Safety Rules for Students at the University of Ljubljana – Faculty of Chemistry and Chemical Technology (UL FKKT)

Year 1

September 2023

Contents

1. THE HISTORY OF HEALTH AND SAFETY AT WORK

For ages, people have been faced with potential sources of injury or damage – and ways of protecting themselves – in all walks of life, especially in occupational environments. Written sources from history prove that safety and health at work is not simply a product of the last couple of years:

1. An ancient Chinese document titled "Ping Yuan Hon Lum" contains a warning about the hazards of wood. The cited example pertains to the Chinese lacquer tree (*Rhus vernicifera*), which was used to produce lacquer.

2. Around 400 BC, Hippocrates warned that certain craft work and technical skills may lead to health issues. In his medical research, he classified them as occupational impairments.

3. In 1531, Paracelsus studied silicosis and other mining maladies, as well as illnesses caused by lead and mercury.

4. In 1746, a Dutch inventor named Goldschmiedt invented the thimble as a means to protect the fingers from needles while sewing.

5. In 1785, the introduction of the steam engine in textile plants launched the industrial revolution in England.

6. A document titled "Guidelines for Foremen" (*Smernice delovanju oddelkovodij*), used in the first nail-making and iron-craft cooperative in Kropa – Kamna Gorica, undoubtedly had a major influence on Slovenian territories. (The exact date of the document is unknown, but it is estimated to have appeared between 1920 and 1930)

2. INTRODUCTION

During your chemistry studies, you will spend a lot of time in the laboratory. Laboratory exercises are the students' first encounter with practical lab work and the chemicals they will use during future employment. Chemicals are everywhere – at the work place, in urban settings, and in nature. They are used for various purposes in engineering, science, the food industry, agriculture and healthcare. When asking when we actually know enough about a substance and how to safely use it, we quickly find ourselves in a bit of a quandary. Certain types of laboratory exercises can result in accidents or injury at work when carried out improperly. It is the duty of everyone at the Faculty – students and staff alike – to help prevent such unfortunate occurrences.

The goal of teaching students about occupational safety is two-pronged:

- Preventing injury and health hazards which can occur during laboratory exercises, by properly handling laboratory equipment, preparations and devices.

- Teaching students about safety at work procedures at the start of their studies, so the latter become second nature and a routine during future professional life.

3. HEALTH AND SAFETY AT WORK

Health and safety at work (hereinafter: HSW) is a collection of knowledge, procedures, and measures used to ensure a safe and healthy work environment – a prerequisite for a successful worker throughout his or her period of employment.

3.1 LEGISLATION

The basis for HSW already exists in the Constitution of the Republic of Slovenia, which requires the state to guarantee legal protection for employment and work, while the the right to a healthy living environment is a constitutionally protected right, which naturally also applies to the work environment. This area is regulated by the Health and Safety at Work Act or ZVZD-1 (Official Gazette of the Republic of Slovenia, No. 43/2011), which is amended by numerous statutory instruments, published on the basis of the Act, as well as other laws regulating health and safety at work for:

- workers exposed to specific risk factors;
- specific categories of "vulnerable workers" (young people);
- workers using specific equipment and
- workers in specific work environments.

The basic principles behind the ZVZD-1 law are based on international regulations on health and safety at work. In this context, it is important to mention the 89/391 EEC Directive and the International Labour Organization's (hereinafter ILO) Convention No. 155 from 1981. Directive 89/391 was adopted on 12 June 1989 with the aim of introducing measures to encourage improvements in the area of HSW. The Directive focuses on: assessing risk, informing workers, training workers, and cooperating with workers when deciding on HSW. The Directive only sets guidelines and serves as the basis for adopting other directives, which apply to risks at the workplace in a more specific manner (e.g. directive on limit values, chemical factors, manual handling of loads, work equipment, etc.). The ILO Convention No. 155 is especially important, since it defines the basic concepts related to health and safety at work, like worker, workplace and health. The Convention defines the obligations of member states, which are required to consult social partners before formulating, adopting and sometimes revising HSW policy.

Article 9 of ZVZD-1 sets out the basic principles behind HSW:

- Danger avoidance;
- Risk assessment;
- Management of danger at the source;
- Adapting the work to the individual by adequately organizing the job and work environment, work spaces, work and technological procedures, selecting work and personal safety equipment, as well as work and production methods, and especially by guaranteeing non-monotonous work and working conditions without forced a working rhythm and other circumstances harmful circumstances (humanisation of work);
- Adapting to technical progress;
- Replacing the hazardous with non-hazardous or the less hazardous;
- Developing a comprehensive safety policy, which includes technology, work organization, working conditions, interpersonal relationships and work environment factors;
- Giving precedence to collective safety measures ahead of individual ones;
- Providing workers with adequate instructions and notifications.

These principles give precedence to collective safety measures ahead of individual, general ones.

Accident at Work

A work accident is an unforeseen or unexpected workplace or work environment event, which occurs during working hours or stems from a type of work capable of injuring a worker[1].

Student Duties Related to Safety at Work at the UL FKKT

At the UL FKKT, HSW is regulated by the Risk Assessment. Among other things, it establishes the competences and responsibilities of individuals for safety at work. The competences and responsibilities of UL FKKT students include the following:

- Before starting laboratory exercises in the scope of a subject, they must learn about safe work practices, guidelines for safe work, sign a statement confirming they have been informed about the conditions, instructions, and measures pertaining to safe work in the laboratory;
- Before starting their studies at the faculty, they are required to pass a test on safety at work and fire protection;
- They are required to follow instructions related to safety at work and strictly follow the instructions given by superiors;
- They are required to use and maintain personal protective equipment;
- They must provide first aid;
- They must help in case of an accident;
- They must extinguish the fires.

The above competences and responsibilities are quotes from the Risk Assessment and further explained below.

The safety of the students is the responsibility of the teacher. It is the teacher's obligation to inform students about potential injuries and health hazards, as well as about measures for safe work. All students must follow the teacher's instructions and abide by them.

3.2 THE UL FKKT RISK ASSESSMENT

Pursuant to ZVZD-1, the Risk Assessment is the obligation of every employer (in this case, the Faculty). The goal of the Risk assessment is to guarantee in advance that no one will be injured or fall ill because of work. The risk assessment enables us to ascertain whether the work procedure is associated with any dangers; should this be the case, it is our duty to do everything in our power to ensure that the risk is small enough or acceptable. Risk Assessment is therefore obligatory for every employer, regardless of the size of his company or institution; it represents the employer's written programme for ensuring health and safety at work. With the document, the employer clearly expresses that he or she is aware of the responsibility for ensuring health and safety at work, as well as of the potential consequences of failing to follow regulations. The Risk Assessment is therefore the employer's tool used to carefully consider everything which could potentially jeopardize the health and safety of his or her employees. It is aimed at eliminating or reducing dangers with minimal resources. The assessment is also a permanent process used for improving the level and safety and safety culture within a company. It must therefore be continually updated (along with the measures).

3.3 LABORATORY SAFETY MEASURES

In the following pages, we will focus on laboratory safety measures, since laboratory environments present risks for injury and damage to health. However, we must also be aware that danger is present even outside the laboratory (on the steps, during the morning commute to school, when working at the computer, when improperly lifting loads, when roller-skating, etc.). Consequently, safety culture must be cultivated in all areas, not only within educational institutions and other organized activities.

3.3.1 DANGERS IN THE LABORATORY

The laboratory has many sources of potential danger, such as "permanent" dangers: broken glass, knives and cutting tools, foreign objects in the eye, back injury due to incorrect lifting and electric shock. There are also dangers associated with corrosive, flammable, and radioactive chemicals, as well as uncontrolled chemical reactions.
The main dangers in a laboratory environment come from the following sources:

- Toxic chemicals,
- Flammable reagents,
- Radioactive substances,
- Compressed gases,
- Refrigerated gases,
- Dangerous equipment.

Laboratory equipment can start fires, cause burns and electric shocks, lead to cuts and explosions. Other health risks are associated with toxic substances, which are routinely used in chemical and other laboratories. Under certain conditions, many flammable substances may become explosive.

Laboratories used by students often have a large number of dangerous substances in small quantities. Despite the plethora of chemicals and different equipment used in laboratories, the majority of lab-related injuries comes from glassware, which is why we will first focus on preventing injuries caused by glass fragments.

3.3.1.1 The General Dangers Associated with Laboratory Glassware

The majority of injuries due to glassware is caused by incorrect use. When the glass shatters, the sharp edges of the fragments can cause cuts. We have to avoid rapid changes in temperature. The glass must be heated gradually and slowly. When heated, it must then be slowly cooled. When handling hot glassware, you must always wear appropriate gloves.

General Rules for Handling Glassware:

1. Never use broken or scratched glassware. Any faults in the glass almost invariably start on the surface. Glassware exhibiting scratches and notches on the surfaces must be immediately taken out of use.
2. When setting up and inserting laboratory glassware without ground glass joints, we must always use the correct gloves (e.g. the ones shown in Image 1).
3. Never separate the ground glass joints by force. In these cases, it is always ask laboratory personnel for help.

4. Heated glassware must be slowly cooled.
5. Never heat closed glass containers.
6. A vacuum, which reduces pressure, may only be created in specially-designed glassware.
7. When carrying around, we must always hold the glass with both hands.
8. Rubber gloves are used for special cleaning.

Image 1: An example of puncture-resistant gloves (Source: ZAVAS Personal Protective Equipment Catalogue)

3.3.1.2 Electrical Hazards

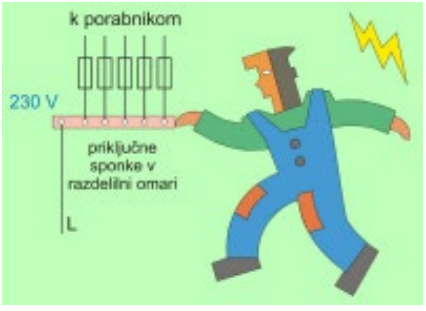
At workplaces and in everyday life, we are surrounded by electrical installations and devices carrying or employing electricity.

Laboratories also use various electrical devices. Nowadays, electrical equipment is used for heating, cooling, mixing and pumping, as well as in most instruments used for taking physical measurements.

3.3.1.3 The Danger of Electrical Current for the Human Body

A person receives an electric shock when for whatever reason a high enough voltages runs through their body. This most often happens when:

· coming into direct contact with an electrical conductor (phase conductor, part of an electrical device or installation) under sufficient voltage (Image 2);
· touching exposed conductive materials, usually because of faulty insulation or wiring (Image 3).



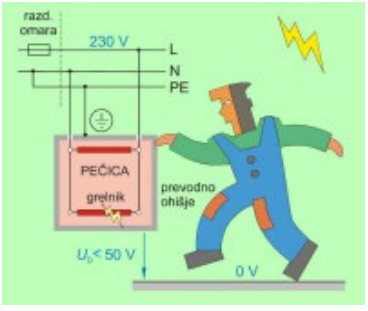


Image 2: Indirect contact
http://eoet1.evsebine.com/material/eOet1_02_06_02-2.html

Image 3: Direct contact

The degree or seriousness of the injuries due to electric shock is influenced by various factors:

. The amplitude (the strength or size) of the current.

- The type and form of current (an alternating sine wave current damages tissue at certain values, while the same injury would require twice or three-times the direct current).
- Exposure time.
- The frequency of the alternating current.
- The path the electrical current takes through the body (the most dangerous is the path through the heart area).
- Being prepared for the shock (trials have shown that human beings are more resistant to the effects of current when sleeping than when awake).

A 25 mA current can cause injury to the respiratory system; a current above 50 mA can cause loss of consciousness, while 100 mA means an almost certain death. The consequences also depend on whether we only touch the high-voltage object (we reflexively move the hand) or hold it while the current passes through the heart. A wet finger in contact with 110 V can cause as much as 7–10 mA to surge through the body.
The electrical equipment must be installed in such a way as to not be dangerous in case of water or chemical spills. If water or any other chemical spills on the electrical equipment, the device must be switched off immediately and must not be used until cleaned. If an electric shock occurs in wet or humid circumstances, the consequences can be much worse. Wet skin can be much less resistant (even by a factor of 100) compared to when dry. Skin can become wet for various reasons (e.g. because of sweating or spilling liquid).

Repairs on electrical wiring may only be carried out by professional personnel. In case of malfunction, failure or faults on the electrical equipment, you should immediately inform the person conducting and supervising the exercises.

A Few General Rules for Working with Electricity:

1. Only use an extension cord when strictly necessary and for as short a time as possible. Be sure to put it immediately away after each use.
2. Before using the electrical equipment, be sure to check whether the insulation is intact or missing and whether the wires are not damaged.
3. Any damage or flaws connected with the electrical devices and wiring must be immediately reported to the UL FKKT staff.
4. Make sure that the work surface under the electrical equipment is not wet.
5. Make sure there are no flammable substances nearby.
6. Before plugging into the socket, make sure all the switches on the device are in the off position. This will prevent sparking at the socket.
7. Before cleaning or replacing any components, make sure the switch on the device is in the off position.
8. Never handle electrical equipment with wet or sweaty hands and never stand on wet floors.
9. Never pull the plug forcefully out of the socket.
10. When you finish work, always make sure that all electrical devices have been switched off.

3.3.1.4 Chemical Hazard

The dangers posed by chemicals are varied and depend on the properties of the substance (flammability, explosiveness, toxicity, corrosiveness, radioactivity, oxidizability, environmental hazardousness, etc.). The classification of chemicals according to their dangerous properties is listed in chapter 3.5.

General Guidelines for Handling Chemicals in the Laboratory:

1. Please, take into account that the mixture is at least as dangerous as the sum of its parts.
2. Never use unlabelled chemicals.
3. Always carefully read the labels on the chemical and make sure you've chosen the correct one. Always read the labels three times: when selecting the chemical, just before using it, and after use. Make sure to compare the name, formula and concentration on the labels with the instructions for the exercise.
4. Make sure to immediately label the container with your sample.
5. Never combine substances, except when being explicitly told to do so.
6. Never taste the chemicals. Pipetting with your mouth is prohibited.
7. When working with chemicals, always avoid contact with skin and eyes.
8. Always add acid to water, never the reverse.
9. Never pour water into chemicals heated above 90 ^{o}C.
10. If one of the mercury thermometers breaks, report it to the UL FKKT staff.
11. Before using a Bunsen burner, make sure there are no flammable substances nearby.
12. Never pour chemicals down the drain.
13. Never take chemicals out of the laboratory without the prior knowledge of UL FKKT staff.
14. Never place chemicals too close to the edge of the work surface or shelf.
15. Never expose chemicals to heat sources (radiators, sunlight).
16. Do not store chemicals in packaging used for storing food.
17. Always assume all unknown chemicals are dangerous.

3.3.2 LABORATORY POLICIES

The basic rules for safe work are can be found in the Laboratory safety rules of UL FKKT. This applies to all laboratories at the UL FKKT and for everyone in them: teachers, students, cleaning staff and visitors.
The provisions of the Laboratory safety rules of UL FKKT should be read and understood. The entire document may therefore be found in Appendix 1. It is also hung in every laboratory. The individual provisions are further explained under individual chapters.

The Laboratory safety rules of UL FKKT determine only the general rules for working in a laboratory. You will regularly receive specific instructions regarding an individual laboratory or exercise. You are required to follow these instructions, regardless if they are part of the laboratory policies, written work safety instructions or simply oral instructions from the teacher, laboratory assistant or technician. If you fail to follow the instructions, the assistant will ask you to leave the exercises.

3.3.3 PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR LABORATORY WORK

Personal protective equipment refers to protective clothing or other garments or equipment designed to protect the exposed person against injuries or medical impairments. It is strictly forbidden to carry out any work without PPE, if the harmful influences or dangers cannot be overcome in advance using technical and organizational protective measures. The required PPE must be suitably used. Failure to use the required personal protective equipment in all instances where it is needed could result in an accident or occupational disease. Image 4 shows an example of skin burns due to hydrofluoric acid, while Image 5 shows a foreign body in the eye.

Image 4: Skin injury due to spilling HF acid
http://visionsource.wordpress.com/

Image 5: Foreign object in eye

Safety Glasses

Safety glasses are used to protect our eyes from mechanical and optical injury, as well as against chemical and liquid sprays. There are several types of safety glasses (hereinafter: glasses) used in laboratory settings:

1. Glasses with side shields,
2. Tightly fitting safety goggles (hereinafter: safety goggles).

Glasses with side shields must be worn at all times in the laboratory. All students wearing prescription glasses and contact lenses must always use safety goggles (Image 7).

Image 6: Example of glasses with side shields

Image 7: Example of safety goggles

You will have the opportunity to purchase safety glasses before the start of practical laboratory work at the UL FKKT. Some exercises will require additional protection. When handling corrosive substances, safety goggles or a face shield must be worn at all times. Special eyewear is required when working

with lasers. All additional face and eye protection will be available at the laboratory. It is true that glasses can be cumbersome and uncomfortable. However, without them, the pain can be much greater and more permanent.

3.3.3.2 Lab Coat

The laboratory coat must be made from 100% cotton; it must have long sleeves and be knee-length or go below the knees. The coat is buttoned up with snap buttons. A white lab coat is recommended. The coat must fit. The coat must be purchased by the students themselves.

Image 8: Example of a laboratory coat

3.3.3.3 Gloves

The type of gloves can be distinguished according to:

- the type of work (hard work, precise work, etc.);
- the type of danger (cuts, burns, chemicals, etc.);
- size.

During practical laboratory work, you will come across various chemicals and dangers. If the latex gloves turn out to be inappropriate, the laboratory staff will provide you with a different pair.

Image 9: Gloves for various laboratory tasks
http://web.princeton.edu/sites/ehs/labsafetymanual/sec6c.htm#gloves

3.3.3.4 Footwear

Slippers and sandals are not allowed in the laboratory. The chosen footwear must protect the entire foot and allow you walk surely and safely. High heels and slippery soles are not suitable for laboratory environments.

3.3.3.5 Maintaining PPE

Students are solely responsible for cleaning and maintaining their PPE. Laboratory coats with tears are not allowed.

You are required to regularly clean your glasses or goggles. The glasses and goggles can be satisfactorily cleaned using water; while still wet, they should be wiped using a cotton cloth that doesn't leave behind lint (handkerchiefs made from cloth are perfect). Make sure your glasses have no scratches on the surface. Cracked glasses or goggles and eyewear with damaged frames are not allowed.

3.3.4 HYGIENE

Laboratories contain plenty of noxious substances. To prevent these substances entering your body, you should always do the following:

1. Carefully wash your hands after working in the laboratory.
2. ***When in the laboratory, never do the following:***

- Drink and consume food;
- Smoke (this applies to the entire UL FKKT);
- Store food and drinks in the lab refrigerators;
- Keep chemicals in food packaging;
- Mouth pipetting.

3.3.4 BIOLOGICAL HAZARD

Marija Kisilak, Chair of Biochemistry, Faculty of Chemistry and Chemical Technology, University of Ljubljana, 2023

In a biochemical laboratory, in addition to other hazards that are also present in a chemistry laboratory, there are additional risks from biological agents - mainly microorganisms, but also proteins and other agents. Furthermore, in biochemical laboratories, because of the frequent work with genetically modified organisms, special care must be taken to ensure that waste is disposed of consistently, that no organisms are released into the environment and that the relevant regulations are observed.

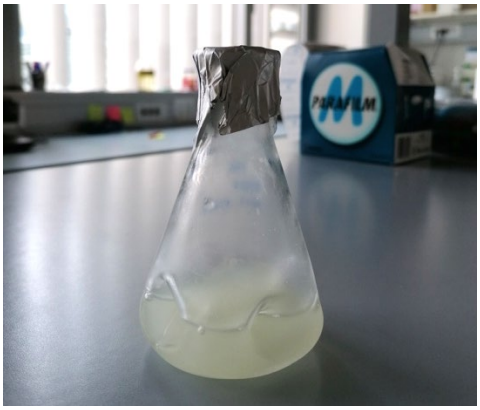


Image 10: Bacterial culture in a shaker flask. Personal archive.

The main risk in the biochemistry laboratory is the possibility of infection with pathogenic organisms (viruses, bacteria, fungi, protozoa), but non-pathogenic organisms can also pose a risk if they come into contact with an open wound or if the person has a weakened immune system. Handling body fluids in the laboratory can also lead to infection. The possible routes of intake are the same as for chemicals - via inhalation, ingestion or spillage on the skin. Therefore, consistent use of personal protective equipment - gowns, gloves and goggles - is extremely important. Of course, contamination is not the only risk - sometimes other biological materials (e.g. proteins) can also pose a risk and cause hypersensitivity or allergic reactions or cause diseases (e.g. prions).

Not all biochemistry laboratories are the same. They are divided into four biosafety levels depending on the degree of biological hazard. During the course of your studies, you will probably only encounter biosafety level 1 laboratories, some of you may also encounter biosafety level 2 labs. Nevertheless, before entering any laboratory, you should first find out what type of lab it is, how high the risk of infection is and what the work rules are – and it is the responsibility of the laboratory manager to inform you of these things.

In the biosafety level 1 laboratory, we work with well-known organisms that do not cause disease in humans. Wearing personal protective equipment is compulsory and you may only enter the laboratory under supervision. When working, you must take care not to touch your face and, of course, you must not bring food or drink into the laboratory. When work is done, all work surfaces and samples must be decontaminated and the waste properly disposed of.

In the biosafety level 2 laboratory, we work with pathogenic organisms that do not cause serious illness in humans. Employees must be vaccinated against diseases for which there is an increased risk of infection in the laboratory and the use of biological safety cabinets is mandatory. Biosafety level 3

laboratories work with known pathogenic organisms that can cause serious (including fatal) diseases in humans, while biosafety level 4 laboratories work with organisms that are not well researched, for which there are no cures or vaccines, and the consequences of infection are not yet well known. The higher the risk, the more protective measures must be taken in these laboratories to ensure the safety of staff and prevent potential infections as much as possible.

Image 11: Biosafety cabinet II. Personal archive

Another unique feature of working in a biochemistry laboratory is the use of biological safety cabinets, which sterilise the air by passing it through special filters that retain 99.7% of particles. Their role is usually twofold - they help maintain an aseptic environment, reducing the likelihood of contamination of biological samples, and at the same time protect the user from possible contamination by the sample (splashing, inhalation).

The risks in a biochemistry laboratory, even if it is a first-level laboratory, are not negligible, but the work can still be safe if the assistant's and technician's instructions are strictly followed and if personal protective equipment is used appropriately.

3.4 PROCEDURES IN THE EVENT OF INCIDENTS

An incident is defined as any event resulting in:
- occupational injury, illness or occupational disease;
- fire and/or an explosion;
- damage to means of action;
- material damage;
- environmental hazard.

When confronted with an incident, you should **immediately** inform the person conducting or supervising the practical laboratory work or other staff at the UL FKKT.

Because of potential incidents in the laboratory, there should always be at least two people present!

3.4.1 MEASURES IN THE EVENT OF AN INCIDENT

1. Offering first aid if the incident results in an occupational injury.
2. Informing UL FKKT staff about the incident.
3. Following the instructions of UL FKKT staff.

3.4.2 FIRST AID

The following first aid equipment is available:
- First aid kit (Image 12);
- Eyewash fountain (Image 13);
- Emergency showers (Image 14);
- Wash stations in case of corrosive substance spillage (Image 15);
- Defibrillators (Image 16).

Image 12: FIRST AID kit

Image 13: Eyewash fountain

Image 14: Emergency shower

Image 15: Wash stations in case of corrosive substance spillage

Image 16: Defibrillator

Before entering the laboratory, you will first get acquainted with the location and use of the equipment pictured above.

3.4.2.1 Procedures for offering first aid in specific cases

The most common injuries in the laboratory requiring first aid:

- Cuts,
- Burns,
- Splash of corrosive substances.

In the cases above, use the following procedures:

a) CUTS: the site of the cut is cleaned and bandaged (or a plaster is applied).
b) BURNS: place under cold water. Never apply any creams.
c) SPLASH OF CORROSIVE SUBSTANCES: When skin or the mucus membrane comes into contact with a corrosive substance, it is imperative the site be **washed with water as quickly as possible**. In the event a liquid makes its way into the eye, it should be washed with a eyewash fountain (Image no. 11) for at least 15 minutes; alternatively, use a bottle of Diphoterine® (Image no. 15). In case of a splash onto the skin on the hands or face, the site should be washed with an eyewash fountain and the entire body rinsed under the shower.
Any eye splashes can be prevented by using safety goggles or a face shield. Gloves and coats should be made from acid-resistant materials.

3.4.3 FIRE, EXPLOSION

The emergency procedures in the event of a fire or explosion are described under 4 – Fire Protection.

3.4.4 INFORMING ABOUT NEAR MISSES

A near miss is an event that could result in an incident. These irregularities do not result in injury or material damage (e.g. chemical spill without any damage or causing damage to the environment).

You are required to immediately inform UL FKKT staff about a near miss.

3.5 HAZARDOUS CHEMICALS

3.5.1 CLASSIFICATION OF HAZARDOUS CHEMICALS

Pursuant to the Chemicals Act (Official Gazette of the Republic of Slovenia, No. 110/03 – official consolidated text, 47/04 – ZdZPZ, 61/06 – ZBioP and 16/08) and EUROPEAN PARLIAMENT AND COUNCIL REGULATION (EC) No. 1272/2008 from 16 December 2008 on the system of classification, labelling and packaging of chemical substances and mixtures, hazardous chemicals, substances, and preparations are classified into one of the hazard classes.
Hazardous chemicals are classified according to hazard classes:

a) Explosive chemicals
Solid, liquid, pasty or gelatinous chemicals, which can undergo an exothermic reaction even in the absence of oxygen in the air, rapidly releasing gases which can detonate under certain conditions, quickly catch fire, or explode as a result of heating and increased pressure when spatially confined.

b) Oxidizing chemicals
Chemicals that cause a strong exothermic reaction when coming into contact with other substances (especially flammable ones).

c) Extremely flammable chemicals
These include liquid chemicals with an extremely low flashpoint and a low boiling point, as well as gaseous chemicals that are flammable at room temperature and pressure when in contact with air.

d) Highly flammable chemicals are:
- Chemicals that heat up when exposed to air and are able to catch fire at room temperature and pressure without supplying external energy;
- Solid chemicals that can catch fire after even minor exposure to an ignition source and then burn and be used up even when the source is removed;
- Liquid chemicals with a very low flashpoint;
- Chemicals that begin emitting flammable gases when in contact with water or its steam.

e) Flammable chemicals
Low flashpoint chemicals.

f) Very toxic chemicals
Chemicals that cause death or acute or chronic damage to health if ingested, inhaled or absorbed through the skin in very small quantities.

g) Toxic chemicals
Chemicals that cause death or acute or chronic damage to health if ingested, inhaled or absorbed through the skin in small quantities.

h) Noxious chemicals
Chemicals that can cause death or acute or chronic damage to health if ingested, inhaled or absorbed through the skin.

i) Corrosive chemicals
Chemicals which can damage or destroy living tissue on contact.

j) Chemical irritants
These chemicals are non-corrosive; however, they can cause skin or mucous membrane irritation even after short, prolonged or repeated contact.

k) Chemicals causing sensitization
Chemicals which can cause sensitization when inhaled or absorbed through the skin, resulting in typical negative effects associated with the substance during continued exposure.

l) Carcinogenic chemicals
Chemicals that can cause cancer or increase its likelihood if ingested, inhaled or absorbed through the skin.

m) Mutagene chemicals
Chemicals that can cause hereditary genetic defects or increase their likelihood if ingested, inhaled or absorbed through the skin.

n) Reproductive toxicant chemicals
Chemicals that can cause or increase the likelihood of non-heritable adverse effects on progeny and/or impair the reproductive capabilities or functions of men and women if ingested, inhaled or absorbed through the skin.

o) Environmentally hazardous chemicals
When coming into contact with the environment, these chemicals can or might cause immediate or long-term damage to a part or parts of the environment.

3.5.2 LABELLING OF HAZARDOUS CHEMICALS

The GHS regulation (see 3.5.1) establishes a Globally Harmonised System of Classification and Labelling of Chemicals, abbreviated as "GHS"). Starting with 1 June 2015, all chemicals and mixtures must be labelled in accordance with the GHS regulation. Naturally, we still store and use some chemicals which have the old symbols.

Old symbol GHS pictogram

The standard warnings (R-phrases) have been replaced with hazard statements (H-statements), while the safety phrases (S-phrases) have been replaced with precautionary statements (P-statements).

3.5.2.1 HAZARD PICTOGRAMS (PICTOGRAMS)

These are black characters on a white background and with a red border. There are nine hazard pictograms which are no longer unambiguous, instead appearing with different descriptions, definitions and explications.
They are divided into:

a) physical hazard pictograms,
b) health hazard pictograms,
c) environmental hazard pictograms.

PHYSICAL HAZARDS

Pictogram	Hazard class and category
 GHS 01	Unstable explosives Explosive divisions 1.1, 1.2, 1.3, 1.4 Self-reactive substances and mixtures, types A, B Organic peroxides, types A, B
 GHS 02	Flammable gases, category 1 Flammable aerosols, categories 1, 2 Flammable liquids, categories 1, 2, 3 Flammable solids, categories 1, 2 Self-reactive substances and mixtures, types B, C, D, E, F Pyrophoric liquids and solids, category 1 Self-heating substances and mixtures, categories 1, 2 Substances and mixtures, which in contact with water, emit flammable gases, categories 1, 2, 3 Organic peroxides, types B, C, D, E, F
 GHS 03	Oxidizing gases, category 1 Oxidizing liquids, categories 1, 2, 3 Oxidizing solids, categories 1, 2, 3
 GHS 04	Compressed gases Liquefied gases
 GHS 05	Corrosive to metals, category 1

HEALTH HAZARDS

Pictogram	Hazard class and category
 GHS 06	Acute toxicity (oral, dermal, inhalation), categories 1, 2, 3
 GHS 05	Skin corrosion, categories 1A, 1B, 1C Serious eye damage, category 1
 GHS 07	Acute toxicity (oral, dermal, inhalation), category 4 Skin irritation, category 2 Eye irritation, category 2 Skin sensitization, category 1 Specific target organ toxicity following single exposure, category 3 Respiratory tract irritation Narcotic effects
 GHS 08	Respiratory sensitization, category 1 Germ cell mutagenicity, categories 1A, 1B, 2 Carcinogenicity, categories 1A, 1B, 2 Reproductive toxicity, categories 1A, 1B, 2 Specific target organ toxicity following single exposure, categories 1, 2 Specific target organ toxicity following repeated exposure, categories 1, 2 Aspiration hazard, category 1

ENVIRONMENTAL HAZARDS

 GHS 09	Hazard to the aquatic environment – Acute hazard, category 1 – Chronic hazard, categories 1, 2

The "hazard category" designates the type of physical hazard or an environmental/health hazard. Within an individual hazard class, chemicals are further classified into "hazard categories", which are then further divided according to criteria within each hazard class determining the seriousness of the hazard. The number 1 designates the highest level of danger. E.g. in the case of reproductive toxicity:
Category 1A: Substances known to have reproductive toxicity in human being.
Category 1B: Substances reputed to have reproductive toxicity in human beings.
Category 2: Substances suspected of having reproductive toxicity in human beings.

3.5.2.2 HAZARD STATEMENTS AND PRECAUTIONARY STATEMENTS

Hazard statements (H-statements) will replace standard warnings (R-phrases). A hazard statement applies to a text referencing a hazard class or category, which describes the type of danger posed by a dangerous substance or mixture (as well as the hazard level, if need be). Hazard statements are marked using the letter H and a three-digit code.
Precautionary statements (P-statements) will replace standard safety phrases (S-phrases). A precautionary statement is a text describing the recommended measure (or measures) for reducing or preventing negative effects, which are the result of being exposed to a hazardous substance or mixture (preparation) in the course of its use or removal. Precautionary statements are marked using the letter P and a three-digit code. Precautionary statements determine:

- general measures (e.g. P103: Read label before use.);
- prevention measures (P235: Keep cool.);
- response (in case of contact, spill, fire);
- storage (P420: Store away from other materials.);
- disposal (P501: Dispose of contents/container...).

A list of all the hazard and precautionary statements can be found in Appendix No. 2.

How do we know a chemical we are about to use is dangerous or not? All the information can be read on the packaging labels and the safety data sheet.

Which information is found on labels according to the new GHS labelling?

1. **Supplier's name, address and telephone number.**
2. **Product identifier (name and brand name, chemical identity, CAS number, etc.)**
3. **Pictogram**
4. **Signal word (Danger or Warning)**
5. **Hazard statements (H-statements).**
6. **Precautionary statements (P-statements).**
7. **Quantity (general use).**
8. **Supplemental information (other hazard phrases, etc.).**

The signal word is used to refer to the relative hazard level, which draws the reader's attention to potential danger. There are two levels:

- "Danger" is a signal word used for more serious hazards;
- "Warning" is a signal word used for less serious hazards.

Below is an example of a label for methanol produced by Merck Germany – according to old and new labelling.

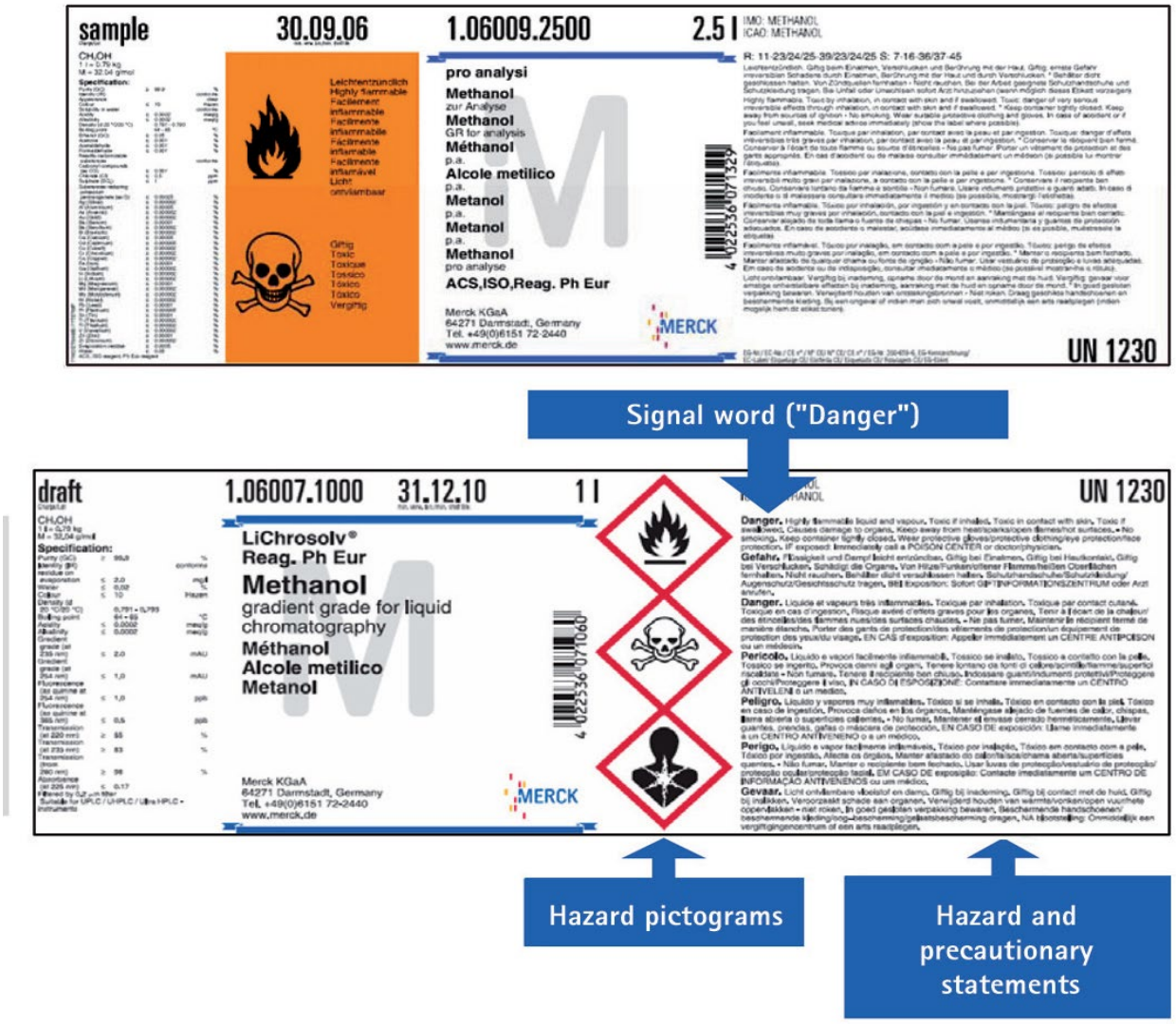


Image 17: Example of old package labelling system (above) and the new GHS labelling system (below).

3.5.3 SAFETY DATA SHEETS

The majority of the data on the characteristics of hazardous substances can be found on safety data sheets. The person or company manufacturing or marketing the hazardous substance is required to deliver this sheet to the user, so as to guarantee health and environmental safety, as well as occupational health and safety. The safety data sheet is regulated by the EUROPEAN COMMISSION REGULATION (EU). The safety data sheet is obligatory for substances and mixtures classified as hazardous.

The safety data sheet includes the following 16 sections:

1. Identification of the substance/mixture and of the company/undertaking
2. Hazards identification
3. Composition/information on ingredients
4. First aid measures

5. Firefighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

3.6 WASTE

Waste containing hazardous substances is called hazardous waste. Hazardous waste must not be disposed of in the trash or poured down drains.
At the UL FKKT, we have a unified labelling system for canisters containing chemical waste. The chemical waste containers have labels with the following information:
1. Type of chemical waste,
2. Signal word,
3. Department,
4. Date on which the waste chemical was stored,
5. Signature of the person who handed over the chemical waste into storage.

Spilled or scattered chemicals are removed in accordance with instructions given by the UL FKKT staff.
An example of a waste chemical label is presented in Image 18.

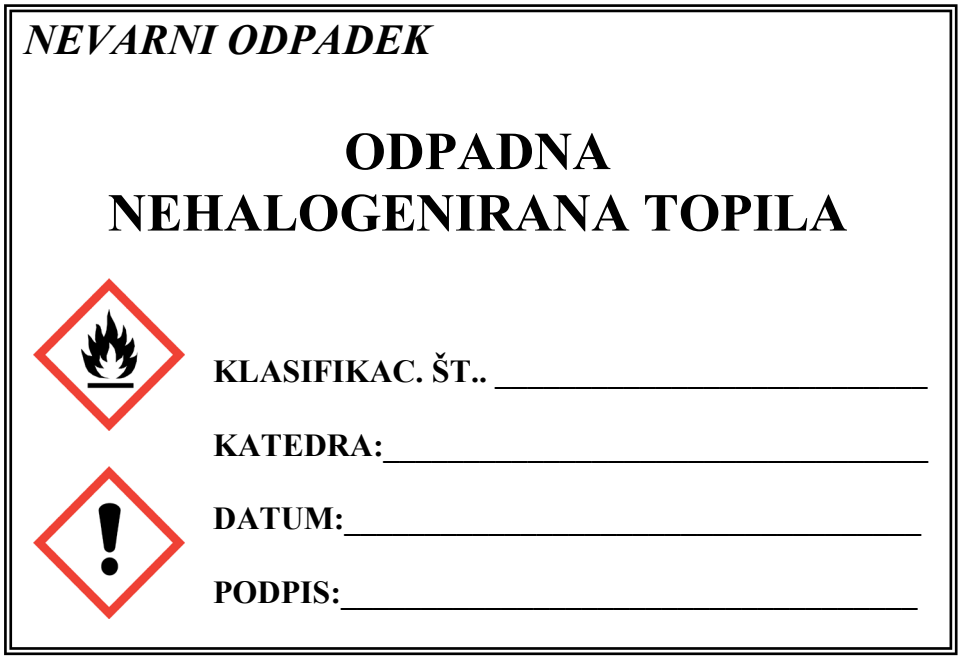


Image 18: Example of a waste chemical label

3.7 SAFETY SIGNS

The purpose of safety signs is to quickly and unambiguously warn about objects or substances, which can pose a danger. Safety signs can:

- prohibit (red),
- prescribe (blue),
- save (green),
- warn (yellow).

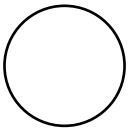
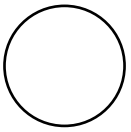
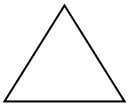
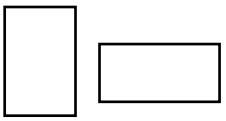
Colour	Meaning	Use	Geometric shape	Example
Red/white	Explicit order	Stop signs, prohibition signs		
Blue/white	Obligation	Mandatory use of personal protective equipment		
Yellow/black	Warning, danger	Hazard identification (fire, explosions, obstacles)		
Green/white	Information and Instructions	Evacuation route signs, first aid signs		

Table 1: General meaning of safety sign colours and geometric shapes

The shape, colour and size of the safety signs, as well as the obligations of employers associated with using safety signs, are regulated by the Rules on Safety Signs at Work (Official Gazette of the RS, No. 89/1999).

4. FIRE PROTECTION

Fire protection is an essential element in guaranteeing safety. All students at the UL FKKT are required to learn in detail about the dangers of fires and explosions that might occur in the course of their work. They must know how to prevent fires and what to do in the event of one. Fire protection is the duty of each and everyone at the Faculty: employees, students, and visitors.

Combustion can be defined as a chemical reaction involving a flammable substance (either solid, liquid or gaseous) and an oxidizing agent – usually oxygen from the air. Fire can be a controlled process used, for example, for generating heat (when starting a fire in a furnace). However, when the fire escapes the boundaries of the fireplace, it is no longer controlled. It can then turn into a blaze or a conflagration. The flammable material must be heated to ignition temperature. For example, wood ignites at around 250 °C, similarly to paper.

How and why do fires even start?

A fire will occur only when the following is present in large enough quantities or concentrations:
- Flammable material (fuel),
- Oxidizing agent (oxygen, air or an oxidant),
- Source of heat or ignition.

Fuel, oxygen and heat are three elements that are absolutely essential for combustion; together, they make up the **fire triangle**, also known as the combustion triangle.

Image 19: Fire triangle https://en.wikipedia.org/wiki/Fire_triangle

During combustion, a flammable substance can either be solid, liquid and/or gaseous. Fuel can be solid (A), liquid (B) or gaseous (C). A special class of fuels are also non-ferrous metals (d) and edible oils and fats (F).

Table 2: Classes of combustible substances

Type of fire	Flammable substance	Pictogram
A	**SOLIDS** - wood - paper - textile -	
B	**LIQUIDS** - alcohol - ether - tar -	
C	**GASES** - acetylene - methane - hydrogen -	
D	**NON-FERROUS METALS** - magnesium - aluminium - lithium	
F	**FATS** - edible oils and fats	

The requirements pertaining to fire protection measures are regulated by the Fire Protection Act (OCT – 1: Official Gazette of the RS, No. 3/07), which stipulates under Article 9 that:

"Pursuant to the Act, any natural and legal person shall have criminal and damage liability for failing to implement the fire protection measures and for the consequences arising thereof."

In Article 45, the same law also states:

"Any person discovering imminent fire or explosion hazard or noticing a fire shall dispose of the hazard and/or extinguish the fire so far as he or she can do so without endangering himself/herself or others. If unable to do so, such a person shall have the obligation to report it without delay to the nearest fire-fighting unit, notification centre or police station. In doing so, he or she shall be assisted by any person having a means of communication or transport at his or her disposal."

The fire protection organization at the UL FKKT, which includes preventive measures and measures in case of a fire, will be outlined below.

4.1 UL FKKT FIRE PREVENTION PLAN

The Fire Prevention Plan is an internal UL FKKT document, which sets out the methods and measures for guaranteeing fire safety at the UL FKKT.

The most important provisions of the Fire Prevention Plan are summarized in the Fire Prevention Plan Fire Prevention Plan Excerpt, provided as Appendix 3. The excerpt is displayed on every floor of the buildings at Večna pot 113.

The Restriction of the Use of Tobacco Products Act (Official Gazette of the RS, No. 60/2007) and the UL FKKT Fire Prevention Plan Fire Prevention Plan prohibit the following:

- Smoking on the Faculty premises;
- Using an open flame, with the exception of laboratory Bunsen burners, which are always used responsibly and in accordance with fire safety measures;
- Using an elevator in the event of a fire.

The duties of students, visitors, and clients, as set out by the Fire Safety Order:

- Students, visitors, and clients (business partners) must follow all the provisions of the Fire Prevention Plan, the common safety measures, as well as the fire contingency plan and instructions in case of a fire (Fire Prevention Plan Fire Prevention Plan Excerpt) that are visibly displayed around the Faculty.
- Students, other visitors, and clients (business partners) may only linger on Faculty premises during working hours and with the knowledge of the staff;
- Students, visitors, and clients (business partners) are required to report any irregularities or fire hazards to faculty staff. All open flames, as well as bringing and disposing of flammable materials in non-designated spaces, are strictly forbidden on Faculty premises.
- In the event of a fire, students, visitors, and clients (business partners) are required to follow staff instructions and vacate the building – going to the evacuation meeting point behind the buildings – as quickly as possible.

In addition to the Fire Prevention Plan Fire Prevention Plan Excerpt, each floor also has an evacuation plan (Image no. 20) – the floor plan with indicated fire extinguishers, hydrants, manual fire alarms and the evacuation route. In the event of an emergency, each floor at the UL FKKT also has an evacuation route marked with pictograms.

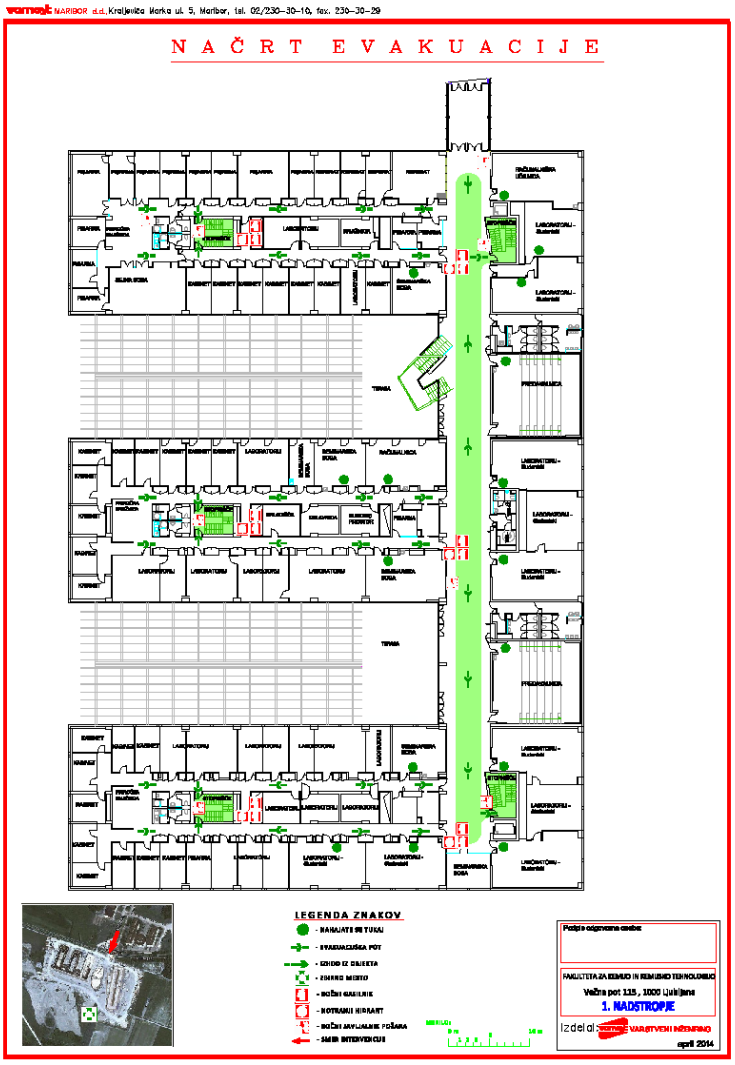


Image 20: Evacuation plan

4.2 DETECTION DEVICES, FIRE ALARMS, AND ALARM SYSTEMS

4.2.1. FIRE ALARM

The most important elements of any fire alarm system are the fire alarms, which can be classified according to their mode of operation, the media detecting it, as well as the coverage and power sources. Based on the mode of operation, we use manual and automatic fire alarms.

Automatic fire alarms (hereinafter: AFA), as shown on Image 21, are installed on the Faculty ceilings. In the event of smoke or a rise in temperature in particular space, the AFA sends out a signal to the fire command centre, which then sound the siren.

Image 21: Automatic fire alarm (right) and alarm indicator (left)

Manual fire alarms (hereinafter: MFA), pictured in Image 22, are installed along the evacuation exits and passageways. By pressing the button, we immediately sound the fire alarm. Manual fire alarms are intended for sounding a fire alarm even before the fire hazard is detected by the AFA.

Image 22: Manual file alarms

4.2.2. GAS DETECTION

Laboratories are equipped with detectors, which measure gas concentrations (Image 23). In the event of higher concentrations of gasses or a lower concentration of oxygen, a visible and audible signal turns on in the laboratory (Image 24).

Image 23: Gass Detector

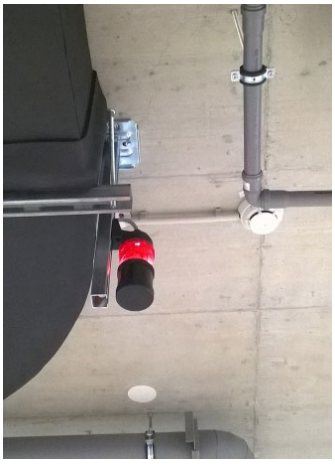


Image 24: Light and audio signal used when detecting gas

4.2.3. ALARM SYSTEM

The main aim of sounding the alarm is to warn people in the building about a fire or a high concentration of gas.
During a fire, the alarm sounded using the fire siren and previously recorded voice message. In the event of elevated gas concentrations or reduced oxygen levels, visual and audio signals (Image 24) will only turn on in the laboratory, where the hazardous concentration of gas had been detected.
If the fire siren has been activated, we are required to evacuate the building and go to the meeting point (Image 34)– following instruction provided by the Faculty staff.

4.3. FIRE FIGHTING MATERIALS AND EQUIPMENT

The buildings, located at Večna pot 113, are equipped with two systems:
- the sprinkler system,
- manual devices and equipment for extinguishing small fires.

4.3.1. SPRINKLER SYSTEM

A sprinkler system is a built-in system with its own water distribution piping system, where pressurized water is found on one side and the sprinkler nozzles (Image 25) on the other side. The sprinkler nozzle is held closed by a cap, which is kept in the orifice of the nozzle by a red glass bulb (reservoir), which breaks at 68°C. When the bulb breaks, water starts flowing from the sprinkler nozzle.

Image 25: Sprinkler nozzle

4.3.2. HANDHELD FIRE SUPPRESSION DEVICES AND EQUIPMENT FOR SMALL FIRES

When faced with small fires, we can count on the following devices and equipment:
- Fire extinguisher,
- Fire hydrant system,
- Fire blankets.

Small fires can most easily be extinguished using a fire extinguisher. Manual fire extinguishers are located in special cabinets marked with a pictogram (Image 26). A hydrant is installed in the upper cabinet, while the lower cabinet contains two manual fire extinguishers: on the left, we find a dry-chemical extinguisher, while a CO_2 fire extinguisher is located on the right.


Image 26: A cabinet containing a hydrant and the two fire extinguishers.

Fire blankets (Image 27) are wall mounted on every floor along the main corridor. A fire blanket can be used to cover a burning surface or be wrapped around a person whose clothes are on fire.

Image 27: Fire blanket

It is well established that a fire can spread from its point of ignition to neighbouring fuels, developing into a full-fledged fire. When it first starts – immediately after ignition – the fire is smaller and easier to put out. This applies to the combustion of most flammable solids and flammable liquids with a higher flashpoint. According to some theories, small incipient fires can be classified as those having a surface area of 1 m^2. When extinguishing fires with devices for initial extinguishing, the user will have more success if they are trained to handle such incipient fires. We should never try and extinguish fires using devices for initial extinguishing if:

- we do not know the type of flammable substance;
- the fire is progressing rapidly;
- we do not possess adequate firefighting equipment;
- the space is full of smoke and hot;
- "something is telling us" we should move away as quickly as possible ...

Whenever we notice a fire, we must stay calm. If saving people in danger is involved, we first help everyone in need and then prepare the extinguisher and start putting out the fire. We inform faculty staff of the situation and follow their instructions.

4.3.2.1 FIRE EXTINGUISHERS

The fire extinguisher is a device used for initial extinguishing. A pressure vessel, which is either under constant pressure or not, is filled with an extinguishing agent that is emptied because of internal pressure. It is made up of a vessel containing an extinguishing agent, an activating valve and a nozzle used for creating a jet; it usually also has a hose used to direct the extinguishing agent toward the fire. Depending on the extinguishing agent, fire extinguishers can be filled with:

- water and water additives,
- dry chemicals,
- foam,
- gaseous extinguishing agents and
- wet chemicals.

The UL FKKT has both dry powder fire extinguishers and CO_2 fire extinguishers. Below, you can learn which extinguishing agent is best suited for a particular type of fuel.

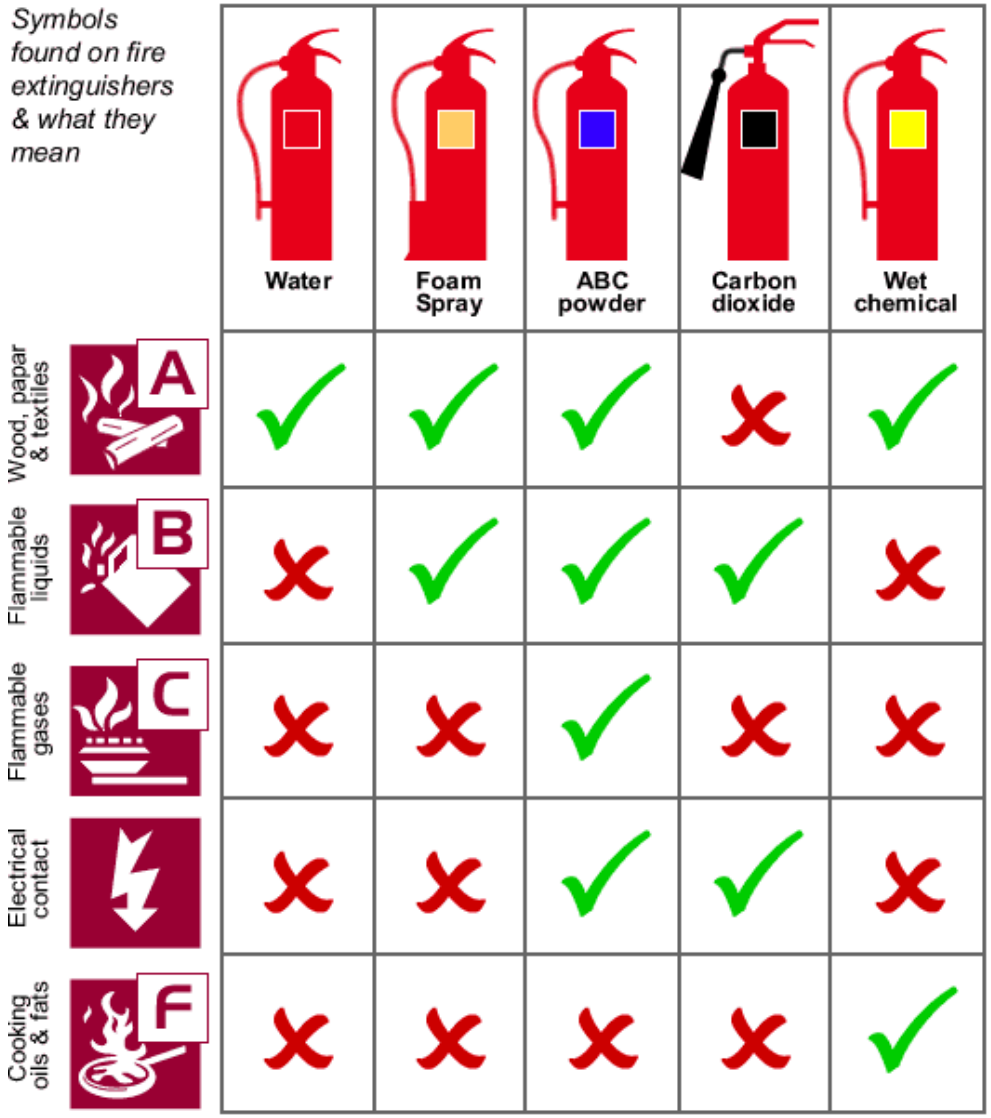


Image 28: Selecting a fire extinguisher based on the type of flammable substance
http://fmsuk.net/Extinguisher%20Matrix.html

Dry Powder Fire Extinguishers

Dry powder fire extinguishers are used for extinguishing A, B, C, D and F type fires. At the UL FKKT, each cabinet has a manual fire extinguisher with a 6 kg capacity. These are used for extinguishing class A, B, and C fires (Image 29).

Image 29: Dry powder fire extinguisher

Image 30: CO_2 fire extinguisher

CO_2 Fire Extinguishers

The most frequently used fire extinguisher is the manual CO_2 fire extinguisher. The marking CO_2-3, CO_2-5, CO_2-30 provides information on the number of kilograms of the substance in the device. The CO_2 fire extinguisher is intended for extinguishing B and C class fires, as well as high-voltage devices (flammable liquids and gases, high- and low-voltage electrical apparatuses, electrical installations, electronic devices, telephones, radio and TV devices and computers). In the extinguisher, the CO_2 is kept compressed. The jet can reach 3 m and a 5 kg fire extinguisher works for 15 s. Portable CO_2 extinguishers can be filled with 3 and 5 kg, while those transported (on smaller trailers) can be filled with 10, 30, and 60 kg.

The cabinets at the UL FKKT contain manual CO_2-5 fire extinguishers that are intended for incipient class B fires (Image 30).

4.3.2.2 USING A FIRE EXTINGUISER

If we believe we are able to extinguish the fire on our own, we first select the appropriate fire extinguisher in approach the fire in the direction of the wind. It is recommended to always prepare at least two extinguishers, since one of the devices could easily fail. When outdoors, we always put out fires from an upwind position.

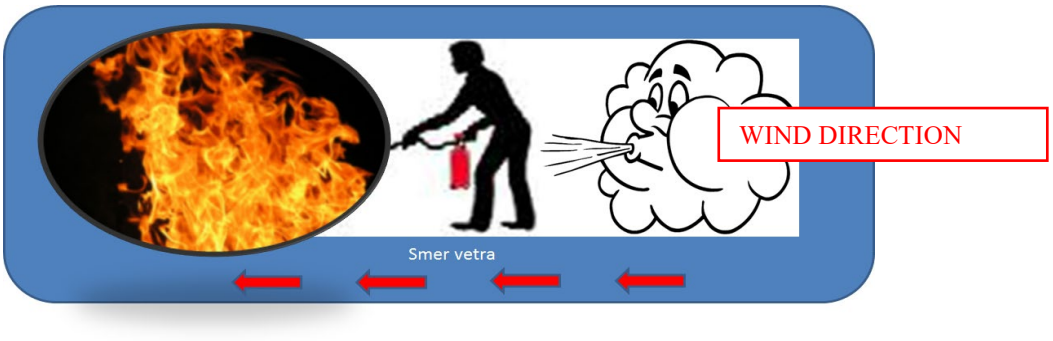


Image 31: Extinguishing a fire upwind

We first activate the fire extinguisher (by pulling out the safety pin and pressing the operating level) and then direct the nozzle holder toward the fire. When using a dry powder fire extinguisher or gaseous extinguishing agents, we will achieve the best results by directing the nozzle holder towards the flame, moving it in a zigzag motion (left and right, up and down) over the flame (chemical powders extinguish fires using chemical inhibitions – a chemical intervention with disrupts the oxidation chain reaction). Once the flame slightly decreases in size, we should direct the nozzle holder in the direction of the flammable substance.

Image 32: Using a fire extinguisher http://emergency.emory.edu/just_in_time/fire.html

4.4 EVACUATION

Once the flammable solids, liquids and gases undergo combustion, the incipient fire may grow into a developed fire. If the incipient fire, which started in closed spaces, is not extinguished – and provided there is enough flammable materials around – the number of substances caught in the fire rapidly begins to rise, which also increases the quantity of emitted heat and the temperature in the room. The air temperature or the temperature of the smoke under the ceiling can rise to around 600 °C, which means this hot layer of gas starts emitting strong thermal radiation. In a very short period of time, all the remaining materials, not yet consumed by the fire, may ignite. The flames consume the entire space and the fire becomes a fully developed fire. The incipient phase of the fire is characterized by mounds of smoke or flames. The smoke emanating from a fire with a long incipient phase can very quickly spread beyond the confines of where it first started. The building is divided into fire sectors according to floors and spaces, each having different fire resistance – 30. 60 and 90 minutes. The automatic fire alarm detects the smoke from the fire; the higher temperatures (68 °C) on the other hand, are detected by the sprinkler nozzles. A fire siren goes off in both events and the building then needs to be evacuated. The sounds of the fire siren are accompanied by a recorded spoken message in Slovene, English, and German. In case of fire, all people present in the building (except those providing first aid and helping with the extinguishing efforts) must leave the facility and head to the meeting point.

We can only do that, if we are familiar with the locations, spatial configurations and exits. The floor plans for the buildings are included in the evacuation plans. The evacuation route is marked with green signs – pictograms –, as shown in Image no. 33.

Image 33: Pictograms – evacuation route signs

The evacuation is carried out according to instructions provided by faculty staff; we must make our way to the meeting point and await further instructions. The meeting point, marked with a sign, is located on the south side of the platform behind building X (Image no. 34).

Image 34: Evacuation meeting point

Never use elevators during an evacuation!

The handicapped and the physically disabled, who are unable to take the evacuation route leading down the staircase, must travel from Floor 1 and enter Building X; If stranded on the 2nd and 3rd floors, they should wait for the rescue personnel on the balcony (Image no. 35).

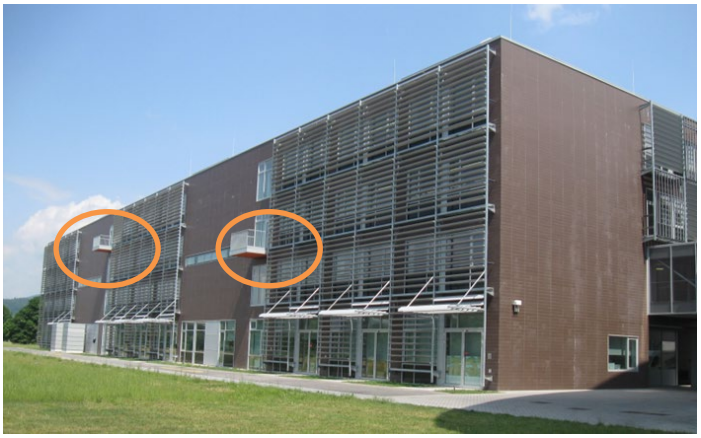


Image 35: The two balconies used to evacuate physically disabled people

1. Before carrying out the evacuation, make sure to go over the evacuation plan; find your way within the building and get acquainted with the evacuation routes.
2. Talk with the staff if you have questions regarding the evacuation plan and the evacuation itself. Make sure to familiarize yourself with evacuation procedures.
3. Make sure to participate in evacuation drills!

How and evacuation should take place:

1. Follow the instructions provided by the staff!
2. You should exit the building in an orderly fashion (pushing and shoving will only delay the evacuation)!
3. During the evacuation, you should always do your best to help people who find it harder to evacuate the building.
4. The evacuation should follow the evacuation routes.
5. Never use an elevator during evacuation.
6. When you exit the building, go to the assigned meeting point (make sure you know where your meeting point is ahead of time).
7. Do not re-enter the building, until allowed to do so.

4.5. ADDITIONAL INFORMATION

1. UION OF FIREFIGHTERS OF SLOVENIA, Tržaška cesta 221, 1000 Ljubljana
   www.gasilec.net
2. SLOVENIAN FIRE PROTECTION ASSOCIATION, Dunajska cesta 369, 1231 Ljubljana-Črnuče
   www.szpv.si
3. ADMINISTRATION FOR CIVIL PROTECTION AND DISASTER RELIEF, Vojkova cesta 61, 1000 Ljubljana
   www.sos112.si

5. RISK ASSESSMENT AND MEASURES FOR ENSURING HEALTH AND SAFETY AT WORK FOR PREGNANT AND BREASTFEEDING STUDENTS

Pursuant to the Rules on the Protection of Health of Pregnant Workers, Workers Who have Recently Given Birth, and Breastfeeding Workers at Work, the Faculty is required to provide a risk assessment and establish the type, level and duration of exposure for all types of work involving exposure to factors, which could negatively affect the health of pregnant workers and workers recently having given birth or who are still breastfeeding. It must assess the type and level of risk for injuries and health impairments, as well as determine and implement suitable measures. Because of the wide variety of work undertaken by women, especially when working in a laboratory setting, it is impossible to predict the workplaces in which pregnant workers or workers who have recently given birth and are still breastfeeding cannot perform their duties. It is likewise impossible to determine safety measures for individual work places so far in advance. These kinds of measures can only be truly determined for an individual, taking into account the locations, where she works, what agents she is exposed to, as well as in what quantities and for how long.

RISK ASSESSMENT PROCEDURE FOR STUDENTS

The student should report her pregnancy to the staff at the Student Office as soon as possible. The staff will then inform the vice-dean for undergraduate studies, who performs the risk assessment procedure. The student must then fill in the *Izjava za nosečnice - Š* form (Statement of Pregnant Students), published on the UL FKKT website. An occupational medicine physician and the vice-dean responsible for safety also take part in preparing the risk assessment. Should circumstances warrant it, the risk assessment procedure may also include all other stakeholders (gynaecologist, teachers, the pregnant woman, an expert in the field of HSW and FP).

The original filled in form is kept at the Student Office, while photocopies are given to the pregnant woman in question, the signatories to the risk assessment, and to the relevant teachers.

The measures, set out in the assessment, come into force when the document is signed by all interested parties. If during the pregnancy, the education process should change in such a way as to be able to have an affect on the pregnant woman's health, the risk assessment process must be repeated.

6. BIBLIOGRAPHY

1. Health and Safety at Work Act (Official Gazette of the RS, No. 43/2011).
2. Chemicals Act (Official Gazette of the RS, No. 110/03).
3. Fire Protection Act (Official Gazette of the RS, No. 3/07).
4. Rules on the Classification, Packaging, and Labelling of Dangerous Preparations (Official Gazette of the RS, No. 35/05, 54/07, 88/08 and 6/14).
5. Rules on the Classification, Packaging and Labelling of Dangerous Preparations promet (Official Gazette of the RS, št. št. 67/051, 137/06, 88/08, 81/09 and 6/14).
6. Rules on Safety Signs at Work (Official Gazette of the RS No. 89/99, 39/05 and 38/15)
7. Rules on the Protection of Health of Pregnant Workers, Workers who have Recently Given Birth and Breastfeeding Workers at Work (Official Gazette of the RS, no. 62/15).
8. Prudent Practice in the Laboratorij, National Reasearch Council, USA, 1995.
9. Priročnik za strokovni izpit iz varstva pri delu, ZVD, Ljubljana 1988.
10. Priročnik za pripravo na strokovni izpit iz varstva pri delu, Upravna akademija, Ljubljana 2006.
11. Priročnik za pripravo na izpit za svetovalca za kemikalije, ZVD, Ljubljana 2006.
12. Fundamentals of Laboratory Safety - Physical Hazards in the Academic Laboratory, William J. Mahn, New York, 1991.
13. Laboratory Safety CRC Handbook, 4th Ed., 1995.
14. Laborrichtlinien: „Sicheres Arbeiten in Laboratorien – Grundlagen und Handlungshilfen“, Izdaja: marec 2015 Graduate Student Safety Guide, *Joint Committe for Health*, Safety and Environment, The John Hopkins University, Baltimore USA.
15. SIST EN 166 »Osebno varovanje oči - Specifikacija«.
16. DIN 12899, 1. del »Laboratorijska oprema; Oprema za tuše v sili; Tuši za telo, Varnostno-tehnične zahteve, preizkusi«.
17. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on Classification, Labelling, and Packaging of Substances and Mixtures.
18. UION OF FIREFIGHTERS OF SLOVENIA, Tržaška cesta 221, 1000 Ljubljana www.gasilec.net
19. SLOVENIAN FIRE PROTECTION ASSOCIATION, Dunajska cesta 369, 1231 Ljubljana-Črnuče, www.szpv.si
20. ADMINISTRATION FOR CIVIL PROTECTION AND DISASTER RELIEF, Vojkova cesta 61, 1000 Ljubljana, www.sos112.si

7. APPENDICIES

1. Laboratory safety rules of UL FKKT.
2. List of P-statements and H-statements.
3. Fire Prevention Plan Excerpt

Appendix 1: Laboratory safety rules of UL FKKT

Based on and according to the Health and Safety at Work Act (Official Gazette of the RS, No. 43/11) and according to Article 77 of the Statutes of the University of Ljubljana and Article 69 of the Rules on the Organization and Functioning of the Faculty of Chemistry and Chemical Technology of the University of Ljubljana, the Senate at its 38th Meeting on 19 May 2017 adopted the following

LABORATORY SAFETY RULES FOR UL FKKT

1 Area of validity

1.1 The Laboratory Safety Rules apply to laboratories belonging to the Faculty of Chemistry and Chemical Technology of the University of Ljubljana (hereinafter: UL FKKT).

1.2 The Laboratory Safety Rules must be observed and taken into account by everyone in the laboratory – employees, students, and visitors (hereinafter: users).

1.3 Additionally, users must also respect the provisions of the Declaration of Safety with Risk Assessment, the Fire Safety Order, safety data sheets, as well as oral and written instructions for work.

2 Definitions

The terms used in the Rules have the following meanings:

2.1 **Hazardous work in the laboratory** involves procedures and tasks, which carry the risk of an incident. The following is considered hazardous work in the laboratory:
- work with hazardous or unknown chemicals;
- work involving exposure to biological agents (except factors included in Safety Class 1);
- work conducted at low or increased pressure and/or temperature;
- work with electrical equipment with voltage over 1kV;
- work with sources of ionizing radiation;
- work involving working equipment with unprotected moving parts;
- work at an elevated position.

2.2 **Hazardous chemicals** are substances and mixtures, which have at least one dangerous property: they are a physico-chemical, health, or environmental hazard.

2.3 **The head of the laboratory** is the chair of department, the head of the infrastructure centre or the head of the research group. The head of the laboratory is appointed by the dean.

2.4 **The laboratory supervisor** is a full-time university professor, assistant or a trained expert employed by the UL FKKT. The laboratory supervisor is appointed by the head of the laboratory.

2.5 **Hazardous waste** is defined as waste containing hazardous substances and is classified into one of the waste categories, as defined in the classification list of hazardous waste.

2.6 **An incident** is defined as any event resulting in occupational injury, illness, fire and/or explosion, the unintended release of chemicals, faulty work equipment, material damage or an environmental hazard.

3 General provisions

3.1 The Laboratory Safety Rules must be visibly displayed in each laboratory.

3.2 In the laboratory, work must be organized in such a way as to minimize the risk of an incident.

3.3 The Faculty management, the head of the laboratory, the laboratory supervisor, the Health and Safety Department, the Maintenance Department and users are responsible for providing a safe laboratory environment. However, the responsibility for safety at work lies first and foremost with the individual.

3.4 At least two people must be present whenever hazardous work is being done in the laboratory. Hazardous work may be undertaken in the presence of an individual familiar with the hazards, safety measures, and procedures in the event of an incident.

3.5 The working hours of laboratories are:
Monday to Friday from 7 a.m. to 8 p.m. and Saturday from 8 a.m. to 12 p.m.

3.6 Work outside these hours is only permitted with a written permission from the head of the laboratory. The permission may only be issued to full-time or part-time employees at the UL FKKT. Contractors, who perform laboratory work at the UL FKKT, are issued a permission according to the conditions stipulated in the contract.

3.7 When performing an experiment and/or using equipment, which present an increased risk, outside regular working hours, the user must report the operation as described in the Notification on Using Equipment/Performing an Experiment with Increased Risk Outside Working Hours.

3.8 Using damaged devices and inventory is not permitted. Any faulty equipment or flaws must be immediately reported to the laboratory supervisor.

3.9 Food and beverages are not allowed in the laboratory.

3.10 According to regulations, access to exits and electrical switches must be unhindered.

3.11 A risk assessment is prepared for each laboratory according to the Laboratory Safety Check List. Every employee is required to get acquainted with the risk assessment before using the laboratory. The head of the laboratory, in cooperation with the Health and Safety Department, reviews and updates the risk assessment in the event of circumstances, which may affect the safety risk and health of laboratory users.

3.12 Female students and employees, who are either pregnant, have recently given birth or are breastfeeding and are working in the laboratory, must undergo risk assessment, which is prepared according to the Declaration of Safety with Risk Assessment appendix.

3.13 The use of mobile phones and other multimedia devices in the laboratory is forbidden, except in the case of incidents or in connection with laboratory work. The devices may also be used by personnel employed in the laboratory.

3.14 Long hair must be tied.

3.15 When cleaning the laboratory, it is necessary to follow the Safety Instructions for Cleaning Laboratories, which is part of the Declaration of Safety with Risk Assessment.

3.16 When finishing work in the laboratory, carefully wash your hands. Wash all other parts of the body, which were exposed to hazardous chemicals, as needed.

4 Personal Protective Equipment

4.1 When working in laboratories, users must wear a coat and glasses with sufficient side shields at all times, unless otherwise stated in the risk assessment for the particular laboratory.

4.2 Depending on the type of work, the user must use the personal protective equipment required by manufacturers, safety data sheets, work instructions, and generally recognized rules, standards, and regulations in Slovenia.

4.3 The coats used in the laboratory are not allowed in libraries, lecture halls, meeting rooms or snack bars; they are likewise not allowed to be worn outside Faculty premises.

4.4 The footwear must protect the entire foot and must allow sure and safe walking. Users are not allowed to wear slippers, sandals, and high heels.

5 Handling chemicals

5.1 Safety data sheets for all commercially-available hazardous chemicals are accessible on the Intranet or the internet.

5.2 Before using the hazardous substances, the user must be acquainted with protective measures and measures in case of danger.

5.3 Only minimally required quantities of chemicals may be stored in the laboratory. A record of chemicals must be kept for each laboratory; this record is periodically updated by the laboratory supervisor. The largest single packaging may not exceed 2.5 L.

5.4 Chemicals must be kept in designated cabinets; when storing chemicals, their incompatibility must also be considered. Flammable, corrosive, and toxic chemicals must be stored in safety storage cabinets. The quantity of chemicals in the laboratory must not exceed the capacity of storage cabinets.

5.5 Hazardous chemicals must not be stored on benchtops, open shelves, or in the fume hood.

5.6 Chemicals must not be stored in food containers.

5.7 Packaging containing a non-commercial chemical or sample must be suitably marked to allow the identification (substance, concentration, user).

5.8 Carcinogens, mutagens, and acutely toxic substances, as well as substances toxic for reproduction, must be kept under key or otherwise protected, allowing access only to qualified personnel. When conducting an experiment, the user is allowed to take only the required amount of such a substance. A record of use must also be kept (substance, quantity, date, user).

5.9 All work involving carcinogens or mutagens must be conducted in the fume hood.

5.10 Work, which may involve the release of dangerous substances in the form of gases, fumes, aerosol or dust, must be conducted in the fume hood or under an exhaust hood.

5.11 Chemicals must be poured in such a way as to prevent spillage. In the event of spillage, the appropriate absorption materials must be used.

5.12 Chemicals may only be transported in closed packaging and using a basket or trolley.

5.13 Mouth pipetting is prohibited. When pipetting, appropriate technical accessories must be used.

5.14 The purchase and use of an explosive substance or an open-source of ionizing radiation are only allowed after receiving a permit from the competent ministry.

5.15 Work with genetically-modified organisms is only allowed in contained systems. The contained system used for work with genetically modified organisms must be previously included in the registry at the ministry.

6 Work with industrial gases

6.1 Only industrial gases coming from extraction points may be used in the laboratory.

6.2 A suitably trained person (storekeeper for chemicals and technical gases) is in charge of the technical gas cylinders.

6.3 Gases, which are kept in smaller cylinders (lecture bottles), may only be used in fume hoods; after use, they must be returned to the gas storage room.

6.4 Before using liquid nitrogen, the user must be acquainted with protective measures and measures in case of danger.

7 Waste

7.1 Hazardous waste and glassware are separated according to type and disposed in assigned containers.

7.2 Hazardous chemicals must never be poured down the drain or dumped into municipal waste containers.

7.3 Hazardous waste must be handed over to the storekeeper in charge of chemicals and technical gases.

8 In case of emergency

8.1 Before acting in case of an emergency, we must first be sure that our actions will not endanger our own safety and that of other users.

8.2 Injured individuals must immediately be given first aid. First aid kits are located in student laboratories and in kitchenettes. The first aid kits contain a list of people qualified to give first aid and their telephone numbers.

8.3 In the event of a major incident, which requires the help of the Maintenance Department, you must first contact the reception desk by calling the internal telephone number **8000**.

8.4 Small initial fires must be extinguished using fire extinguishing equipment and people in danger must be evacuated. The location of all fire extinguishing equipment is marked on the evacuation plan. In the event you are unable to successfully extinguish the fire, please call the internal telephone number **8000**.

8.5 In the event you hear the technical gas alarm, please leave the premises immediately and inform the reception desk by calling **8000**.

8.6 In the event of chemical spillage, please use the absorption materials and follow the measures specified in the safety data sheet.

8.7 In the event of any incident, please notify the head of the laboratory or one of the people in charge (indicated on the notice near the laboratory exit).

The Laboratory Safety Rules become valid once adopted by the Faculty Senate. It is published on the UL FKKT Intranet; it is also visibly displayed in each laboratory.

Prof. dr. Matjaž KRAJNC
UL FKKT Dean

Appendix 2: List of P-statements and H-statements

List of GHS Precautionary Statements and P Codes

P101: If medical advice is needed, have product container or label at hand.
P102: Keep out of reach of children.
P103: Read label before use.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P211: Do not spray on an open flame or other ignition source.
P220: Keep/Store away from clothing/.../combustible materials.
P221: Take any precaution to avoid mixing with combustibles...
P222: Do not allow contact with air.
P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P230: Keep wetted with...
P231: Handle under inert gas.
P232: Protect from moisture.
P233: Keep container tightly closed.
P234: Keep only in original container.
P235: Keep cool.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting/.../equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P244: Keep reduction valves free from grease and oil.
P250: Do not subject to grinding/shock/.../friction.
P251: Pressurized container: Do not pierce or burn, even after use.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P262: Do not get in eyes, on skin, or on clothing.
P263: Avoid contact during pregnancy/while nursing.
P264: Wash **.....** thoroughly after handling.
P270: Do no eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required.
P282: Wear cold insulating gloves/face shield/eye protection.
P283: Wear fire/flame resistant/retardant clothing.
P284: Wear respiratory protection.
P285: In case of inadequate ventilation wear respiratory protection.
P231 + P232: Handle under inert gas. Protect from moisture.
P235 + P410: Keep cool. Protect from sunlight.
P301: IF SWALLOWED:
P302: IF ON SKIN:

P303: IF ON SKIN (or hair):
P304: IF INHALED:
P305: IF IN EYES:
P306: IF ON CLOTHING:
P307: IF exposed:
P308: IF exposed or concerned:
P309: IF exposed or if you feel unwell:
P310: Immediately call a POISON CENTER or doctor/physician.
P311: Call a POISON CENTER or doctor/physician.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P313: Get medical advice/attention.
P314: Get medical advice/attention if you feel unwell.
P315: Get immediate medical advice/attention.
P320: Specific treatment is urgent (see ... on this label).
P321: Specific treatment (see ... on this label).
P322: Specific measures (see ... on this label).
P330: Rinse mouth.
P331: Do NOT induce vomiting.
P332: If skin irritation occurs:
P333: If skin irritation or rash occurs:
P334: Immerse in cool water/wrap in wet bandages.
P335: Brush off loose particles from skin.
P336: Thaw frosted parts with lukewarm water. Do no rub affected area.
P337: If eye irritation persists:
P338: Remove contact lenses, if present and easy to do. Continue rinsing.
P340: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P341: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P342: If experiencing respiratory symptoms:
P350: Gently wash with plenty of soap and water.
P351: Rinse cautiously with water for several minutes.
P352: Wash with plenty of soap and water.
P353: Rinse skin with water/shower.
P360: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P361: Remove/Take off immediately all contaminated clothing.
P362: Take off contaminated clothing and wash before reuse.
P363: Wash contaminated clothing before reuse.
P370: In case of fire:
P371: In case of major fire and large quantities:
P372: Explosion risk in case of fire.
P373: DO NOT fight fire when fire reaches explosives.
P374: Fight fire with normal precautions from a reasonable distance.
P375: Fight fire remotely due to the risk of explosion.
P376: Stop leak if safe to do so.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P378: Use ... for extinction.
P380: Evacuate area.
P381: Eliminate all ignition sources if safe to do so.
P390: Absorb spillage to prevent material damage.

P391: Collect spillage.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301 +P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302 + P334: IF ON SKIN: Immerse in cool water/wrap in wet bandages.
P302 + P350: IF ON SKIN: Gently wash with plenty of soap and water.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P304 + P341: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P306 + P360: IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P307 + P311: IF exposed: Call a POISON CENTER or doctor/physician.
P308 + P313: IF exposed or concerned: Get medical advice/attention.
P309 + P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P332 + P313: If skin irritation occurs: Get medical advice/attention.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P335 + P334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P337 + P313: If eye irritation persists: Get medical advice/attention.
P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P370 + P376: In case of fire: Stop leak if safe to do so.
P370 + P378: In case of fire: Use ... for extinction.
P370 + P380: In case of fire: Evacuate area.
P370 + P380 + P375: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
P371 + P380 + P375: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P401: Store ...
P402: Store in a dry place.
P403: Store in a well-ventilated place.
P404: Store in a closed container.
P405: Store locked up.
P406: Store in corrosive resistant/... container with a resistant inner liner.
P407: Maintain air gap between stacks/pallets.
P410: Protect from sunlight.
P411: Store at temperatures not exceeding ... oC/...oF.
P412: Do not expose to temperatures exceeding 50 oC/122oF.
P413: Store bulk masses greater than ... kg/... lbs at temperatures not exceeding ... oC/...oF.
P420: Store away from other materials.
P422: Store contents under...
P402 + P404: Store in a dry place. Store in a closed container.
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
P403 + P235: Store in a well-ventilated place. Keep cool.
P410 + P403: Protect from sunlight. Store in a well-ventilated place.
P410 + P412: Protect from sunlight. Do no expose to temperatures exceeding 50 celcius degress.

P411 + P235: Store at temperatures not exceeding ...Keep cool.
P501: Dispose of contents/container to...

List of GHS Hazard Statements and H Codes

H200: Unstable explosive
H201: Explosive; mass explosion hazard
H202: Explosive; severe projection hazard
H203: Explosive; fire, blast or projection hazard
H204: Fire or projection hazard
H205: May mass explode in fire
H206: Fire, blast or projection hazard; increased risk of explosion if desensitizing agent is reduced
H207: Fire or projection hazard; increased risk of explosion if desensitizing agent is reduced
H208: Fire hazard; increased risk of explosion if desensitizing agent is reduced
H220: Extremely flammable gas
H221: Flammable gas
H222: Extremely flammable aerosol
H223: Flammable aerosol
H224: Extremely flammable liquid and vapour
H225: Highly flammable liquid and vapour
H226: Flammable liquid and vapour
H227: Combustible liquid
H228: Flammable solid
H229: Pressurized container: may burst if heated
H230: May react explosively even in the absence of air
H231: May react explosively even in the absence of air at elevated pressure and/or temperature
H232: May ignite spontaneously if exposed to air
H240: Heating may cause an explosion
H241: Heating may cause a fire or explosion
H242: Heating may cause a fire
H250: Catches fire spontaneously if exposed to air
H251: Self-heating; may catch fire
H252: Self-heating in large quantities; may catch fire
H260: In contact with water releases flammable gases which may ignite spontaneously
H261: In contact with water releases flammable gas
H270: May cause or intensify fire; oxidizer
H271: May cause fire or explosion; strong oxidizer
H272: May intensify fire; oxidizer
H280: Contains gas under pressure; may explode if heated
H281: Contains refrigerated gas; may cause cryogenic burns or injury
H290: May be corrosive to metals
H300: Fatal if swallowed
H301: Toxic if swallowed
H302: Harmful if swallowed
H303: May be harmful if swallowed
H304: May be fatal if swallowed and enters airways
H305: May be harmful if swallowed and enters airways
H310: Fatal in contact with skin
H311: Toxic in contact with skin

H312: Harmful in contact with skin
H313: May be harmful in contact with skin
H314: Causes severe skin burns and eye damage
H315: Causes skin irritation
H316: Causes mild skin irritation
H317: May cause an allergic skin reaction
H318: Causes serious eye damage
H319: Causes serious eye irritation
H320: Causes eye irritation
H330: Fatal if inhaled
H331: Toxic if inhaled
H332: Harmful if inhaled
H333: May be harmful if inhaled
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness
H340: May cause genetic defects
H341: Suspected of causing genetic defects
H350: May cause cancer
H351: Suspected of causing cancer
H360: May damage fertility or the unborn child
H361: Suspected of damaging fertility or the unborn child
H361d: Suspected of damaging the unborn child
H362: May cause harm to breast-fed children
H370: Causes damage to organs
H371: May cause damage to organs
H372: Causes damage to organs through prolonged or repeated exposure
H373: May cause damage to organs through prolonged or repeated exposure
H400: Very toxic to aquatic life
H401: Toxic to aquatic life
H402: Harmful to aquatic life
H410: Very toxic to aquatic life with long-lasting effects
H411: Toxic to aquatic life with long-lasting effects
H412: Harmful to aquatic life with long-lasting effects
H413: May cause long-lasting harmful effects to aquatic life
H420: Harms public health and the environment by destroying ozone in the upper atmosphere

Appendix 3: Fire Prevention Plan Excerpt

IZVLEČEK POŽARNEGA REDA

V skladu s pravilnikom o požarnem redu (Ur. l. RS, št. 52/07, 34/11, 101/11)

Veljavnost: FAKULTETA ZA KEMIJO IN KEMIJSKO TEHNOLOGIJO, Večna pot 113, 1000 Ljubljana

I. ORGANIZACIJA VARSTVA PRED POŽAROM

Sistem varstva pred požarom ureja ZAKON O VARSTVU PRED POŽAROM (Ur. l. RS 03/07, 09/11). Vsaka oseba, ki dela ali se nahaja v prostorih obravnavanega objekta je dolžna skrbeti za varstvo pred požarom. Vsaka oseba je v skladu z zakonom kazensko in odškodninsko odgovorna za neizvajanje ukrepov varstva pred požarom.

Glede na velikost in namembnost prostorov je predvideno število uporabnikov objekta do 2.535.

II. UKREPI VARSTVA PRED POŽAROM

Vsaka nepravilnost oziroma nevarnost za nastanek požara je potrebno takoj sporočiti zaposlenim, le ti pa po presoji odgovorni osebi za varstvo pred požarom.

Gasilniki in ostala sredstva namenjena požarni varnosti, morajo biti vedno na svojih mestih ter redno vzdrževana in pregledovana, dostop do njih pa vedno prost. Po končanem delu preverite, če so odstranjeni vsi možni viri za nastanek požara, izklopljena vsa glavna elektro stikala in drugi energetski dovodi.

Prepovedana je uporaba ognja in kajenje.

Z nevarnimi snovmi odprtega ravnajte po navodilih proizvajalca.

Vzdržujte red in čistočo. Vse nevarne in gorljive odpadke je potrebno dnevno odstranjevati.

Pred pričetkom vzdrževalnih in drugih del, ki lahko predstavljajo nevarnost za nastanek požara je potrebno zagotoviti požarno stražo.

Zagotovite neoviran dostop do gasilnih sredstev in naprav za izklop električnega toka ter proste poti za evakuacijo.

III. UKREPI V PRIMERU POŽARA

OSTANITE MIRNI IN PRISEBNI!

Ocenite velikost požara. Če je požar v začetni fazi in ga lahko pogasite brez nevarnosti zase ali druge ljudi, uporabite razpoložljiva gasilna sredstva (gasilniki, notranji hidranti).

Če nastalega požara sami ne morete pogasiti:

Sprožite ročni javljalnik požara in pokličite:

CENTER ZA OBVEŠČANJE 112 (POLICIJA 113)

in javite:
- kdo kliče,
- kje (kaj) gori,
- ali so ljudje v nevarnosti in bo potrebno reševanje,
- obseg požara in ali je možnost širitve na sosednje objekte.

Opozorite ogrožene osebe in poskrbite za evakuacijo nemočnih.

V objektu zaprite dovode električne energije (izklop glavnih stikal) in drugih energetskih virov.

ZAPRITE GLAVNI PLINSKI POŽARNI VENTIL

Objekt zapustite po evakuacijskih poteh, pri tem upoštevajte navodila odgovornih. Evakuacijske poti zavarujte pred zadimljenjem in se zberite na varnem (evakuacijskem) mestu izven objekta.

Uporaba dvigala je v primeru požara PREPOVEDANA!

Ljubljana, junij 2014

Podpis odgovorne osebe:

_____