

This guide (available in English only) is a help sheet for all safety officers/assistants in the HCI building for the proper way to conduct personal safety instruction for new employees and students. All of the following information is to be conveyed personally to all new staff & students before they start work in their laboratories. New staff and guests who do not work in the laboratories need only to be informed about points 1,2, 4, 6 (concerning the offices) and 13 – 15.

Specific dangers and risks in certain working groups that require special appropriate behaviour and safety measures must be added to this general safety introduction.

More information is available at



www.su-management.ethz.ch

www.toxlab.ethz.ch

www.c174.ethz.ch

www.hci-isotopelabs.ethz.ch

E-Mail: chab-safety@chem.ethz.ch

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1. Safety- and Environment Manual for the HCI

All employees and students will receive the following paperback brochure (available at the HCI-Shop in German and English), a brief description of the Safety and Environmental Handbook for the HCI Version 2024. In this brochure, the QR code or link is provided that leads to the complete edition of the Safety and Environmental Handbook version 2024.



The Safety- and Environment Manual for the HCI should have read attentively and staff must be capable of implementing the most important work and emergency organisation rules. The manual does not only include the emergency organisation but also contains information on the organization of the entire SU management and its services, the safety training concept (e.g. Safety Lecture), the obligatory safety examinations, as well as maintenance management, laboratory technology and much more. The maintenance management explains who is responsible for which technical problems and whom to report them to.


Old versions of SHE-manuals, laboratory rules, etc. must always be disposed.

2. Alarm

Emergency Alarm (all types, 24/7): Tel 888
(valid for all ETH internal telephones)

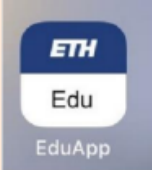
Emergency Desk via cell phone or external lines (24/7): 044 342 11 88

Save the Emergency Desk in your cell phone with the QR code:



ETHZ NOTRUF


ANRUUFEN	E-MAIL
044 342 11 88	
suu_alarmcentral@ethz.ch	
E-Mail	



Note: The **EduApp** is an interactive smartphone application for studying and teaching at ETH Zurich. You can also use the EduApp to make an emergency call.

Look → Think → Act

1. Secure danger area, protect yourself
2. If possible, always leave the patient on site (the first aid team will come on site)



Where? Place of accident (building, floor, room)

What? Type of accident

Who? Name of alerting person and how to contact

When? Time of accident

How many? Count of patients (and their injuries)

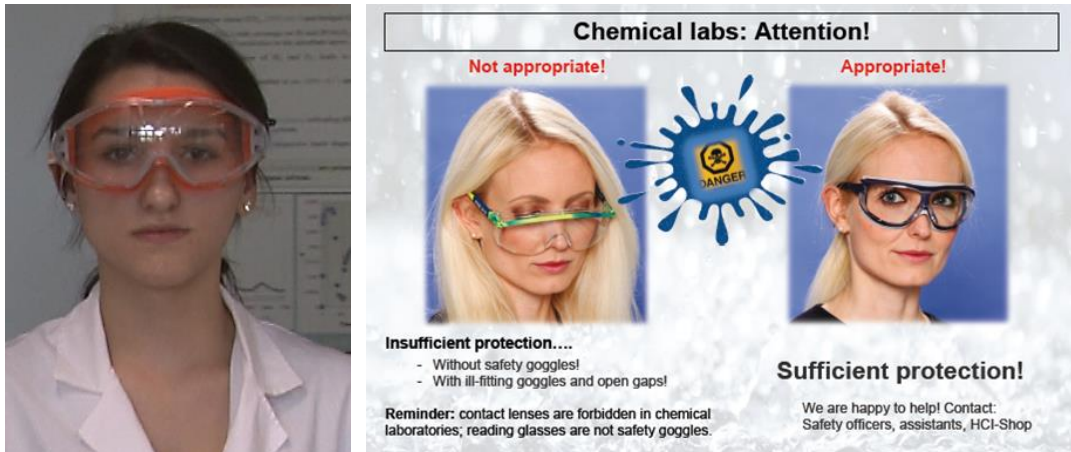
Other? Additional potential risks

3. Goggles and Eyewash

3.1 Goggles

The wearing of safety glasses is mandatory. Contact lenses are not permitted even while wearing safety glasses. ETH employees can apply for optically adapted safety glasses via the SSHE department.

There is evidence that standard protective goggles are not suitable for some people, especially those with narrow faces, as there are open gaps in the goggles that leave the face vulnerable to chemical sprays and spills. For employees/students who work with particularly hazardous liquids, the so-called "diving goggles" are available in the HCI shop. The "diving goggles" should be worn if there is a risk of splashing during work.



Fit and quality check of safety goggles: Before new employees and students can work in the laboratories, the safety officer or assistant must check the fit and quality of their safety goggles. The safety officers and assistants should specifically check whether there are any open gaps when wearing the safety glasses where liquid could splash in the face. In case of poor fit of the goggles, a better version must be purchased in the HCI shop.

3.2 Eyewash

Note: A contaminated eye must always be rinsed with water for at least 10-15 minutes! Two-helper method: One person holds the contaminated eye open while the other flushes the eye with water. Even if the victim is no longer complaining after sufficient eyewash, **a medical follow-up in the eye clinic is obligatory.**

Prevor Eyewash (Diphotérine solution) if present (Link: www.prevor.com)

This kind of eyewash only works when used immediately after an incident. The small (50ml) bottle must be used in the first 10 seconds after an incident. Hence, it is advisable to carry this bottle with oneself at all times, especially when performing dangerous experiments. After application of the Diphotérine solution the eye should be rinsed with water as described above (in order to ensure that the eye is washed sufficiently). In our emergency cabinets, you will find large eyewash bottles. These must be used within 1 minute following an incident. **Note:** If the Prevor eyewash bottle is not available, never wait to rinse the contaminated eye with water until someone has found it.



4. Emergency and Evacuation

4.1 Emergency niches

In the corridors of the HCI-building emergency niches are located at regular intervals. In the finger buildings the emergency niches are located in the south and north parts of the corridors on every floor. Additional but smaller emergency niches are positioned in the middle of the corridors, in the stairwell.



Content of emergency niches:

- 2 x 5 kg fire extinguishers CO₂ (note: 1x 2 kg fire extinguisher CO₂ is placed in each laboratory unit)
- 1 fire blanket
- 1 box with sand (for example against alkali metal fire)
- small first aid kit (if this should be empty or incomplete, please report this via the «Meldeportal» (building services))
- full body shower
- eye shower
- telephone (only in the emergency help points in the north and south parts of the corridor)
- hose-on-reel extinguisher (water)
- fire brigade alarm button (if activated, the fire fighters will come irrevocably)

4.2 Smoke alarm

There are smoke/fire detectors located in all rooms of the HCI building. They detect smoke or fire, for example smoke formed from blown out candles (Christmas, birthday celebrations) or food that has been forgotten in the oven (in the recreational rooms). In cases of grossly negligent behaviour causing a false alarm, the costs for the fire brigade (CHF 2000) have to be paid by the person/s responsible. It is possible that the detectors react to the outbreak of liquid gases and steams (e.g. autoclave). The use of tightly installed units that regularly emit steams should be cleared up with the house service.

4.3 Evacuation

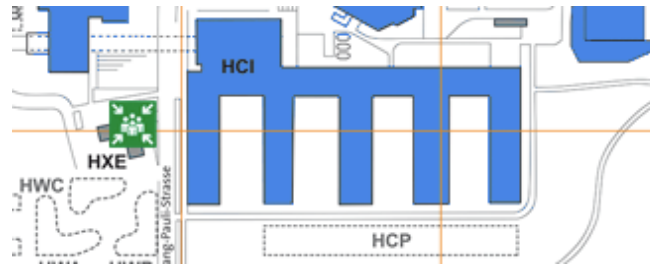
Important notice: The use of headphones or sound systems that prevent acoustic alarm signals increases the risk of accidents. Sound/radio equipment may only be operated with the approval of the supervisor and may only be audible in the immediate personal environment at most. Those who do not hear an alarm because they are wearing head sets and headphones are responsible for this themselves.

- In case of a **serious incident**, anyone can set off an evacuation of a part of the building (if needed) via the telephone number **888** (e.g. in case of an outbreak of toxic gas).
- In case of an evacuation you will hear announcements broadcast from the loudspeakers. As the acoustic alarm is not audible in all rooms, inform the people in these rooms.
- **In case of an evacuation**, follow the escape route signs. The use of elevators is not allowed. Everybody is obliged to assist disabled or injured people who cannot use the stairs as long as you don't endanger yourself. Rooms locked with a key are considered to be empty and will be not checked by the evacuation staff.

- Please also note that in case of an evacuation the fire doors are retracted in the corridors. This changes the perspective in the corridor and people can get puzzled.



- The **assembly point** for the HCI in case of evacuations:



5. Emergency Cabinets

Stationed Emergency Cabinets

In the event of an incident, each person has to decide for him or herself whether or not he/she want to help. Those who decide to stay and help must first protect themselves by wearing the proper gear. In each building, there is an emergency cabinet stationed in the corridor with various emergency materials for helpers. The key to the emergency cabinet is in the red box next to it. Simply break the glass and take the key. It is everyone's duty to inform the Alarm Central (888) in case of an emergency. Helpers must secure the event scene with caution tape to control unauthorized entry until the medical/rescue staff has arrived. It must be ensured that spectators do not hinder the rescue work.

Location of Emergency Cabinets:

- HC1: In the middle side corridor of the big laboratory D118
- HC2: In the side corridor, next to D212
- HC3: In the side corridor, next to D312
- HC4: In the side corridor, next to H412
- HC5: In the side corridor, next to F512

Inventory of Emergency Cabinet:

- 2 gas masks; Note:
 - o These are only suitable for instructed persons
 - o Filter masks are not suitable for all gases/vapors
- Protective suits
- Chemical-resistant and heat-resistant protective gloves (note resistance list!)
- First aid box with first aid instructions
- Anti-hydrofluoric acid kit, Hexafluorine eye wash bottle and hydrofluoric acid absorber material
- Civil defense rugs
- Foil rescue blankets

- Various chemical absorber materials for all kinds of spills
- Fluid barrier
- Barrier tape
- Orange box containing Diphotérine eye wash bottles and Diphotérine spray
- Nano-ex - protective cream
- Depending on your needs, workgroup-specific materials

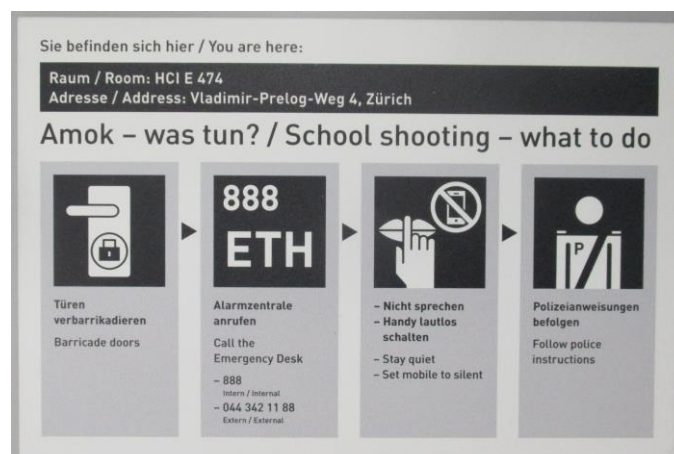
6. Rooms and building ventilation

6.1 The building ventilation system

In general, on every floor (facing south) the offices are situated on the left and the laboratories on the right. Only the laboratories are connected to the building ventilation system, the offices are not. The building ventilation is basically not air-conditioned and not dehumidified. The offices are fitted with air-conditioning of limited capacity. Many laboratories as well as some offices (in general PC rooms) have autonomous ceiling recirculation air cooling devices (= ULK = Umluftkühlgeräte) for air-conditioning. These ULK are only installed in the laboratories if tools and units produce a waste of heat and overheat the premises or if the high temperature is likely to cause danger.

6.2 Laboratory unit

- **Ventilation system:** Every laboratory has an extensive autonomous ventilation system (this is not accessible for the users as it is located in the vertical duct). The pneumatic ventilation permanently regulates the ventilation balance in the laboratory. There is a light negative pressure in the standard laboratories at all times which means that all kinds of accidents stay in the laboratory area and do not spread further in the building. Laboratories with sensitive optic have a slight over-pressure, which minimises the dust emission. The laboratory and balcony doors may not be left open. The consequence of open laboratory and balcony doors is that the ventilation system runs up to maximum power in order to find the negative pressure in the laboratory, which it cannot do in such a situation. This is also associated with a massive increase in energy consumption, or the destruction of cold (in summer) or heat energy (in winter). **In case of an accident**, it is strictly forbidden to open the laboratory and balcony doors for ventilation.
- **Dangerous chemicals or chemicals with emissions of foul smells:** It is forbidden to carry out dangerous experiments or experiments with emissions of foul smells in the standard laboratories. For these purposes, special laboratories are available (e.g. the Tox Lab, the High Pressure Lab, the Isotope Labs, the Central Distillation Room, etc.).
- **Panic locks:** The locks in student and seminar rooms allow doors to be closed from the inside in the event of an amok situation, so that the offender cannot open them from the outside.



- **Precautions against theft:** If there is no staff present in the laboratory, the door must be locked. ETH is not responsible for stolen or missing private property.
- **Eye wash station/fire extinguisher:** The eyewash is integrated above the washbasin and is removable. It must be washed at least once a week in order to prevent the water in the shower from spoiling or contaminating. In the laboratory there is also a 2 kg CO₂ fire extinguisher.

- **Fume hoods:** If the fume hoods are closed (window down), less exhaust ventilation is used which is also ecological. Open fume hoods need more exhaust ventilation. It is necessary for the fume hood unit to have a normal and safe working hygiene. If this is not the case, the laboratory service staff may close off the workplace until a solution is found.
- **Workplaces:** Workplaces require a normal and safe working hygiene. If this is not the case, the laboratory service staff may close off the workplace until a solution is found.
- **Escape balconies:** This is the primary escape route throughout the whole building. Standing on the balcony is allowed (except in laboratories for student courses), but the doors must always be closed. It is forbidden to leave things on the escape balconies; they will be removed and disposed by the laboratory at the cost of the person/s responsible. Everybody in the building is obliged to draw attention to others if doors are open or things are being placed in an obtrusive manner on the balcony.
- **Washbasin:** It is forbidden to dispose chemicals and foul-smelling compounds in the washbasins.
- **Floor drains in the standard laboratories in the HCI building:** There is a floor drain in each lab, which was covered with a metal plate in nearly all rooms by the Dept. Facility Services in 2021. The floor drain is directly connected to the wastewater tank. If the siphon underneath has dried out and the metal cover is missing from the floor drain, odours from the wastewater system can be drawn into the lab air due to the negative pressure in the lab and cause odour emissions. If you notice this situation, please report this event via «Meldeportal» (building services).
- **Problems, incident, technical defects or need for advice** must be only reported via email to **chab-safety@chem.ethz.ch**. Technical problems with fume hoods and media columns are to be described including the laboratory, fume hood and/or media column number.

7. Operating instructions

7.1 The operation of safety-relevant infrastructures

The operation of safety-relevant infrastructures is increasingly being explained via videos. Use existing **QR codes** or visit our website www.su-management.ethz.ch



Handling media column



Training video LN2 filling station for tanks




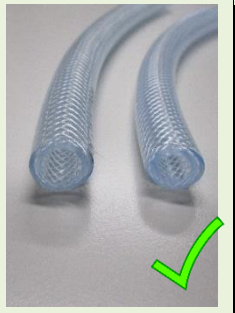

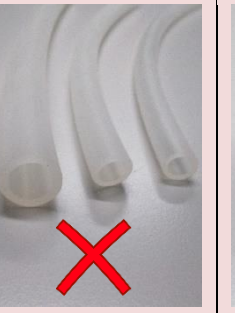

Bedienung und Nutzung vom ASECOS-Auszugsgefahrschrank Typ V-Line



7.2 Cooling water module/cooling water-emergency switch

The cooling water modules are unfortunately in poor technical condition. If water suddenly breaks out of these cooling water modules due to corrosion or due to unsecured cooling water hoses, close the main cooling water valve immediately. It is placed in the vertical duct (Steigzonenschacht) in the corridor in front of the laboratory unit and is indicated with a red dot. The cooling water valve itself is also marked with a red dot. You can open the door with the red point with your personal laboratory key.

Proper tubing of cooling water systems:

Allowed	Allowed	Allowed	Forbidden	Forbidden
PVC-tubes	PVC-tubes with mesh	Polyurethane tubes	Silicone tubes	Vacuum or natural rubber tubes
				

7.3 Problematic Gas Module

With the gas module, you can only set the gas pressure but not the gas volume. For exact gas volume regulations, metering valves (pictured below) are available at the HCI shop. These must be attached to the gas module. One of the most common incidents is over-pressure, which occurs when glass devices are directly attached to the gas module.



7.4 Protection Against Excess Pressure in the Apparatus

Several accidents at the HCI, which have nearly ended in worst-case scenarios, have been caused by over-pressure of gas pipes or as a result of over-pressure accumulation in various apparatus. Therefore, we urgently suggest the use of safety valves for all hazardous and pressure delicate apparatus. In particular, we recommend the safety valves from «Herose» which are obtainable in different variations on www.lorch.de. The safety valve can, among other things, be installed easily on Lüdi-fittings. The in the HCI-Shop available safety valve for neutral gas and vapour is opening at 0.3 bar over-pressure (check the website for details). The Lüdi-fittings can also be obtained from the HCI-shop. Applications: Over-pressure protection of gas pipes in flash-chromatography-columns, over-pressure protection of gas pipes in alkali metal distillation, over-pressure protection in cases of failure of the gas modules or gas amount regulator in the media column etc. The safety valve should not be applied with vacuums (e.g. the Schlenk line).



8. Waste Management

8.1 Disposal in the laboratories

Disposal in the laboratories is an issue that the staff/students do not like. Because this topic is so unpopular, there are many risks present that could cause accidents. The disposal guide for waste management can be found in the Safety and Environmental Manual for the HCI Version 2024.



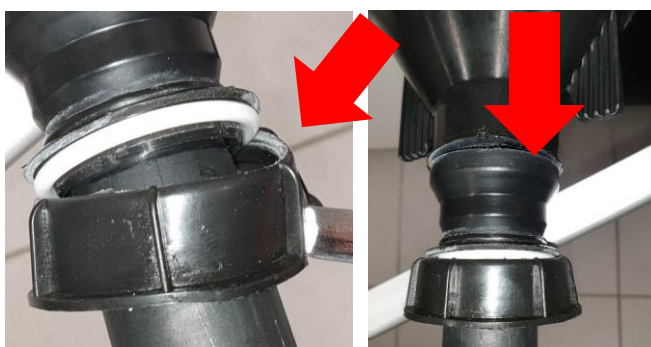
8.2 Solvent waste disposal cupboard

In these solvent waste hazard cabinets, the solvent waste is collected in 10 L canisters (electrically conductive), separated between halogen-free or halogen-containing. Filled waste canisters (for labeling, see the Safety and Environmental Manual for the HCI Version 2024) must be closed – as long as there is no sign for a chemical reaction or overpressure formation – and transported using a transport trolley with a collection tray to the special waste disposal point. If a canister shows any sign of chemical reaction or overpressure formation, it must be placed in a laboratory hood without any experiments. For further instructions, sgu-incidents@ethz.ch from the SSHE department must be contacted. If an uncontrolled reaction occurs with a potential of bursting the canister, inform 888. For more details, see the Safety and Environmental Manual for the HCI.



Users of these solvent waste hazard cabinets must ensure that...

- the drain funnels with overflow protection are correctly and tightly screwed onto the waste canisters. If you see cracks or leaks in the drain funnel system, please replace it (are available in the HCI-Shop)



- the canisters with the funnels are correctly placed in the safety drip pan in the hazard cabinet
- the earthing clamps are correctly attached to the drain funnels
- the cabinet drawer including your safety drip pan is kept clean. Any solvent spills are cleaned up immediately



Further safety instructions:

- Solid materials (e.g. silica gel, slag, glass fragments, syringe needles, magnetic stirring rods) as well as acids, bases, special poisonous substances etc. must never be disposed in the solvent waste canisters!
- All liquids that have special risk and/or odor emission potential (e.g. butyl lithium, benzyl chloride, mercaptane, thioles, etc.) must never be disposed of in the solvent waste canisters.
- Dangerous liquid waste must always be disposed by using a dedicated canister (available in different sizes up to 10 L) and be placed in a well ventilated location for interim storage, e.g. in a laboratory hood where no experiments are running.
- In case of technical issues or any deficiencies, immediately contact our e-mail chab-safety@chem.ethz.ch.

9. Tox-Lab D312 www.toxlab.ethz.ch

For dangerous experiments please use the toxicology laboratory D312. In order to work there or to book a fume hood, register online:

- Open the link www.toxlab.ethz.ch
- Log in (if registered)
- After the log in: book the desired fume hood and describe the planned work briefly
- Your enquiry will be confirmed automatically by e-mail
- As soon as your enquiry has been checked and approved by the lab safety team, you will receive a confirmation by email.

Note: If you are planning dangerous experiments in the tox lab, you must first submit a **risk assessment**. The SU management or SSHE department will check this. Only after this has been checked and approved by us may you use the tox lab.

10. Central distillation room D310 www.distillation.ethz.ch

The **central distillation room** for distillation of the technical solvents in 10 litre scales is available for all staff of the HCI. In order to be allowed to work in the distillation room you need special instruction from the Superuser.

11. Tox-Lab C174 (contains a bio lab BL2) www.c174.ethz.ch

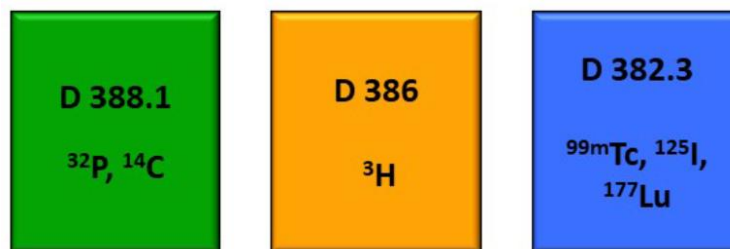
For **dangerous biological experiments** please use the toxicology/cytostatic laboratory C174. In order to work there or to book a room, register online:

- Open the link www.c174.ethz.ch
- Log in (if registered)
- After the log in: book the desired fume hood and describe the planned work briefly
- Your enquiry will be confirmed automatically by e-mail
- As soon as your enquiry has been checked and approved by the lab safety team, you will receive a confirmation by email.

Note: If you are planning dangerous experiments in the BL2 or cytostatic lab, you must first submit a **risk assessment**. The SU management or SSHE department will check this. Only after this has been checked and approved by us may you use the BL2 or cytostatic lab.

12. HCI Isotope labs www.hci-isotopelabs.ethz.ch

In the HCI building experiments with open ionizing radiation have to be performed in designated radioactivity laboratories (C-labs). In total there are three departmental isotope-specific labs in the HCI which are located in the D-floor between the 3rd and 4th finger (lab numbers: D388.1, D386 and D382.2/3):



These C-labs are equipped with a variety of radioanalytical instruments (for more information please see section radioanalytical instruments), radiation protection measuring equipment and shielding material. Entry to these C-labs is only admitted to people who have received an appropriate introduction (including education in radiation protection). Please contact the radiation protection officer Dr. Stefan Gruber, if you want to work with open ionizing radiation, for an initial assessment of the feasibility of the experiment and read carefully the "Guidelines for working with radioactive substances in the HCI Isotope Labs".

Services:

- Education of staff and students in radiation protection
- Organization of triage/incorporation measurements & person dosimetry
- Radioanalysis of liquid samples (liquid scintillation counting and γ -spectrometry)
- Wipe-tests
- Lend out of closed radiation sources and radiation protection measuring devices (Geiger counters) for teaching and research

13. Information for students

All students will receive the information leaflet from the HCI-shop. The leaflet includes the regulations on taking over / leaving the laboratory as well as the settlements.

14. Recreation areas

- **Roof terrace HC2:** For all staff in the HCI, the roof terrace of HC2 on the J-floor is available. The roof terrace is covered and the railing is secured with artificial glass. There is a couch and a barbecue, as well as benches and tables. Large events must be reported to the house warden in advance. It is forbidden to grill in the entrance to the corridor as the smoke could trigger the fire alarm. Access to the roof terraces of HC1, HC3, and HC4 is forbidden. Access to the HC5 is only possible if agreed upon by the D-MATL.
- **Recreation rooms:** There are recreation rooms with a kitchen and a washbasin on all floors in the middle of the finger corridor (via crossing the middle stairwell corridor).

15. Location of the defibrillators in HCI

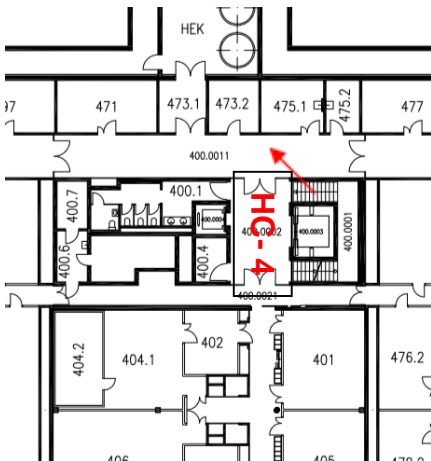
HCI E 30:



HCI D 379.1:



HCI E 473.2:



Confirmation for the receipt of the safety introduction**Empfangsbestätigung für die persönliche Sicherheitseinführung:**

Arbeitsgruppe _____

Hiermit bestätige ich (Vorname, Nachname) _____

den Erhalt der persönlichen Sicherheitseinführung am _____

von (Vorname, Nachname) _____

Ort / Datum Unterschrift des Arbeitnehmers _____

Hinweis: Die unterschriebenen Bestätigungen werden durch die jeweilige Arbeitsgruppe archiviert.**Acknowledgement of receipt for personal safety induction:**

Workgroup _____

I hereby acknowledge (first name, last name) _____

the receipt of the personal safety briefing _____

from (first name, last name) _____

Place / Date Employee's Signature _____

Note: The signed confirmation is stored in the respective workgroup.