The load capacity must be indicated on both the racks and the shelves.

For work with flammable materials, a separate laboratory – called a flameless laboratory – must be set up. Electrical equipment and lighting in the laboratory must be of explosion-proof design. No open flame and no electrical equipment without Ex protection may be used in the laboratory. Workers must be provided with flame-resistant clothing or non-synthetic lab coats and cotton underwear. Clothing made from synthetic materials is prohibited!

A maximum of 5 litres of flammable and explosive liquids (flash point below 21 °C, flammability class A) required for the day's work may be stored in a non-flameless laboratory. A maximum of 10 litres of liquids with flammability class B or C may be stored there. The glassware must have thick walls. If more than the above permitted quantities are required, they may be stored outside the laboratory in a dedicated holding storage or metal cabinet.

Only assigned employees are allowed to enter or work in a storage room or warehouse with high fire hazard and in a flameless laboratory. Persons working with materials classified as flammable substances of classes A and B and in flameless laboratories must have a fire safety certificate.

Flammable vapours are usually heavier than air, so they always spread along the floor. When a flammable solvent is poured into a container, the vapours will spread along the laboratory desk and can ignite and cause an explosion even from gas burners away from the work area.

Flammable solvents have a high vapour pressure, which means they evaporate with high intensity even at room temperature. Their evaporation increases with even a slight rise in temperature. Therefore flammable materials should never be stored in a warm place.

Bottles containing flammable solvents should normally be filled to three quarters full. When the flasks are full, the vapours produced by even a slight warming cannot expand sufficiently, creating overpressure that can eject the stopper or make the flask explode.

Ether should be stored in a well-closed glass flask, filled to three-quarters full, in a dark place or refrigerator to prevent peroxide formation.

For safety reasons, laboratory solvent glass containers should not be larger than 500 ml.

Solvents with a boiling point below 50 °C (e.g. ethyl ether, monochloroethane) should never be heated on an open flame. These can only be heated in an electrically heated water bath. Between 51 and 83 °C, hot solvents (e.g. methanol, ethanol) can also be heated in a water bath heated over an open flame.

If a flammable solvent is accidentally spilled, it should be wiped up immediately with an absorbent cloth to prevent the vapours from spreading. Work involving a risk of fire or explosion should only be carried out on a fire-resistant surface (covered with tiles or a metal sheet). The same precautions should be taken with flammable gases as with flammable solvents or solids. In such cases, nearby gas flames should also be put out.

If a leak occurs due to a fault in the city's mains gas system, the first step is to turn off the main valve. It is strictly forbidden to use an open flame to search for a leakage point caused by an unsealed gas pipe! In such cases, the relevant experts of the gas supply company should be informed.

5.16.4 Storage and Handling of Toxic Substances

Toxic substances must be stored in a locked poison cabinet with strong walls or in a dedicated room that has a strong wall on all sides, is ventilated, adequately lit and locked, and each substance must be separated and labelled. A cabinet with corner iron on the edges and strong glass on the sides can also be used as a poison cabinet. The external door of the poison storage must be prominently marked with the standard ‘MÉREG’ [poison] label and a skull and crossbones sign.

If the substances stored include corrosive substances, the words ‘MARÓ’ [corrosive] must be displayed next to the above. The sign ‘RÁKKELTŐ’ [carcinogens] must be displayed if substances are stored in there that belong to the category of carcinogenic substances according to the EüM Decree No. 26/2000 (IX. 30.).

Many chemicals require storage in refrigerators, and the doors of such refirigerators should also be labelled accordingly. If you want to store a small amount of toxic or carcinogenic substances in a refrigerator that originally contains chemicals of a lower hazard category, the carcinogenic substances can be stored in one of the drawers. In this case, the drawer must be labelled separately for the higher hazard category (poison, carcinogenic). It is forbidden to store any food or feeding material in the chemical storage refrigerator!

Signs and inscriptions shall be placed in such a way that they are clearly visible and permanently installed so that they cannot be removed. Their presence and condition must be monitored by the person responsible for the premises and, if necessary, they need to be replaced or updated.

The poison container must be kept locked when not in use. The key to the security lock must be kept by the person in charge of the room or a person designated by him/her, and the lock may only be opened in this person’s presence.

Only toxic or hazardous substances may be stored in the poison storage area. The packaging of the materials placed here must prevent the material from dispersing.

Toxic substances should always be handled under a previously inspected, well extracting fume hood. If possible, it should be ensured that toxic gases and vapours are absorbed in a solution.

5.16.5 Storage and Handling of Biohazardous Substances and Preparations

A separate group of workplace pathogens are those that cause infectious diseases. These can be bacteria, viruses, fungi and parasites. The harm they cause can be infection, allergy or toxicity.

People exposed to biological hazards are mainly those working with experimental animals in animal and plant health, in research and development, those working as vaccine producers, hunters, animal caretakers, animal product processors, leather and fur workers, and people in contact with biohazardous waste (e.g. sewage), etc.

In organisational units where there is a risk of biological hazards, the units are required to draw up specific rules on the storage and handling of hazardous substances and preparations in order to reduce the risk.

5.17. Handling and Use of Gas Cylinders

Only gas cylinders in use (connected to an apparatus) may be kept in the laboratory. Other gas cylinders must be stored outside the laboratory.

Gas cylinders must not be stored in stairwells or corridors and must not obstruct traffic. Cylinders must be secured against falling with steel clamps or steel chains. When not in use, the cylinder valve must be closed and with the protective cap screwed on.

Gas cylinders can only be obtained through the Department of Legal Affairs and Procurement. The purchaser shall ensure that the gas cylinder is marked and placed on the market in accordance with the Gas Cylinder Safety Regulations (GSC), and that its pressure test is valid for a minimum of two additional years.

The warehouse may only hand over the purchased gas cylinders to the person with responsibility for gas cylinders in the organisational unit!

The person with responsibility for gas cylinders in the organisational unit shall keep an accurate, up-to-date record of all gas cylinders in the organisational unit, containing the information specified in the table below. 'On arrival of the fire brigade, information should be provided on the presence, number, type and location of cylinders.' (GSC: Transport, Storage and Handling of Gas Cylinders, 2.21.)

Register of Gas Cylinders and Reducers

Organisational unit:				Responsible person:			
Cylinder serial number	Name of gas stored in cylinder	Date of arrival	Date of expiry of certification	Storage location	Identification number of the reducer on the cylinder	Date of inspection of the reducer	Hand-back date:

Cylinders that have caught fire, burnt, become hot on the surface or have been otherwise damaged during use must be handled separately. Records of these cylinders must be kept according to their serial number. The operator shall return the damaged cylinders to the

filling company or its exchange point, together with the records and a copy of the recorded report, in the same condition as in the records.

It is the responsibility of the head of the organisational unit to ensure that the gas cylinders in his/her unit are returned to the gas filling company before the expiration date of the pressure test. Any additional costs arising from the fact that a cylinder is returned only after the expiration date of the pressure test shall be borne by the organisational unit who bears responsibility for the cylinder being returned after the expiration date of the pressure test.

It is prohibited to use gas from a gas cylinder without a pressure regulator and to install a pressure regulator on a gas cylinder valve with a damaged thread!

Before installing the pressure regulator (reducer), the sealing ring must be inspected and any defective sealing ring must be replaced. Only pressure regulators with completely intact sealing rings shall be installed. If a failure is detected on the reducer after it has been installed, it should be rectified after the cylinder has been closed.

Only the person with responsibility for gas cylinders may mount or dismount the reducer on the gas cylinders, and only he/she may transport the gas cylinders from the warehouse or to the warehouse, accompanied by one person. Cylinders should only be transported on trolleys and must be secured against falling during transport. Cylinders may be rolled on their base ring or on their concave bottom. The reducers shall be inspected quarterly by the person with responsibility for the gas cylinders and the results of the inspection shall be recorded in writing. The certification period for reducers is five years. Reducers that are not certified or whose certification period has expired must not be used!

Colour Coding of Gas Cylinders (MSZ EN 1089-3)

The shoulder colour of the bottle is yellow for toxic and/or corrosive fillings, red for flammable fillings, light blue for oxidising fillings and bright green for neutral fillings.

Examples:

ACETHYLENE	Yellow/brown+brown shoulder
OXYGEN	Blue+white shoulder
COMPRESSED AIR	Purple+green shoulder
NITROGEN	Green+black shoulder
HYDROGEN	Red+red shoulder

CARBON DIOXIDE	Grey+grey shoulder
ARGON	grey+green shoulder
SYNTHETIC AIR	green+green shoulder
CHLORINE, AMMONIA, SULPHUR DIOXIDE	Brown+yellow shoulder

It is imperative to ensure that the gas cylinder does not become part of an electrical circuit. It is forbidden to carry out any repairs or modifications to the gas cylinder!

It is forbidden to transfer gas from one gas cylinder to another or to mix gas!

The gas cylinder shut-off valve may only be opened or closed with the tools provided for this purpose (e.g. handwheel, key); the use of any other auxiliary tool is prohibited!

Gas cylinders filled with liquefied gas shall not be tilted at an angle of more than 30° during use. For acetylene, ammonia, a metal fitting made of copper shall not be used. For acetylene, a pressure regulator with a stirrup shall be used.

The gas burner must not be operated without first using a pilot flame.

Oil-based sealants that are highly flammable must not be used for cylinder fittings. Particular care should be taken with oxygen tanks. It should not be touched with oily, greasy hands or cloth, or handled with oily clothing.

The LPG cylinder should be placed in a bath at a maximum temperature of 40 °C to facilitate the release of the gas.

Cylinders containing toxic gases must be placed under a fume hood in the laboratory during working hours.

Work with cylinders containing hydrogen and other flammable gases should only be carried out in a laboratory designated for work involving a risk of fire or explosion and organised accordingly.

Flammable gases and combustible gases should be kept completely separate and well separated from each other.

The rules concerning the purchase, storage, handling and use of gas cylinders apply to all gas cylinders located on the territory of the University of Pannonia, regardless of their size and the amount of gas stored in them.

The cylinder shall be emptied only to the extent that an excess pressure of at least 0.5 bar remains.

6. First Aid Provision

At workplaces where immediate medical care is not available, the head of the workplace or the immediate supervisor must have first aid equipment available appropriate for the number of staff, appoint first-aiders (first aid providers) and arrange for their training and further training with the involvement of the occupational health service.

In workplaces where electrical installation or working with live current is carried out, workers carrying out installation work must know the basics of first aid and CPR. The manager of the workplace shall be responsible to ensure this.

First-aiders are trained in an organised course. Further training of trained first-aiders should be provided on a regular basis (annually).

The first-aider is responsible for the purchase and maintenance of first-aid equipment and for the replacement of medications, dressings and equipment that are worn out, expired or unusable.

First aid supplies, first aid equipment must be placed in a storage box (first aid box) or cabinet (first aid cabinet). The amount of first aid equipment depends on the size of the organisational unit. The Department of Facility Management and Security decides whether to maintain one first aid box per laboratory or one first aid cabinet for the number of staff in the whole organisational unit.

First aid equipment and the location of the first aid post must be clearly marked. The first aid position should also have enough drinking water sufficient for cleaning too, as well as a sufficient amount of hand sanitiser, nail brushes and towels. A clean piece of the latter should be kept in reserve for use in the event of serious injury.

If necessary, all employees are obliged to provide first aid to their colleagues according to their abilities.

Before starting first aid, the most important thing to do is to find out where and what has happened. It is very important to do this, as there is a lot of information that can be given to the emergency services that the patient cannot give in the event of unconsciousness, but which could save their life.

Before starting first aid, a doctor or help should be called if the person going to provide first aid cannot manage the tasks.

The aim of first aid is to ensure that the injured or sick person receives the help needed to prevent their condition from deteriorating until emergency care is available, or to prevent deterioration that could lead to death.

Everyone should always perform first aid only according to their knowledge, skills, practice and abilities, because inappropriate intervention will not improve the patient's condition, but may cause further deterioration.

As far as possible, the injured person should never be left alone and should always be sat down or laid down during first aid. Therefore every first aid post should have at least one chair.

6.1. Health Hazards of Chemicals and First Aid Provision

The most important way to prevent the harmful effects of chemicals is to use protective equipment. Without using these, it is forbidden to carry out any operation or work process in which a chemical substance is used or handled in case of which it is unknown whether it has any harmful effects on health.

Symptoms of toxicity:

If a previously healthy person suddenly becomes unwell under suspicious circumstances without any particular history, poisoning should always be considered.

Likewise, if several people fall ill at the same time with the same symptoms, the suspicion of poisoning should immediately be ruled out or confirmed.

In a sick person, the appearance of symptoms unrelated to the disease may arouse suspicion, e.g. vomiting, diarrhoea, drowsiness, loss of consciousness, etc.

The adverse effects of the toxic substance may be local or general.

General symptoms of toxicity may include: unconsciousness, drowsiness, seizures, muscle weakness, vomiting, diarrhoea, drooling, etc.

Local signs of toxicity: change in skin colour (e.g. cyanide, nitrite, carbon monoxide poisoning), skin blistering (e.g. effects of acids, bases), blistering of the skin (e.g. certain gas poisoning), lacrimation (e.g. effects of irritant gases), pupils that are smaller or larger (e.g. drug poisoning). Annex 18/2 describes the most commonly used chemicals and their adverse health effects and how to react to them.

In the event of an accident, the following general first-aid tasks should be carried out in the case of accidents and toxicity caused by chemicals:

The injured person should be moved to fresh air or a window should be opened, intensive ventilation should be carried out and the patient should be laid down comfortably, while tight clothing should be loosened. Any contaminated clothing, shoes or stockings must be removed from the injured person, while taking care not self to suffer contamination. The parts of the body that have been in contact with the material should be rinsed with plenty

of water, for a prolonged time and covered with a sterile dressing. If the substance has come into contact with the eyes, these need to be rinsed with running drinking water for 10-15 minutes. This is done by pulling the eyelids apart with the thumb and index finger and simultaneously the injured person shall move his/her eyes in all directions.

The injured person should be secured against cooling down, by covering him/her with a blanket or warm clothes. In the event of unconsciousness, the injured person must be placed and transported in a secured recovery position lying on their side. In the event of respiratory arrest, artificial respiration should be used immediately.

The table in Annex 18/2 shows the adverse health effects of some chemicals, the symptoms of toxicity and the first aid required.

6.2. Treatment of Burn Injuries

A substance or equipment with a temperature significantly higher than the body's temperature causes burn injuries when it comes near or touches the surface of the body. Burn injuries can be categorised in 1st, 2nd or 3rd degree burns.

1st degree burns: Redness, pain, the skin smoothing out as if it had been ‘ironed’.

2nd degree burns: In addition to these symptoms, there are several smaller or larger blisters on the skin surface.

3rd degree burns: In addition to the blisters, there is also tissue necrosis at depth.

The first and most important element of first aid is to stop the heat as soon as possible. Clothing should be carefully removed from the burnt area. The injured body surface should preferably be cooled with running water. Keeping the burnt body part under cold water for 5-20 minutes to cool it permanently reduces damage to deeper body tissues and temporarily reduces pain. After cooling, the body surface must be loosely dressed with a dry, sterile dressing. It is strictly forbidden to put any substance (fat, oil, egg white, etc.) on the burn wound!

If the burn covers a large area, the injured person should preferably be given plenty saline fluid to drink – if he/she does not vomit. The injured person should be taken to a doctor immediately.

If acids or bases come into contact with the skin, the injured person should receive first aid in the same way as if they had suffered a burn.

6.3. Rules for Wound Care

Wounding is when the continuity of the skin is broken by an external force, the edges of the wound more or less retract, are ‘gaping’, pain is felt around the wound and bleeding occurs in the absence of proper care.

The size and shape of the wound, the extent of bleeding, the severity of pain and infection depend on the shape of the instrument that caused the injury, the amount of force and the resistance of the body surface.

Wound care is essential in the case of wounding. The area around the wound should be cleaned by movements leading outwards from the wound, and treated with iodine. The wound should then be covered with sterile gauze, a cotton pad over the gauze if necessary and dressing which then should be secured with a bandage or plaster, depending on the area and the size of the wound.

In the case of a wound with a perforated artery or vein that is causing heavy, pulsating blood to spurt from the wound (risk of bleeding out), it is imperative to stop the bleeding immediately, using a clean cloth or even hand if nothing else is available, and then to apply a pressure dressing to the wound. In such cases, the first step is to treat the wounded, followed by notification.

6.4. Emergency First Aid in Case of Accidents Caused by Electric Current

Electric current damages the heart muscle, skeletal muscles and brain tissue. It leaves a current mark at entry and exit (a twig-like metallic pattern), possibly with burning at both points. Electric shocks can occur without leaving any external sign of damage.

It is important that before first aid can be administered, the electrocuted person must first be disconnected from the electric circuit. The first thing to do is to cut off the power to the room, but if this is not possible, pull the injured person away from the circuit by grabbing his/her clothing, taking care not to touch the body or any conductive parts.

Symptoms: after an electric shock, the person who suffered the injury may feel restless, unsteady, have temporary loss of vision or hearing, experience tremor of the hands, palpitations.

Treatment: if burns are involved, the rules for treatment of burns apply. If breathing or circulation stops, resuscitation should be given.

The injured person should be laid down, a doctor should be called or the injured person should be transported on a stretcher to a doctor. The injured person should not be allowed to move or walk around!

7. Information on Fire Safety

Lab work must comply with the University's Fire Safety Regulation.

Fires in laboratories are usually caused by a lack of knowledge of the flammability of the materials used or by failure to comply with regulations.

Employees must receive training in fire prevention and fire extinguishing. Laboratory workers need to know what can be used to extinguish a fire in each material they work with. These are usually the same for each group of compounds.

Extinguishing equipment should be kept available in quantities appropriate to the flammability of the chemicals used. (BM Decree No. 54/2014 (XII.5.)) Fire extinguishers must be periodically inspected, which is to be done centrally. Only fire extinguishers with a suitable inspection tag should be kept on standby.

The location of fire extinguishers must be clearly marked and known to all employees. The fire extinguisher must not be blocked, not even temporarily. Quick, unobstructed access must always be ensured, so it must not be placed in a corner on the floor or under a table.

The main switches, gas and water shut-off devices of the laboratory shall be located outside the laboratory and shall be clearly and prominently labelled.

If there is a fire in the laboratory, the tasks should be carried out in the following order:

- Saving human life,
- Activating fire alarm,
- Shutting off the main gas tap, possibly disconnecting the power, removing combustible materials,
- Starting extinguishing the fire,
- Accurately informing the arriving firefighters.

It is the responsibility of the organisational unit, the head of the laboratory and the fire safety officer to ascertain that all employees know what to do in the event of a fire, so that the above measures are executed efficiently in as quick succession as possible. The Department of Facility Management and Security shall also assist in designing the process.

Water and foam extinguishers must not be used to extinguish fires involving electrical equipment, as they conduct electricity and will cause electric shock accidents.

Special care should be taken when extinguishing burning powders, because if the powder is stirred up, it may ignite explosively. Electrical fires should be put out by using powder extinguisher or a clean gaseous agent extinguisher. Since electrical appliances used in

laboratories are usually of high value and difficult to replace, a clean gaseous agent extinguisher should be used to extinguish fires involving them.

It is forbidden to use fire extinguishers to extinguish burning clothing on the human body; fire blankets must be used for this purpose.

All fires, even extinguished ones, must be reported to the Department of Facility Management and Security!

8. Personal Protective Equipment and Its Use

The most commonly used protective equipment in the laboratories: respirators and dust masks, rubber gloves, protective aprons or coats, goggles, face shields, etc.

It is up to each individual to ensure the usability of the equipment. It is the responsibility of the user to clean them after use. One personal protective equipment (e.g. respirator) may only be used by one person.

Everyone should know which filter cartridge to fit on the mask, if any. The filter cartridges for the respirators have colour and letter markings for easy identification, which are listed in the following table.

Colour Coding of Filter Cartridges

Letter	Colour	Area of application
A	Brown	Against organic vapours, solvent vapours
B	Grey	Acid gases, halogens, nitrous gases
E	Yellow	Sulphur dioxide
K	Green	Ammonia

Special filters

Letter code of	Colour	Area of application
NO-P3	blue-white	Against nitrogen oxides, nitric oxide (single use only)

HG-P3	red white	Against mercury vapour, chlorine gas (maximum operating life 50 hours)
CO-P3	black-white	Against carbon monoxide (for maximum 20, 40, or 60 minutes)
AX	brown	against organic compounds boiling below 65 °C (max. 20-60 minutes)
SX	violet	Against substances specifically identified by tests

The effectiveness of a filter cartridge is gradually diminishing with time, so it should be checked before use (e.g. for rattling, etc.). After use, the openings of the filter cartridge must be sealed with adhesive tape, caps or plugs.

The use of rubber gloves is compulsory when working with acids and bases, but is also recommended for all work with toxins that can be absorbed through the skin. The properties of rubber gloves should always be chosen for the material the worker is working with.

After use (before removal), the rubber gloves must be decontaminated to avoid contamination when removing them. After removal, the inside should also be wiped dry and dusted with talcum. When using rubber gloves, it is recommended to also wear woven gloves under the rubber gloves.

Safety goggles must be used for all work where there is a risk of corrosive substances getting into the eyes. When working with substances that irritate the eyes (e.g. ammonia), a respirator with a filter cartridge should be used.

Goggles should also be used when inspecting closed glassware containing corrosive or toxic substances (breakage, spillage), and operating equipment under vacuum.

If goggles must be worn for a prolonged period of time, wearing them becomes uncomfortable after a period of time. In such cases they should be replaced with a transparent face shield if possible.

Most eye injuries happen when pouring corrosive liquids. Therefore, to avoid this, it is essential to use a carboy cradle if the worker has to pour the liquid frequently.

The pipetting of concentrated acids, bases or toxic liquids can only be done mechanically, using a so-called poison pipette or ball pipette, but the suction effect of a water jet pump can also be used.

When working with corrosive, toxic or explosive materials, one should always work with the smallest amount of material possible.

Protective coats made from synthetic material must not be worn during laboratory work. It is important to make sure that the outerwear is free from synthetic fibres.

9. Wastes, Dish Washing

No organic solvents, concentrated acids or toxic substances should be poured into the drip cups. These materials should be collected in the container provided for this purpose. If they cannot be recovered, they must be disposed of properly.

Filter paper contaminated with oil or solvent and other flammable materials should be collected in metal containers with lids provided only for this purpose. These materials should be removed from the laboratory every day.

Substances that ignite in water should not be poured into the waste, into the drip cup or sink. They may only be poured out after proper neutralisation.

It is forbidden to throw matches or cigarette butts into the laboratory drip cup or sink!

It is forbidden to put dangerous substances and vessels contaminated with them in the sink! They must first be rendered hazard-free.

When dishwashing with acids or solvents, the same protective equipment must be used as for laboratory work with these substances.

A hand-washing sink with dishwashing liquid and towels should be provided in each laboratory.

10.Eating, Drinking and Smoking in the Laboratory

Eating in laboratories is prohibited. Laboratory vessels, equipment, chemicals – including sodium chloride – must not be used for food purposes! Food is not permitted in the laboratory. No food may be stored in laboratory refrigerators.

Containers used for eating or drinking must not be brought into the laboratory!

A room outside the laboratory should be designated where employees can eat and drink and keep their food and drink containers.

It is prohibited to drink, bring into the laboratory or prepare alcoholic beverages before or during laboratory work.

Smoking is allowed only in designated outdoor areas. Use of open flames and smoking in the laboratory is forbidden. These restrictions apply to any laboratory classified as a fire or explosion hazard and to its surroundings. Smoking still remains forbidden in every laboratory even when the use of open flames is permitted in those!

11.Annexes

Annex 18/1: *Operational Rules of Procedures of the Laboratory*

UNIVERSITY OF PANNONIA Coat of arms	Operational Rules of Procedures of the Laboratory Revised: 0 Page: ☐ Copy number
Name of Laboratory	
Drafted by: Date: _____ Checked by: Date: _____ Its application ordered by: _____ Date:	

1. General Information

1.1 The room

Name:
Purpose:
Location:
Fire safety classification

1.2 Responsible Person

Contact information outside the workplace:

1.3 Persons Authorised to Work in the Laboratory

1.4 Personnel Requirements

2. Short Profile Description of the Laboratory

3. Location of Instruments, Equipment and their Operation Manuals in the Laboratory

4. Materials and Groups of Materials Used in the Laboratory

4.1 Solid Materials:
4.2 Liquid Substances:
4.3 Gaseous Substances:

5. Process Description or Technological Instruction

6. Occupational Safety and Health

6.1 Protective Equipment Used in the Laboratory

6.2 Safety Equipment in the Laboratory

6.3 Installation of the Main Shut-off Devices To Cut Off Gas, Water and Electricity Supply to the Laboratory

gas shut-off valve:
water shut-off valve:
main power disconnect switch:

7. Fire Safety

7.1 Fire Safety Equipment in the Laboratory

8. Environmental Protection

8.2 Chemical Handling Instructions:
8.3 Waste Management Instructions:

9. Hazards, Emergencies and Responses

Annex 18/2: Properties of Chemical Substances Commonly Used in Laboratory Practice

Name of chemical substance	Chemical formula	Adverse health effects	Signs of toxicity	First aid information
Acetone	CH_3COOH_3	The liquid and its vapour irritate the eyes and skin, inhalation has a narcotic effect	Sleepiness, burning sensation on the skin and in the eyes, vomiting.	Drinking plenty of fluids.
Ammonia solution	NH_4OH	Its fumes are very irritating to the eyes and respiratory system. Contact with the liquid will cause burns.	Lacrimation, severe burns to mucous membranes, cough.	Fresh air. The patient should only be transported lying down.
Aniline	$C_6H_5NH_2$	It is a strong blood poison. It is also absorbed through the skin. It damages kidneys and liver.	Severe headache, nausea, blueing of the lips and nails, weakness, dizziness, irritability, loss of consciousness.	Drinking plenty of fluids. It is prohibited to give alcoholic beverages to the injured person!
Gasoline	-	In closed spaces, its vapour displaces oxygen. Inhaling it causes a state similar to drunkenness.	Headache, stupor, nausea. Loss of consciousness and respiratory paralysis in case of high concentration.	The poisoned person must immediately be taken to fresh air, if necessary artificial respiration, oxygen ventilation should be used.
Benzene	C_6H_6	Inhaling it irritates the respiratory system. The liquid is absorbed through the skin and causes toxicity and death from respiratory paralysis. In case of	Dizziness, headache, stupor, arrhythmia, drowsiness, unconsciousness, convulsions.	Immediate specialist care required (blood transfusion).

		prolonged exposure, haematopoietic damage occurs.		

Name of chemical substance	Chemical formula	Adverse health effects	Signs of toxicity	First aid information
Bromine	Br_2	Its vapour is highly irritating to the eyes and respiratory system. It causes deep and painful burns on the skin.	It causes coughing, burns the eyes, the skin and causes blistering. Burning sensation in the mucous membranes, short gasping breaths, asphyxiation attacks.	Fresh air against bromine fumes. Immediate medical assistance.
Diethyl ether (Ether)	$C_2H_5OC_2H_5$	Inhaling its vapour causes stupor and daze. Contact with skin causes inflammation.	It causes first happiness, cheerfulness, then drowsiness and unconsciousness.	The patient should be given strong black coffee.
Acetic acid	CH_3COOH	Its fumes are irritating to the eyes and respiratory system. The liquid causes chemical burns.	It causes intensive lacrimation, burning sensation on the skin and mucous membranes, coughing.	Any acid on the skin should immediately be washed off with plenty of water. If ingested, it is forbidden to induce vomiting! The patient should be given milk diluted with water to drink.
Ethyl alcohol (Ethanol)	C_2H_5OH	Its vapour is intoxicating.	Dizziness, double vision, nausea, drunkenness.	Gastric lavage, ingesting activated carbon.

Ethylene glycol	$HOCH_2CH_2OH$	Inhaling its vapour is dangerous. The liquid is absorbed through the skin. It is irritating to the skin and eyes, damaging to the kidneys.	Headache, nausea, dizziness, feeling unwell, possible unconsciousness.	Plenty of fluids should be given to drink.
Silver nitrate	$AGNO_3$	Its dust causes chemical burns. The substance in the eyes causes burns and on the skin it causes blackening.	Burning sensation on the mucous membrane. Blackening of skin surfaces and airways, burns. Heavy salivation, diarrhoea. Contact with eyes causes visual impairment.	If ingested, the patient should be given water or saline solution to drink and then vomiting should be induced. The eyes of the injured person should be rinsed with diluted saline solution.

Name of chemical substance	Chemical formula	Adverse health effects	Signs of toxicity	First aid information
Phenol	C_6H_5OH	It is easily absorbed through the skin and causes toxicity. Contact with the liquid causes extensive burns to the skin and eyes. In more severe cases of poisoning, paralysis of the central nervous system can cause death.	Headache, tinnitus, dizziness, upset stomach and intestines, intoxication, fainting, drop in blood pressure, stupor, loss of consciousness, irregular breathing, respiratory paralysis, cardiac arrest.	In the case of ingestion, the patient should be liberally given olive oil or other vegetable oil to drink (castor oil is forbidden!). It is forbidden to give alcoholic beverages to the patient.
Phosphorus	P	The burning phosphorus vapour irritates the mucous membranes and lungs. Contact with phosphorus causes extremely severe burns. Ingestion causes upset stomach and intestines within a short time, followed by severe renal and liver damage. Circulatory problems and death can occur.	Coughing, unusual sensitivity of the eyes to light. Severe pain in the affected areas of the skin.	The part of the body in contact with the material should be submerged in water, and if necessary covered with moist soil or sand. Phosphorus residues must be washed off urgently with an aqueous synthetic detergent solution. (The use of soap-based detergents is prohibited!) In case of ingestion, the doctor shall immediately

				induce vomiting.
Hydrogen cyanide solution	HCN	It is an extremely strong poison. It blocks the circulation of oxygen in the body. Inhalation in high concentrations causes sudden death. The liquid is absorbed through the skin.	Irritation of the mucous membranes, shortness of breath, dizziness, and inability to move the arms and legs.	Caution! If at all possible, protective clothing and, if necessary, a respirator mask must be worn when performing first aid. Urgent medical assistance must be requested.

Name of chemical substance	Chemical formula	Adverse health effects	Signs of toxicity	First aid information
Mercury	Hg	Inhaling its vapour damages the nervous system.	Fatigue, severe headache, irritability, nervous weakness.	Fresh air.
Potassium	K	It causes severe burns on skin. Contact with eyes causes blindness.	Burning sensation in the eyes, on the mucous membrane. Headache, coughing, nausea. Severe pain, shock effect.	Any metal that has got on the skin must be removed with tweezers and then washed off with plenty of water.
Potassium permanganate	$KMnO_4$	Inhaling or ingesting its dust is harmful. It irritates the respiratory organs locally and causes burns in the gastrointestinal tract. If it comes into contact with the eyes, it will cause burns.	Burning sensation in the eyes and on the mucous membranes. Strong coughing, feeling of asphyxiation. The part of the body in contact with the material turns brown.	In the case of ingestion of larger amounts of the substance, the patient should be given milk with sugar to drink.
Chlorine	Cl_2	It causes burns in the respiratory system. In contact with the eyes, it causes burns, and in contact with skin, it causes skin damage. Liquid chlorine in contact with the skin creates a frostbite-like injury.	Cough, choking, pulmonary oedema, burning sensation of mucous membranes.	If necessary, mouth-to-mouth resuscitation should be used to restore breathing until mechanical ventilation can be started.
Chloroform	$CHCl_3$	Its vapour has a narcotic effect. Contact with the liquid will cause	Dizziness, headache, nausea, intoxication, unconsciousness, respiratory arrest.	It is forbidden to give the patient castor oil, milk

		burns. It damages the liver and kidneys.		or alcohol to drink!
Chlorosulphonic acid	$ClSO_2OH$	Its vapour is highly irritating to the eyes and respiratory system. It can cause pulmonary oedema. When exposed to moisture, it decomposes to form hydrogen chloride gas, hydrochloric acid and sulphuric acid, which cause very severe burns.	A burning sensation or burns on the mucous membrane. A burning sensation in the eyes, accompanied by heavy lacrimation. Coughing attacks, shortness of breath, loss of consciousness.	The body part in contact with the chlorosulphonic acid should be rinsed for a long period of time and with plenty of water, and finally covered with a sterile dressing.
Name of chemical substance	**Chemical formula**	**Adverse health effects**	**Signs of toxicity**	**First aid information**
Methanol	CH_3OH	It damages the nervous system and the skin as well as the respiratory system.	Intoxication, dizziness, feeling unwell, vomiting, mild narcosis, impaired vision, apnoea.	In case of suspected poisoning, the patient should drink ethyl alcohol.
Sodium hypochlorite (bleach)	NaOCl	It is corrosive to eyes, skin, and respiratory organs.	Burning sensation in the eyes, on the mucous membrane, and skin. Coughing, asphyxiation attacks, pulmonary oedema. Skin blistering.	Vomiting must not be induced! Patient should be transported in recovery position lying on their side only, or in semi-sitting position in case of shortness of breath.
Sodium hydroxide (caustic soda)	NaOH	It causes severe, deep burns. If ingested, it causes damage to the	Slippery skin surface. Severe pain in the gastrointestinal tract	Vomiting must not be induced! Patient must be

		walls of the gastrointestinal tract.	when ingested. Heavy salivation, bloody vomit, shortness of breath.	transported to hospital urgently.
Nitrogen (liquid)	N_2	Its rapid evaporation squeezes out oxygen, making it an asphyxiation hazard. Contact with the liquid causes cold burns.	Drowsiness, feeling unwell, increased heart rate due to lack of oxygen.	The body part in contact with the material must be rinsed with plenty of water. The body part with cold burns should not be rubbed, it should be covered with a sterile dressing.
Nitrobenzene	$C_6H_5NO_2$	Inhalation of its vapour, ingestion of the liquid and absorption through the skin all cause poisoning. It destroys the blood cells. It causes late stage renal and central nervous system damage.	Headache, dizziness, loss of consciousness, blueing of the lips and fingernails, skin colour resembles pallor mortis (grey).	It is prohibited to consume alcoholic beverages!
Nitrous gases	-	Inhalation causes very strong and lethal poisoning. They cause severe burns on the skin and eyes.	Eye and airway irritation, lacrimation, nausea.	A poisoned person should be transported on a stretcher, lying down or in semi-sitting position in case of threat of asphyxiation. Any movement and walking is prohibited!

Name of chemical substance	Chemical formula	Adverse health effects	Signs of toxicity	First aid information
Lead and its compounds	-	They cause damage to the nervous system, blood and blood vessels.	Headache, dizziness, sluggishness and fatigue, loss of appetite, insomnia, pale yellow or grey complexion.	The patient must be given egg whites to drink, or medical charcoal.
Nitric acid	HNO_3	Its vapour is highly corrosive. The part that comes into contact with the liquid suffers extreme burns that heal very slowly.	Burns, painful sores. Shortness of breath, very severe pain if ingested, vomiting, shock.	Vomiting must not be induced! The patient should be given milk diluted with water to drink.
Hydrochloric acid	HCl	It causes burns. Its vapour is irritating to the eyes, airways and respiratory organs.	Strong coughing, lacrimation. Stabbing pain on the surface of the skin. Shortness of breath. Ingestion may cause severe pain, vomiting, shock.	Vomiting must not be induced! The patient should be given milk diluted with water to drink slowly.
Carbon tetrachloride	CCl_4	The liquid is toxic and can be absorbed through the skin. Its fumes damage the central nervous system and the heart.	Headache, feeling unwell, nausea, vomiting, intoxication, loss of consciousness.	The patient should be given tea sweetened with glucose to drink.
Toluene	$C_6H_5CH_3$	Its vapour has a narcotic effect and irritates the respiratory system. The liquid irritates the skin and eyes.	Headache, feeling unwell, vomiting, irritated airways, stupor, loss of consciousness, respiratory paralysis, convulsions.	Fast medical assistance.

Xylene	$C_6H_5(CH_3)_2$	Its vapour is highly intoxicating, damaging to the central nervous system.	Headache, dizziness, nausea. At higher concentrations, it causes intoxication and agitation, delirium, respiratory paralysis, convulsions.	Immediate medical assistance.