

**Ruling of the Director  
of the Central European Institute of Technology of Masaryk University  
No. 7/2016**

**Handling with Dangerous Chemical Substances and  
Mixtures  
and Operation of Laboratories**

*(effective as of 1 December 2016)*

*Pursuant to Part Three, Art. 7 (2) f) and Art. 4 (6) of the Rules of Organisation of the Central European Institute of Technology of Masaryk University and pursuant to the provisions of Act No. 262/2006 Coll., the Labour Code, as amended (hereinafter the "Labour Code"); Act No. 350/2011 Coll., on Chemical Substances and Mixtures, as amended, provisions of Sections 44a and 44b of Act No. 258/2000 Coll., on Public Health Protection, as amended, Government Order No. 495/2001 Coll., stipulating the scope and detailed conditions of the provision of personal protective equipment at the workplace, cleaning agents, detergents and disinfection preparations, as amended; Government Order No. 1907/2006 Coll., stipulating technical requirements pertaining to personal protective equipment, as amended; Regulation of the European Parliament and Council (EC) No. 1907/2006 (REACH), on Registration, Evaluation, Authorisation and Restriction of Chemicals; and pursuant to the Chancellor's Guideline No. 10/2009 "Determination of the Organisational Measures of Occupational Safety and Health Protection at MU", I hereby issue this Ruling:*

Article 1

**Subject Matter**

- (1) This ruling of the Director of CEITEC MU (hereinafter the "Ruling") stipulates the terms and conditions for ensuring safety in the course of handling and storing chemical substances and mixtures at all worksites within the Central European Institute of Technology of MU (hereinafter "CEITEC MU").
- (2) This operation safety regulation contains, as its integral part, safety data sheets of the used chemical substances and chemical mixtures, which safety data sheets also constitute a part of all relevant worksites.
- (3) This Ruling applies to all persons who get in contact with chemical substances and chemical mixtures within the scope of their work for Masaryk University (hereinafter "MU" or the "employer") or which the scope of their activities performed on any grounds other than employment at the worksites of CEITEC MU. The wording of this Ruling uses a unified term "employee" for all these persons.

## Article 2

### Definitions

- (1) For the purposes of this Ruling, the definitions are used as set out in Art. 2 of Regulation (EC) No. 1272/2008, as amended, as follows:

#### **Hazards class**

the nature of the physical, health or environmental hazard

#### **Hazard category**

the division of criteria within each hazard class, specifying hazard severity

#### **Hazard pictogram**

a graphical composition that includes a symbol plus other graphic elements, such as a border, background pattern or color that is intended to convey specific information on the hazard concerned

#### **Signal word**

a word that indicates the relative level of severity of hazards to alert the reader to a potential hazard; the following two levels are distinguished:

- "Danger" means a signal word indicating the more severe hazard categories
- "Warning" means a signal word indicating the less severe hazard categories

#### **Standard hazard statement (H-statement)**

a phrase assigned to a hazard class and category that describes the nature of the hazards of a hazardous substance or mixture, including, where appropriate, the degree of hazard

#### **Precautionary statement (P-statement)**

a phrase that describes recommended measure(s) to minimise or prevent adverse effects resulting from exposure to a hazardous substance or mixture due to its use or disposal

#### **Substance**

a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition

#### **Mixture**

a mixture or solution composed of two or more substances

#### **Import**

physical introduction into the customs territory of the Community

## Use

any processing, formulation, consumption, storage, keeping, treatment, filling into containers, transfer from one container to another, mixing, production of an article or any other utilisation

## GHS

generally harmonised system of classification and labelling of chemical substances

- (2) Furthermore, the term stated below is defined as follows for the purposes of this Ruling pursuant to Section 44a of Act No. 258/2000 Coll., as amended:

### Handling of hazardous chemical substances and mixtures

their manufacture, import, distribution, sale, use, storage, packaging, labelling and intra-company transport.

#### Article 3

##### Properties of Chemical Substances and Mixtures

A chemical substance or mixture that has one or more hazardous properties (i.e. that meets the criteria relating to physical hazard, health hazard or environmental hazard) is classified as a hazardous substance or hazardous mixture.

#### Article 4

##### Highly Toxic Chemical Substances and Mixtures

- (1) Legal entities and individuals - entrepreneurs may only handle hazardous chemical substances or chemical mixtures classified as **highly toxic** if the handling of such chemical substances or chemical mixtures is secured by a **professionally competent individual**. Individual activities within the scope of handling such chemical substances and chemical mixtures may also be carried out by an employee who has been **demonstrably trained** by a professionally competent individual. Repeated training is held at least once every 2 years. A written record must be executed of the training that must be kept by the legal entity or individual - entrepreneur at least for a period of 3 years. The provisions of this paragraph do not apply to the operation of special protective disinfection, disinsection and deratization.
- (2) Individuals professionally competent to handle hazardous chemical substances and chemical mixtures classified as highly toxic are deemed to be the following individuals:
- a) graduates of universities who:
- have obtained university education in an accredited master's study program of general medicine, dental medicine or stomatology, pharmacology or in accredited master's study programs in the field of veterinary medicine and hygiene or public health protection;
  - have obtained university education in any of the fields of chemistry;
  - have obtained university education in any of chemistry teaching specialisations;

- have obtained university education and hold a certificate of graduating from a lifelong learning program in the field of toxicology;
  - have obtained university education in an accredited master's study program of plant medicine or plant protection or in a lifelong learning program in this field;
- b) individuals who have obtained other education than specified sub a) and who have successfully taken a professional competency exam and hold a certificate of professional competency for handling chemical substances and chemical mixtures classified as highly toxic.
- (3) Person professionally competent to handle hazardous chemical substances and mixtures and appointed responsible person for Masaryk University: Mgr. Jaromír Literák, Ph.D., Institute of Chemistry and Research Centre for Toxic Compounds in the Environment, Faculty of Science, email: literak@chemi.muni.cz, tel.: 549 49 5580; the deputy of the appointed responsible person for CEITEC MU is Ing. Barbora Loučková, email: barbora.louckova@ceitec.muni.cz, tel.: 549 49 8037, 777 926 633.
- (4) The employees who handle highly toxic chemical substances and mixtures must be trained by the appointed responsible person of MU.

#### Article 5








##### **Other Hazardous Chemical Substances and Mixtures**

- (1) The employees who handle hazardous chemical substances and mixtures that are not at the same time highly toxic substances and mixtures must be demonstrably acquainted with:
- a) hazardous properties of the chemical substances and chemical mixtures they handle;
  - b) the rules of health and environmental protection against their harmful effects;
  - c) the rules of the first pre-medical aid;
  - d) safety data sheets;
  - e) work procedures and instructions (e.g. solution of chemical substances, the manner and place of their storage, maximum permitted amounts of the substances at the worksite or in the warehouse, etc.);
  - f) drafted and approved rules (if there is an obligation to draft such rules, see the section "Written Rules" below).
- (2) Such acquaintance takes place within the scope of training conducted at the worksite by the worksite supervisor (i.e. head of a research centre, research group, core facility or another workplace) at least every 2 years. In the case of a new chemical substance, the training must be conducted before the employee gets in contact with the new chemical substance or mixture.

Article 6

Written Rules

- (1) At all worksites of CEITEC MU where hazardous chemical substances or chemical mixtures are handled that are classified as highly toxic, toxic, corrosive, carcinogenic of categories 1 or 2, mutagenic of categories 1 or 2, toxic for reproduction of categories 1 or 2 and substances and mixtures of the hazard category (categories) carcinogenicity 1A or 1B, germ cell mutagenicity 1A or 1B and reproductive toxicity 1A or 1B, there are written rules available regarding the safety, health and environment protection in the course of work with such substances or mixtures (hereinafter the "rules").
- (2) The rules are freely available to all persons at the worksite - they are posted in each laboratory and contain in particular the information regarding hazardous properties of the substances and mixtures listed in the first paragraph hereinabove handled by the employees, instructions regarding safety, health protection, environmental protection, instructions for first pre-medical aid and procedures to be applied in the case of an accident.
- (3) The rules for the worksites of CEITEC MU are drafted by the appointed responsible person of MU. These rules are discussed with and approved by the Regional Public Health Authority in Brno. The table below contains a list of hazardous substances and mixtures to which the aforementioned requirements apply:

<b>List of hazardous substances and mixtures to which the aforementioned requirements apply</b>		
Classification	Symbol	H-statements
Highly toxic		<b>H300</b> – Fatal if swallowed. <b>H310</b> – Fatal in contact with skin. <b>H330</b> – Fatal if inhaled.
Toxic		<b>H301</b> – Toxic if swallowed. <b>H311</b> – Toxic in contact with skin. <b>H331</b> – Toxic if inhaled.
		<b>H370</b> – Causes damage to organs. <b>H372</b> – Causes damage to organs through prolonged or repeated exposure
Corrosive		<b>H314</b> – Causes severe skin burns and eye damage
Carcinogenic		<b>H350</b> – May cause cancer <b>H350i</b> – May cause cancer by inhalation
Mutagenic		<b>H340</b> – May cause genetic defects
Reproductive toxins		<b>H360F</b> – May impair fertility <b>H360D</b> – May cause harm to the unborn child

## Article 7

### **Basic Obligations in the Course of Handling**

- (1) When handling any hazardous chemical substances and chemical mixtures, the employees are obliged to protect human health and the environment and to observe hazard pictograms, standard statements indicating the specific risks and hazards and standard instructions for safe handling pursuant to the Chemical Substances Act and any directly applicable regulations of the European Union pertaining to chemical substances and chemical mixtures.
- (2) When handling hazardous chemical substances and chemical mixtures, the employees are obliged to use the prescribed personal protective equipment at the workplace, thus preventing contact with eyes and skin and avoiding any direct contact with the given substance or mixture.
- (3) Employees and other persons are obliged to observe the rules of personal hygiene (in particular washing hands, body and face after completing their work, no eating, drinking or smoking during work).
- (4) When handling hazardous chemical substances and chemical mixtures, the employees and other persons are obliged to ensure that no contact occurs among mutually incompatible materials (e.g. acids, metals - risk of toxic gas release, risk of explosion).
- (5) Employees and other persons are obliged to handle and open containers carefully, to prevent splashing, spilling or spreading of the chemical substance or mixture, taking into consideration the risk of eye, face or skin injury.
- (6) After each use, employees and other persons must tightly close the packaging (to prevent spilling or spreading).

## Article 8

### **Storage Requirements**

- (1) Hazardous chemical substances and chemical mixtures classified as highly toxic must be stored in the premises that are lockable, safeguarded against burglary and entrance of unauthorised persons (e.g. in a locked and marked warehouse, in a locked sheet metal case, etc.). During storage, it is necessary to eliminate the possibility of interchange and mutual harmful impacts of the stored chemical substances and chemical mixtures and to prevent their leakage to the environment and endangering human health. Records must be kept of highly toxic substances. Separate records must be kept with respect to each hazardous chemical substance and chemical mixture and the records must contain information on the received and released amounts, stock taking, and the name and surname of the person to whom the substances or mixtures were released. The records shall be archived for a period of at least 5 years after reaching zero stock level of the relevant hazardous chemical substance or chemical mixture. Storage records must contain in particular the following data: release date, name of the client, purpose of withdrawal, signature of the client, original and current amount of the registered chemical substance and mixture. The records must also specify page numbers.

- (2) Chemical substances or mixtures must be stored exclusively in their original packaging, i.e. in closed, tight, undamaged and labelled containers.
- (3) If a "substitute" packaging is used, the person handling the hazardous chemical substance or chemical mixture is obliged to use a suitable packaging resistant against the chemical impacts of the given substance or mixture and to ensure proper labelling of such packaging. It is prohibited to use any food or beverage containers.
- (4) It is necessary to observe the storage conditions prescribed by the manufacturer of the relevant substance or mixture (temperature, humidity, ventilation, etc.) and to store separately from food and beverages.
- (5) It is necessary to prevent leakage to the environment, soil, water, sewage system and the surrounding environment. The floor in the warehouse must be impermeable, chemically resistant against the stored substance or mixture.
- (6) In the event of leakage, the employee or another person shall be obliged to proceed in line with the instructions set out in the safety data sheet pertaining to the given substance or mixture, in particular to tighten the place of leakage and, if possible, to contain the leaking substance (e.g. with the use of a suitable sorption material - sand, sorbent, etc.), and to call professional assistance in the event of a more extensive leakage (Mgr. Jaromír Literák, Ph.D., tel.: 549 49 5580, in his absence Ing. Barbora Loučková 777 926 633, or 150 Fire Rescue Service of the Czech Republic or 112 Emergency Number).
- (7) Storage of chemical substances must be based on their properties and mutual reactivity. Incompatible chemical substances must be stored separately from each other.
- (8) Depending on the seriousness of the hazardous properties of chemical substances, incompatible chemical substances must be stored in the distance of at least 3 meters from each other and in the case of possible violent reaction in the distance of at least 5 meters from each other.
- (9) The employees and other persons getting in contact with chemical substances and mixtures are obliged to follow the following rules:
  - a) Combustible liquids must be stored separately in a separate area or in a separate labelled sheet metal case.
  - b) Oxidising agents must be stored out of reach of any combustible liquids and other materials that might react with oxidising agents or accelerate their decomposition. Oxidising agents include, for example, permanganates, chlorates, perchlorates, chromates, dichromates, nitrates, nitrites.
  - c) Substances that react with glass (e.g. hydrofluoric acid) or decompose in contact with glass (hydrogen peroxide) must be stored in plastic or metal containers or in glass containers with a paraffin lining.

d) Substances that decompose under light must be stored in containers made of dark glass or opaque material. Containers containing liquids where the radius acts as a converging lens must be protected against sunlight.

(10) Table of incompatibility of some groups of chemical substances:

<b>Table of incompatibility of some groups of chemical substances</b>								
	inorganic acids	oxidising acids	organic acids	alkalines	oxidising agents	inorganic toxic substances	organic toxic substances	organic solvents
inorganic acids								
oxidising acids								
organic acids								
alkalines								
oxidising agents								
inorganic toxic substances								
organic toxic substances								
organic solvents								



Incompatible groups of substances

#### Article 9

#### Safety Data Sheets

- (1) The employer is obliged to obtain safety data sheets with respect to chemical substances and mixtures that are classified as hazardous, either from the manufacturer or from the supplier of the relevant substance or mixture. If any particular substance or mixture has no hazardous properties, it is not necessary to obtain a safety data sheet.
- (2) The employer must enable employees to have access to the safety data sheets relating to the chemical substances or mixtures used by the employees or to the effects of which the employees may be exposed during their work. Safety data sheets are deposited at each worksite. The supervisor of each worksite (head of the research group, centre, core facility or another worksite) is responsible for the data sheets or for the appointment of a responsible person in the sense of Art. 11.15 hereof.
- (3) Safety data sheets must be available in the laboratory in printed or electronic form. The employees must be demonstrably acquainted with these safety data sheets.



- (4) Upon purchase of any new chemical substance or mixture, the list of used substances must be updated and the employees must be sufficiently acquainted with the relevant safety data sheet.
- (5) Safety data sheets in English and in Czech are available, for example, at: <http://www.sigmaldrich.com/czech-republic.html>

Article 10

**Personal Protective Equipment at the Workplace**

- (1) The manner, conditions and times of using personal protective equipment (hereinafter also "PPE") are regulated by a separate ruling of the director pertaining to the provision of PPE based on the determined risks. Personal protective equipment is determined by the worksite supervisor based on consultations with the Occupational Safety and Health and Fire Prevention Manager, taking into consideration the safety data sheets pertaining to each of the relevant chemical substances and mixtures.
- (2) The employees are obliged to properly use all the assigned personal protective equipment at the workplace.
- (3) The table below lists some examples of personal protective equipment:

<b>Type of PPE</b>	<b>Risks against which PPE protects</b>	<b>Note:</b>
protective gloves	hand contamination, degreasing, irritation or burns of the skin, effects of cleaning agents, chemical substances or mixtures (immersion, splashing)	the chemical resistance of gloves must correspond to the hazardous properties of the relevant chemical substance or mixture used, see the recommendations relating to the use of PPE as stated in the SDS, e.g. butyl, butyl-rubber, nitrile, latex gloves, etc.
protective goggles	eye injuries in the course of handling chemical substances or mixtures (during work, storage, transfusing, liquidation of an accident, etc.)	suitable goggles must be determined in consideration of the type and manner of using the relevant chemical substance or mixture, e.g. clear chemical goggles with sides, closed goggles, etc.
protective face shield	face injuries in the course of handling chemical substances or mixtures (during work, storage, transfusing, liquidation of an accident, etc.)	suitable also for handling liquid nitrogen
laboratory coat	face injuries in the course of handling chemical substances or mixtures (during work, storage, transfusing, liquidation of an accident, etc.)	The laboratory coat must be used for each work with biological material.

Article 11

**Rules of Laboratory Work**

- (1) Laboratory works may only be carried out in the laboratories equipped for this purpose.
- (2) Laboratories must be equipped with:
  - a) personal protective equipment at the workplace;
  - b) drinking water supply;
  - c) decontaminants and neutralising agents, depending on the nature of the work.
- (3) The devices and instrumentation must be maintained in a functional and safe condition.
- (4) The laboratory dishes may not be used for eating, drinking and storage of food.
- (5) It is prohibited to eat, drink and smoke in the laboratories.
- (6) Each chemical substance must be labelled.
- (7) In the course of laboratory works, the following measures must be taken corresponding to the risks that can be expected based on the properties and amounts of the used chemical substances and mixtures.
- (8) In the course of works where harmful chemical substances may leak into the air, it is necessary to ensure proper exhaust (e.g. by means of fume hoods, flow boxes, etc.).
- (9) It is prohibited to use any unsuitable or damaged devices and laboratory equipment. Prior to the work commencement, it is necessary to inspect the condition of the devices pursuant to the relevant instructions for use.
- (10) Mouth pipetting is prohibited.
- (11) Corrosive substances that release heat in the course of dilution or solution must be dissolved in parts, while constantly stirred.
- (12) Any spilled acids must be immediately washed with water or neutralised by soda powder and then again washed with water. Any spilled alkalis must be immediately washed with water.
- (13) It is only possible to pour in the laboratory sinks sufficiently diluted (at least 1:10) solvents perfectly mixable with water up to the amount of 0.5 litre (in a single dose) and water solutions (at least 1:30) of acids and hydroxides. It is prohibited to pour in the sewage pipes any solvents that do not perfectly mix with water, any toxic substances of all categories, acids and hydroxides above the defined concentrations, explosives, any substances releasing toxic or irritating gases upon

contact with water, acids and hydroxides. It is also prohibited to pour any residues of genetically modified organisms in the chemical sinks.

- (14) The worksite supervisors are obliged to ensure, in compliance with applicable legal and other regulations and the internal guidelines, all necessary activities in particular in connection with keeping records of the laboratory equipment, including expandable supplies and operation of the laboratories.
- (15) The worksite supervisors shall demonstrably appoint, by means of filling the relevant form (See Annex No. 5 hereof), at least one responsible person on behalf of each laboratory who shall be fully responsible for the observance of the following obligations:
- safe handling of hazardous chemical substances and mixtures;
  - records of handling (received and released amounts, stock inventory, name and signature of the person to whom the substances and mixtures were released) of highly toxic substances pursuant to section 44a (9) of Act No. 258/2000 Coll.;
  - records of safety data sheets and their demonstrable presentation to the users;
  - compilation, updating and visible placement of the rules of operation of the laboratories and their demonstrable presentation to the users;
  - communication with the Occupational Safety and Health and Fire Prevention Manager of CEITEC MU in relation to the work with biological agents of categories 2 and 3 pursuant to Government Order No. 361/2007 Coll., Annex No. 7 (these biological agents must be, prior to the commencement of the work with them at the workplace, approved by the Regional Public Health Authority);
  - communication with the Occupational Safety and Health and Fire Prevention Manager of CEITEC MU regarding further risk factors (e.g. ionising and non-ionising radiation, GMO, etc.);
  - restriction of access to the laboratory for unauthorised persons as the protection of laboratories against access of unauthorised persons and prevention of damage to assets, life and health;
  - use of personal protective equipment at the workplace;
  - observance of the rules of storing pressure cylinders.
- (16) In the case of laboratories that are used by several worksites, the responsible person shall be appointed by agreement of the supervisors of all the relevant worksites.
- (17) Should the worksite supervisor fail to appoint the responsible person pursuant to Art. 11.15 and 11.16 hereof, he/she shall be him/herself fully responsible for the fulfilment of the obligations stipulated by this Ruling.

#### Article 12

#### **Final Provisions**

- (1) The secretary of the Institute shall be responsible for the interpretation of this Ruling.

- (2) The Occupational Health and Safety and Fire Prevention manager shall be responsible for updating this Ruling from time to time.
- (3) The Occupational Health and Safety and Fire Prevention manager is appointed to supervise the observance of this Ruling.
- (4) This Ruling cancels the Organisational Guideline Relating to the Work with Chemical Substances effective since 6 October 2014.
- (5) This Ruling shall become valid as of the execution date hereof.
- (6) This Ruling shall become effective as of 1 December 2016.

**Annexes:**      No. 1 – GHS Labelling: Hazard Pictograms  
                     No. 2 – H-statements - Overview of standard hazard statements  
                     No. 3 – P-statements - Overview of prevention precautionary statements  
                     No. 4 – Examples of inappropriate combinations of storing chemicals  
                     No. 5 – Model form of appointment of a person responsible for the  
                     laboratory

In Brno, on 24 November 2016

*Jiří Nantl*  
*Director of the Institute*






## Annex No. 1: GHS Labelling: Hazard Pictograms


### Hazard pictograms - GHS




(GHS = generally harmonised system of classification and labelling of chemical substances)

pursuant to Annex V of the Regulation of the European Parliament and Council (EC) No. 1272/2008

on classification, labelling and packaging of substances and mixtures, on amendments and cancellation of Directives No. 67/548/EEC and 1999/45/EC and on amendments to Regulation (EC) No. 1907/2006 (as amended by amendments M1 through M6)  
(wording effective as of 1 June 2015)

GHS No.	Hazard pictogram	Sign	Hazard class and category
GHS01		Exploding bomb	<b>Physical hazard</b> Section 2.1 Unstable explosive Explosives, divisions 1.1, 1.2, 1.3, 1.4 Section 2.8 Self-reactive substances and mixtures, types A, B Section 2.15 Organic peroxides, types A, B
GHS02		Flame	<b>Physical hazard</b> Section 2.2 Flammable gases, category 1 Section 2.3 Flammable aerosols, categories 1, 2 Section 2.6 Flammable liquids, categories 1, 2, 3 Section 2.7 Flammable solids, categories 1, 2 Section 2.8 Self-reactive substances and mixtures, types B, C, D, E, F Section 2.9 Pyrophoric liquids, category 1 Section 2.10 Pyrophoric solids, category 1 Section 2.11 Self-heating substances and mixtures, categories 1, 2 Section 2.12 Substances and mixtures which, in contact with water, emit flammable gases, categories 1, 2, 3 Section 2.15 Organic peroxides, types B, C, D, E, F
GHS03		Flame over circle	<b>Physical hazard</b> Section 2.4 Oxidizing gases, category 1 Section 2.13 Oxidizing liquids, categories 1, 2, 3 Section 2.14 Oxidizing solids, categories 1, 2, 3
GHS04		Gas cylinder	<b>Physical hazard</b> Section 2.5 Compressed gases; liquefied gases; refrigerated liquefied gases; dissolved gases
GHS05		corrosion caustic	<b>Physical hazard</b> Section 2.16 Substances and mixtures corrosive to metals, category 1

			<b>Health hazard</b> Section 3.2 Skin corrosion, categories 1A, 1B, 1C Section 3.3 Serious eye damage, category 1
GHS06		Skull and crossbones	<b>Health hazard</b> Section 3.1 Acute toxicity (oral, dermal, inhalation), categories 1, 2, 3

GHS No.	Hazard pictogram	Sign	Hazard class and category
GHS07		Exclamation mark	<b>Health hazard</b> Section 3.1 Acute toxicity (oral, dermal, inhalation), category 4 Section 3.2 Skin corrosion/irritation, category 2 Section 3.3 Eye damage/irritation, category 2 Section 3.4 Skin sensitisation, categories 1, 1A, 1B Section 3.8 Specific target organ toxicity - single exposure, category 3 Respiratory tract irritation Narcotic effects <b>Additional hazard</b> Section 5.1 Hazardous to the ozone layer (category 1)
GHS08		Health hazards	<b>Health hazard</b> Section 3.4 Respiratory sensitization, categories 1, 1A, 1B Section 3.5 Germ cell mutagenicity, categories 1A, 1B, 2 Section 3.6 Carcinogenicity, categories 1A, 1B, 2 Section 3.7 Reproductive toxicity, categories 1A, 1B, 2 Section 3.8 Specific target organ toxicity - single exposure, categories 1, 2 Section 3.9 Specific target organ toxicity - repeated exposure, categories 1, 2 Section 3.10 Aspiration hazard, category 1
GHS09		Environment	<b>Environmental hazard</b> Section 4.1 Hazardous to aquatic environment Acute, category 1 Chronic, category 2

## Annex No. 2: H-statements - Overview of standard hazard statements

H-statements (worldwide system)	H200 – H290	Physical hazards
	H300 – H373	Health hazards
	H400 – H420	Environmental hazards
Supplementary system of EUH-statements (EU specific)	EUH 001 – EUH 401	Physical properties, health properties, Supplementary information on the label / information on certain mixtures

### H-statements

**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.

**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.

**H228** – Flammable solid.

**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 gases.

**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.

**H304** – 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.

**H314** – Causes severe skin burns and eye damage.

**H315** – Causes skin irritation.

**H317** – May cause an allergic skin reaction.

**H318** – Causes serious eye damage.

**H319** – Causes serious eye irritation.

**H330** – Fatal if inhaled.

**H331** – Toxic if inhaled.

**H332** – 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.  
**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 *<other exposure routes are not hazardous>*.  
**H373** – May cause damage to organs through prolonged or repeated exposure *<other exposure routes are not hazardous>*.  
**H400** – Very toxic 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.

**EUH 001** – Explosive when dry.  
**EUH 006** – Explosive with or without contact with air.  
**EUH 014** – Reacts violently with water.  
**EUH 018** – In use may form flammable/explosive vapour-air mixture.  
**EUH 019** – May form explosive peroxides.  
**EUH 044** – Risk of explosion if heated under confinement.  
**EUH 029** – Contact with water liberates toxic gas.  
**EUH 031** – Contact with acids liberates toxic gas.  
**EUH 032** – Contact with acids liberates very toxic gas.  
**EUH 066** – Repeated exposure may cause skin dryness or cracking.  
**EUH 070** – Toxic by eye contact.  
**EUH 071** – Corrosive to the respiratory tract.  
**EUH 059** – Hazardous to the ozone layer.  
**EUH 201** – Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.  
**EUH 201A** – Warning! Contains lead.  
**EUH 202** – Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of reach of children.  
**EUH 203** – Contains chromium (VI). May cause an allergic reaction.  
**EUH 204** – Contains isocyanates. May cause an allergic reaction.  
**EUH 205** – Contains epoxy constituents. May cause an allergic reaction.  
**EUH 206** – Warning! Do not use together with other products. May release dangerous gases (chlorine).  
**EUH 207** – Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer.  
 Comply with the safety instructions.  
**EUH 208** – Contains ... May cause an allergic reaction.  
**EUH 209** – Can become highly flammable in use.  
**EUH 209A** – Can become flammable in use.  
**EUH 210** – Safety data sheet available on request.  
**EUH 401** – To avoid risks to human health and the environment, comply with the instructions for use.

Note: H-statements highlighted in red indicate exposure prohibited to pregnant women.



### **Annex No. 3: P-statements - Overview of prevention precautionary statements**

- 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** – Do not allow contact with water due to violent reaction and possible sudden ignition.
- 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 cold.
- P240** – Ground/bond container and receiving equipment.
- P241** – Use explosion-proof electrical/ventilating/light/.../equipment.
- P242** – Use only non-sparking tools.
- P243** – Take precautionary measures against static discharge.
- P244** – Keep valves and fittings free from oil and grease.
- P250** – Do not subject to grinding/shock/.../friction.
- P251** – Pressure vessel: do not pierce or burn, even after use.
- P260** – Do not breathe dust/fumes/gas/mist/vapours/aerosoles.
- P261** – Avoid breathing dust/fumes/gas/mist/vapours/aerosoles.
- 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 not 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 shield.
- 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 cold. 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 not 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 a 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 ... °C/... °F.

**P412** – Do not expose to temperatures exceeding 50 °C/122 °F.

**P413** – Store bulk masses greater than ... kg/... lbs at temperatures not exceeding ... °C/... °F.

**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 not expose to temperatures exceeding 50°C/122°F.

**P411 + P235** – Store at temperatures not exceeding ... °C/... °F. Keep cool.

**P501** – Dispose of contents/container to ...

#### Annex No. 4: Examples of inappropriate combinations of storing chemicals

The substances listed in the left of the table should not get in contact with the substances in the right of the table and vice versa.

Acetone	Mixture of concentrated nitric acid and sulphuric acid
Acetylene	chlorine, bromine, fluorine, copper, mercury, silver and compounds thereof
Alkaline metals, metals of alkali earths, such as sodium, potassium, lithium, caesium, magnesium, calcium, aluminium	Carbon dioxide, carbon tetrachloride and other chlorinated hydrocarbons
Alkaline metals	Epichlorohydrin, ethylenchlorhydrin, water, water solutions
Ammonia	Chlorine, bromine, iodine, mercury, calcium hypochlorite, hydrogen fluoride, chlorates
Aniline	Nitric acid, hydrogen peroxide
Bromine	Ammonia, ethylene, acetylene, butadiene, butane and other petroleum gases, sodium carbide, turpentine essential oil, benzene, finely dispersed metals, hydrogen, sulphur, arsenic, antimony, phosphor, sodium, potassium
Ammonium nitrate	Acids, powder metals, combustible liquids, nitrates, sulphur, finely dispersed organic substances or combustible substances
Sodium nitrate	Ammonium nitrate and other ammonium salts
Nitrates and substances bound by nitric acid	Sulphur, potash, concentrated sulphuric acid, organic substances, carbides, phosphor, explosives
Ethyl nitrite	Hydrazine, ammonia salts, ammonium halides, sulphocyanides, hexacyanoferrates
Fluorine	To be isolated from all substances, in particular beware of hydrogen and silicon dioxide (amorphous)
Waterless hydrofluoric acid (hydrogen fluoride)	Ammonia (gas and water solution),
Phosphor	Oxidisers, explosives, sulphur, metal sulphides, alkali metals, metals of corrosive earths, combustible liquids
Combustible liquids (in particular of hazard class I. and II.)	Oils, oxidisers, explosives
Hydroxylamine	Powder zinc, calcium, dichromates, oxidising agents
Chlorine	Hydrogen, ammonia, acetylene, butadiene, butane and other petroleum gases, sodium carbide, turpentine essential oil, benzene, finely dispersed metals, ether
Potassium chlorate	Acids (including chlorates)
Chlorates	Ammonia salts, acids, powder metals, sulphur, carbon disulfide, finely dispersed organic substances or easily combustible substances, red phosphor, ammonium thiocyanate, hydrazine, hydroxylamine, amines
Mercuric chloride	Phosphor, salts or arsenic, antimony, silver, alkali metals, sulphides of alkali metals, acetylene, ammonia, oxalic acid, metal oxalates, metal sulphides
Barium perchlorate	Salts of stearic acid
Potassium perchlorate	Acids (see also perchloric acid)
Iodine	Acetylene, ammonia (gas and water solution), hydrogen

Carbides, anhydrous lime	Organic substances, acids of all kinds, water, water solutions
Metal powders, bronze	Fats, oils, metal sulphides, oxidisers
Crotonaldehyde	Alkalis, ammonia, amines
Hydrogen cyanide	Nitric acid, alkalis
Concentrated nitric acid	Acetic acid, aniline, chromium trioxide, hydrogen cyanide, hydrogen sulfide, combustible liquids and nitrosatable substances, oils, metal powders, explosives, phosphor, phosphine, organic substances
Perchloric acid	Acetic anhydride, bismuth and its alloys, ethanol, paper, wood, lubricants and mineral oils, strong dehydration and oxidising agents
Chromic acid	Acetic acid, naphthalene, camphor, glycerine, turpentine essential oil, ethanol and other combustible liquids
Acetic acid	Chromic acid, nitric acid, compounds containing hydroxyl groups, ethylenglycol, Perchloric acid, peroxides, permanganates
Concentrated sulfuric acid	Oxidisers (e.g. nitric acid, nitrates, chlorates, etc.), explosives, metal powders
Oxalic acid	Silver, mercury
Oxygen	Oils, lubricants hydrogen, combustible liquids, combustible solids and gases, activated carbon, powder metals
Dust generating substances	Fats, oils, oxidisers, metal powders
Potassium permanganate	Glycerine, ethylenglycol, benzaldehyde, sulphuric acid, ethanol, ether, turpentine, mixtures of sulphur and tin, organic substances and ammonium nitrate
Copper	Acetylene, hydrogen peroxide
Urea	Chlorine, bromine, iodine
Nitromethane	Amines, strong acids and alkalis
Nitroparaffins	Inorganic alkalis
Oxidisers	Sulphur, phosphor, nitric acid, metal powders, coal, carbon black, explosives, combustible liquids, nitric compounds, alkali metals, metals of corrosive earths, magnesium, electron, calcium carbide, resins, dust generating substances, hydrogen sulphide
Organic substances	Fats, oils, oxidisers (e.g. liquid air, nitric acid, chlorates, peroxy acids, etc.), explosives (e.g. picric acid and its salts, fulminates, etc.), anhydrous lime, carbides
Chlorine dioxide (ClO <sub>2</sub> )	Ammonia, methane, phosphine, hydrogen sulfide
Calcium oxide	Water
Barium peroxide	Reducing and combustible substances, e.g. aniline, alcohols, organic acids, fats, oils, phosphor, antimony, activated carbon
Organic peroxides	Acids (organic and mineral) – avoid friction
Sodium and potassium peroxide	All oxidising substances, e.g. ethanol, methanol, acetic acids, acetic anhydride, benzaldehyde, carbon disulfide, glycerine, ethylenglycol, ethyl- and methyl ester of acetic acid, furfural, water, sodium hydroxide, potassium hydroxide, sulphur, powder metals (aluminium), cotton

Hydrogen peroxide	Copper, chromium, iron, most metals or their salts, all combustible acids, combustible substances, aniline, nitromethan, glycerine, oils, resins, cotton, wool, wood dust, coal
Peroxy acids	Sulphur, metal powders, coal, organic substances, combustible liquids (in particular hazard class I. and II.)
Ammonium (potassium) persulphate	Chlorates, perchloric acid, sulphur, metal powder (aluminium)
Resins, oils	Oxidisers, combustible liquids, mineral acids, chlorine, iodine, bromine
Mercury	Acetylene, fulminic acid, ammonia, mixture of ethanol and nitric acid
Sulphur, metal sulphides	Coal, carbon black, oils, oxidisers, metal powders, explosives, alkali metals, metals of corrosive earths
Carbon disulphide	Oxidisers, combustible liquids, explosives
Hydrogen sulphide	Fuming nitric acid, oxidising gases
Silver	Acetylene, oxalic acid, tartaric acid, fulminic acid, ammonium compounds
Fats, oils	Oxygen, organic substances, fibres, wool, coal, carbon black, metal sulphides, sulphide minerals, oxidisers, dust generating substances, explosives
Coal, carbon black	Fats, oils, metal sulphides, oxidisers
Activated carbon	Calcium hypochlorite, all oxidisers
Hydrocarbons (benzene, butane, propane, gasoline)	Fluorine, chlorine, bromine, chromic acid, sodium peroxide

**Annex No. 5: Model form of appointment of a person responsible for the laboratory**

**Appointment of a person responsible for the laboratory no. ....**

The person listed below shall be fully responsible for the specified laboratory in terms of:

- safe handling of chemical substances and mixtures;
- records of handling (received and released amounts, stock inventory, name and signature of the person to whom the substances and mixtures were released) of highly toxic substances pursuant to section 44a (9) of Act No. 258/2000 Coll.;
- records of safety data sheets and their demonstrable presentation to the users;
- compilation, updating and visible placement of the rules of operation of the laboratories and their demonstrable presentation to the users;
- communication with the Occupational Safety and Health and Fire Prevention Manager of CEITEC MU in relation to the work with biological agents of categories 2 and 3 pursuant to Government Order No. 361/2007 Coll., Annex No. 7 (these biological agents must be, prior to the commencement of the work with them at the workplace, approved by the Regional Public Health Authority);
- communication with the Occupational Safety and Health and Fire Prevention Manager of CEITEC MU regarding further risk factors (e.g. ionising and non-ionising radiation, GMO, etc.);
- restriction of access to the laboratory for unauthorised persons as the protection of laboratories against access of unauthorised persons and prevention of damage to assets, life and health;
- use of personal protective equipment at the workplace;
- observance of the rules of storing pressure cylinders.

On behalf of laboratory no. ...., I hereby appoint ..... as the responsible person.

In Brno, on .....

..... Name of the managing employee	..... Employee ID No.	..... Signature
..... Name of the responsible person	..... Employee ID No.	..... Signature