



**General instruction sheet
of Occupational Health and Safety and fire safety applicable in the scientific
and research laboratories of the Institute of Physics of the Polish Academy
of Sciences**

I. General provisions

1. This instruction sheet applies to all employees, PhD students, interns, trainees and third persons carrying out research work under a cooperation agreement or consent of the Director of the Institute of Physics of the Polish Academy of Sciences.
2. No unauthorised persons can enter scientific and research laboratories.
3. Every employee, PhD student of the scientific and research laboratory shall possess:
 - ✓ proper qualifications for the position held,
 - ✓ valid medical certificate from the occupational medicine physician which states the lack of contraindications for work on the occupied position,
 - ✓ training in the scope of occupational health and safety (introductory general and station training).
4. Persons carrying out works in the scientific and research laboratory must be equipped with working clothing and proper personal protection equipment according to the law applicable in this scope. The type of the working and protection clothing depends on the type of performed activities.
5. In the scientific and research laboratories where dangerous substances are used, persons appointed by the director are obliged to keep record of these substances and store the safety data sheets of the abovementioned substances in an accessible and visible place.
6. It is obligatory to ensure that employees and abovementioned persons could permanently use valid:
 - ✓ safety data sheets of dangerous substances,
 - ✓ instruction manuals regarding machines and technical equipment located in the given scientific and research laboratory,
 - ✓ OHS instruction sheet, fire safety instruction sheet,
 - ✓ station instruction sheets,
 - ✓ first aid instruction sheets.
7. Food products are not to be eaten and stored in the laboratories. Preparation and eating of food should take place in a separate room. Dishes used for food purposes should not be used in any other manner and must differ significantly from the laboratory utensils.

II. Work in the scientific and research laboratories

1. During work performed in the scientific and research laboratories by persons who are not employees, PhD students of the International Doctoral Studies, such persons must be accompanied by an employee or PhD student of the Institute of Physics of the Polish Academy of Sciences.
2. In the scientific and research laboratory in which only one person is employed where, in an emergency situation, a threat for health may occur, such a person must be obliged to report in a specific manner.
3. Systematic controls of the occupational health and safety in the scientific and research laboratories, registration of irregularities and methods for removing them need to be carried out.
4. It is imperative to maintain cleanliness and order in the laboratory. All tools and items used during work have to be located in specified places.
5. Dangerous materials should be kept in places and packaging intended for the given purpose and must be adequately marked.
6. Excessive amounts of chemical substances cannot be stored in the workplace, only amounts to be used during the day.
7. Products made of glass and materials which guarantee safety of work are to be used for laboratory works.
8. While washing laboratory glass and using different cleaning products, safety gloves and apron are to be used.
9. All waste should be handled in accordance with the waste handling instructions and internal regulations of the Director of the Institute of Physics of the Polish Academy of Sciences.
10. It is prohibited to discharge poisons and substances dangerous for the environment to the sewage system.
11. Work with substances which are toxic, harmful for health or emitting gas must be carried out under the hood with fan turned on.
12. Heating of liquid should be carried out in a manner ensuring that if the container breaks, or the liquid gushes out, no one suffers damage.
13. When conducting chemical reactions during which gases may be generated, the apparatus non-permeability needs to be ensured. A warning inscription should be placed on the door of the given laboratory.
14. When working with acids, the employee must be secured with gloves, acid-proof apron and eye protection through use of protection eyewear.
15. Reactions under increased or reduced pressure, e.g. vacuum distillation, must be always carried out in protection glasses or masks.
16. Extractions should be carried out away from sources of open fire and in case of inflammable solvents, such as ether, away from strongly heated items.
17. All works with "dry ice", liquefied nitrogen and helium (cryogenic liquids) should be carried out using special protective gloves and protective face masks.
18. During works with substances which are flammable, combustible and substances which mixture with air or water may cause an explosion or fire (hydrogen, ether) should be carried out burners and heating equipment turned off. Inflammable substances should not be stored at the work station without securing them and supervision.

19. Be absolutely sure to follow information contained in the safety data sheets regarding chemicals, including protection measures, method of storage, procedure in case of an accident, fire.

III. Handling of the research apparatus

1. Every employee is absolutely obliged to immediately inform the superior about noticed irregularities in operation of the research apparatus. In case of danger to human life or health, the co-workers and other persons in the threatened area need to be immediately warned about the imminent danger.
2. Persons responsible for the course of performed works and proper use of the equipment are obliged to take actions in order to immediately remove the irregularities and to report the repair of the damaged equipment components.
3. All machinery and technical equipment in the scientific and research laboratories (gas burners, digesters, gas cylinders) should meet the OHS and PS requirements, whereas equipment, machinery and technical devices subject to technical supervision should have appropriate documents approving their use.
4. Handling of the apparatus and equipment should take place according to the recommendations provided in the instructions displayed or located near the device.
5. Handling of the research apparatus may take place exclusively upon station training in the scope of device operation and upon reading of the manufacturer's instruction manual.
6. Every user is obliged to check the condition of the apparatus prior to commencement of work and upon finishing or handing over for further use without exposing the co-workers' health and safety to danger.
7. The user is prohibited to use the research infrastructure in a manner not compliant with its intended purpose.
8. Unauthorised persons may not repair the equipment or apparatuses.
9. Active furnaces, pumps, generators which improper activity (excessive temperature, increase of pressure, lack of cooling water) may cause a failure, may not be left without supervision.

IV. Work with lasers, laser devices, sources of light

1. Every user, before turning on a laser, should verify the laser's class and basic data regarding it, mainly the length of the emitted wave and power or energy.
2. Read the OHS instruction sheet on working with laser devices located in the laboratory.
3. During performance of measurement using class 4 lasers, the process should be signalled outside the room, turning on the light signal.
4. The imperatives and prohibitions specified in the instruction manual of the given laser type should be followed and attention should be paid to warning inscriptions in the laboratory.
5. Regardless of the laser class, IT IS FORBIDDEN TO LOOK AT THE LASER BEAM (i.e. peeking to the laser outlet hole from which the beam is emitted); this applies also to the reflected beam.
6. It is forbidden to direct the laser beam onto people as well as dangerous materials, e.g. inflammable, reactive.
7. When setting up the experiment, work with full lighting turned on because this significantly decreases the danger of eye irradiation.
8. Laser beams should be directed (if possible) at a level other than the eye level.

9. Appropriate personal protection equipment should be used (e.g. goggles), adequate for each class of lasers.
10. Spectral lamps used in the laboratory emit UV radiation which is harmful for the eyes. Therefore, before turning on, the lamp needs to be covered with the casing.
11. In case of irradiation, seek medical assistance immediately and report the accident.

V. Use of gas cylinders with technical gases in rooms

1. The instruction sheet regards exclusively use of gas cylinders in the laboratory or workshop rooms, it does not include OHS provisions regarding storage of gas cylinders.
2. Gas cylinders should be equipped with inscriptions and painted with colours according to standards applicable in this scope.
3. The employee cannot introduce any changes in the gas cylinder marking (painting, inscription); it is forbidden to repair gas cylinders and their valves – such activities must be performed by persons authorised by UDT [Technical Supervision Office].
4. Gas cylinders purchased or collected from the Department of Cryogenics should be secured with a protective nose cap screwed onto the gas cylinder valve.
5. Gas cylinders should not be thrown, hit, toppled, rolled, when used at the work station they should be secured against fall using wall handles, holders, cabinet for gas cylinder storage.
6. Gas cylinders should be protected against heating to temperature exceeding 35°C, it is forbidden to expose gas cylinders to direct fire.
7. Gas cylinders should be placed at the minimum distance of 1 m from central heating radiators and at least 10 m from stoves and other heat sources with open fire.
8. Release of gas from the gas cylinders to lower pressure containers should be done through a reducer intended exclusively for the given gas and marked with appropriate colour. Low pressure reducer chamber should have a manometer and spring-loaded safety valve set at the highest working pressure of the container to which the gas is released. If use of the reducer is not possible, in case of strongly corroding gases (chlorine, sulphur dioxide, phosgene) it is allowed to use another efficiently working device, subject to UDT's consent.
9. Gas cylinders with toxic gases should be stored in closed rooms, intended specifically for this purpose and properly ventilated. Gas cylinders with hydrogen sulphide should be kept under a roof on open air. It is forbidden to store gas cylinders with oxygen and gases forming explosive mixtures with the oxygen in the same room, it is also forbidden to store them with carbide. Gas cylinders with inflammable gases may be stored with gas cylinders for inert gases.
10. Electric installation in the room where inflammable gases are used should comply with applicable standards for dangerous rooms with explosion potential.
11. Rooms where technical gases are used should be equipped with adequate fire-fighting equipment.

VI. Transportation of gas cylinders, cryogenic liquids

1. Handling of gas cylinders with capacity over 10 l should be performed with due care by at least two employees.
2. Adequate transport means should be used to move and transport chemical materials and gas cylinders.
3. Transportation of gas cylinders must take place using trucks intended for this purpose. Every time before starting works connected with transport of the gas cylinders, the technical condition of the truck as well as elements of additional equipment and devices necessary for safe work

performance and environmental protection should be thoroughly checked.

4. Carriage of persons and gas cylinders and cryogenic liquids in the same lift is prohibited.

VII. Procedure in case of an accident.

1. In case of an accident, follow the first aid instruction sheet and inform the persons responsible for provision of first aid in the given area. Information about persons assigned to provide first aid along with a contact number can be found at the nearest first aid kit in the departments.
2. In case of fire - follow fire-fighting instructions.
3. In case of contact of a caustic liquid with the eyes - rinse continuously with lots of running water, use eye-cleaners available in the rooms.
4. In case of electrocution - turn off the power; if possible, separate the electrocuted person from the voltage by grabbing the clothes, not the body. In case of need, proceed with cardiopulmonary resuscitation and call the ambulance.
5. If clothes, hair catch fire - knock the person affected to the ground and extinguish the fire using the fire blanket.
6. When small amount of solvent in a small container catch fire - tightly encase the container with a glass plate.
7. If burning liquid spills on the lab table or the floor - extinguish the fire using fire extinguishers or fire blankets. In case of fire, if possible, prevent further development turning the burners off or removing the inflammable substances.

VIII. Final provisions

1. In cases not covered by the instruction sheet, follow the applicable regulations of the Director of the Institute of Physics of the Polish Academy of Sciences and detailed instructions taking into consideration the specifics of works carried out at the given station.
2. Managers, or persons appointed by them, providing station instructions to the newly employed persons, PhD students, interns, trainees and third parties performing research works in the institute are obliged to present and familiarise them with the general OHS instruction sheet and safety data sheets of substances and chemical mixtures used during research works at the work station during the training.
3. The employee, PhD student, intern, third person confirms reading the instruction sheet with their signature on the declaration which is to be provided to the OHS specialist.

Drafted by

Approved by

Warsaw, on

DECLARATION

Mr/s

Employed on the position of

Employee/PhD student/intern/third party*

(delete as appropriate)

Conducting research works in room no.

I, the undersigned, declare that I have read the general OHS instruction sheet of the Institute of Physics of the Polish Academy of Sciences as well as safety data sheets of substances / chemical mixtures used at the work station.

.....
Signature of the employee/
PhD student/intern/third party

.....
signature of the manager
or authorised person

