**Introduction to laboratory facilities at VHC**

 **Recommendations from VHC laboratory group**

**Important phone numbers:**

**Fire department, ambulance and police** 112

**Toxic chemicals - hot line** 112 or 08-33 12 31

**Akademiska hospital** 611 00 00

**Eye clinic** **Akademiska hospital** 611 00 00

**SLU** 67 10 00

**Trouble with the building**, 68 32 04 electricity, water or sewerage

**Suspicion of crime or thefts** 67 30 40

**The police** 114 14

**Securitas**  67 30 40

**Emergency situations**

***In case of fire***

There are several repeating signals from the alarms announcing fire.

In each corridor there is fire emergency equipment: foam extinguishers and CO2-fire extinguishers. The latter type is used if electrical equipment is on fire. There are also fire blankets in each corridor. You should know where the fire extinguishers are located and have read the escape plan, which is located next to the fire extinguishers.

In case of a larger fire you must do the following:

**SAVE** first of all those in imminent danger. Make sure nobody is left in the lab.

**SOUND** the alarm

* By (breaking the glass and pressing the alarm button) or call the fire department (00/112).
* When the operator replies be prepared to answer the following questions:
* Location of fire (VHC house and floor)
* If there are any people at risk
* Who is calling - from where you are calling
* Sounding the fire alarm automatically alerts the fire brigade.

**WARN** others who are threatened by the fire.

**EXTINGUISH** the fire if it is possible.

**ESCAPE**

* Escape through the nearest escape route and go to assembly point.
* Do not use an elevator
* Close the doors to prevent fire and smoke from spreading.
* When the fire department is notified, evacuate the lab.
* The meeting place (where everybody must go immediately in order for a roll-call) is near the bus stop at Ulls väg 26

***In case of eye damage***

**Always use eye-protection (glasses, screen) when working with dangerous material.**

**Alkali is more hazardous than acid**

**If you spill or squirt anything into your eyes do the following**:

* Hurry to the nearest eye-shower equipment
* Yell for help
* Keep your eyes open
* Do not rub your eyes with your hands
* Flush your eyes for 5-10 minutes. If you have NaOH in your eyes, flush for a longer time
* Go to the eye-clinic entrance 70 (ground floor, see accompanying sketch), which is staffed during workdays 7.30 to 17.00 (Mo-Fr). At other times, go directly to the ward 35D or to casualty, entrance 60.

**Colleagues**

* Help the victim to the eye wash equipment.
* Help the victim direct the flow of water and hold the eyes open during the flushing.
* Arrange transport to the hospital.
* Phone the hospital.
* If possible, apply (drop wise) sterile physiological eyewash solution to the injured eye during transport to the hospital
* Take the victim to the hospital, see above. **General safety information is given at the introduction to your local laboratory facilities**.

**Working with chemicals**

Chemicals pose a potential threat to our health and to the environment. Included in the term chemicals are all proteins and other bioactive substances we use in our work. All chemicals in use or stored at the department should be registered in the KLARA database. Each division has separate registries and passwords for reading the information in KLARA, which should be distributed to everyone working in the group or corridor. KLARA contain safety data sheets for all registered chemicals. Knowledge about potential dangers is essential if you want to minimize the risks of working with chemicals. Information on safety of specific chemicals and how to protect yourself and your colleagues is provided in material safety data sheets (MSDS). You should read the information and evaluate risks when planning your work, once adverse events happen it is too late. The risk evaluation should include whether you need to use protective goggles, thick rubber gloves, a fume hood, and whether your solvents are easily ignited etc. Before start working you should also consider if you need special arrangements for the waste you produce.

***Common hazardous chemicals***

The use of **PMSF** (Phenylmethylsulfonyl fluoride) is not allowed within VHC. As replacement the less toxic and more stable Pefablock SC (Roche applied science) is recommended.

**Chloroform** can cause irritation to the skin, eyes and throat. Inhalation of high doses of chloroform causes dizziness and sickness, which can lead to unconsciousness, and at the worst death. It is also hepatotoxic and a suspected carcinogen.

**Phenol** has a corrosive effect on the skin and the eyes and the vapor can give rise to severe lung damage. If someone has poured phenol on her/his skin, first flush with a large amount of water, then apply PEG 400.

**Acrylamide** is a colorless, odorless powder or white crystals. In the lab you most often handle it in liquid form. It can cause burns in the respiratory tract, drowsiness, affect the central nervous system etc.

**Formamide** is a colorless, faintly yellow liquid. It is hazardous if it gets in contact with your skin or if you inhale it. Some symptoms are: burns in the respiratory tract and skin, and dizziness. It may cause spleen and liver damage and allergic reactions. It may also cause fetal damage.

**Ethidium bromide** is not allowed in VHC. As replacement the less toxic Gelred can be used.

**All of the chemicals above should be treated with care and be handled in the fume hood.**

***PRIO – A tool for risk reduction of chemicals***

The following tables provide an overview of the substance properties that characterize the substances at the two levels of prioritization, phase-out substances and risk reduction substances. Observe that regulation KIFS 2005:7 will be replaced by CLP

[**http://www.kemi.se/en/prio-start/criteria/overview-table**](http://www.kemi.se/en/prio-start/criteria/overview-table)

**Poisons Information Center 010-4566700 or 112 (ask for Poisons Information Center)**

**Basic services at VHC**

***Dish washing routines/Glassware handling***

See the appropriate document for your local lab.

Also read this document [Diskrundan.doc](https://arbetsplats.slu.se/sites/vhfak/vhi/vhc/_layouts/WordViewer.aspx?id=/sites/vhfak/vhi/vhc/CENTRALDISKEN/Diskrundan.docx&Source=https%3A%2F%2Farbetsplats%2Eslu%2Ese%2Fsites%2Fvhfak%2Fvhi%2Fvhc%2FAnsvarsomr%C3%A5den%2520VHC%2520%2D%2520sidor%2FCENTRALDISK%2Easpx&DefaultItemOpen=1) (in Swedish)

***Waste***

Hazardous waste - see document [SLU-312 Rutin för avfallshantering i VHC-farligt avfall](https://arbetsplats.slu.se/sites/ledningssystem/Publicerat/SLU-312.docx) (in Swedish)

A room for leaving paper, plastic, metal, cardboard, batteries, etc. for recycling is located on floor 3, room 53155, floor 4, room 54646 and on floor 5, room 55134.

***Goods***

When ordering goods, packages should be delivered to

SLU VHC Godsmottagning

Almas Allé 4C

756 51 Uppsala

Inform suppliers that packages must be marked with name of recipient and room number. For more information on goods, see <https://internt.slu.se/en/support-services/campus-and-buildings/vhc/service-in-vhc/for-employees/2/>

***Fault reporting***

For reporting things that are not working properly, e.g. lighting, passes, cleaning, goods, damage, etc., see <https://internt.slu.se/en/support-services/campus-and-buildings/vhc/service-in-vhc/for-employees/fault-reports/>. You can also request help with a service.

**The laboratories**

The Environmental guide VHC should be read before starting laboratory work. <https://internt.slu.se/en/support-services/campus-and-buildings/vhc/service-in-vhc/for-employees/environment/environmental-guide-vhc/>

Outside each laboratory there is a list of the persons in charge of the different rooms/common areas.

Instruments in VHC have responsible/contact persons who should be contacted before use of the instruments. The name of the person responsible for the instrument is posted at or close to the instrument**.** Inform the responsible person immediately if there has been a problem with the equipment you have used. Observe that for some equipment/working areas you are obliged to receive a 'driver's licence' from the responsible person and/or to sign in the logbook after completion of your work. Instruments should be cleaned thoroughly after usage.

***Important lab rules***

* Perform risk analyses before starting the lab work.
* Lab coat should be used during laboratory work. Leave this coat in the lab when you leave for e.g. a coffee break or similar. Routines for disposal of dirty lab coats will be explained.
* If you use gloves for protection, do not keep them on when you open doors etc.
* Use all possible UV-protections, especially for your eyes, when handling UV light.
* Chemicals stored or in use, must be listed in the KLARA register. All containers of chemicals must be labeled with the receiving date (yymmdd). If you store chemicals for a long time you must control the actuality of the labeling.
* You must always label all bottles and beakers with the proper chemical name of the content and pictogram. You should pour out or send for destruction, solutions no longer in use. It is very important that you, before leaving your department, clean out all your chemical solutions.
* You should minimize the amount of inflammable chemicals stored in the open laboratory environment. Up to 10 liters of inflammable solvents (Swedish Brandklass 1, 2a, 2b and 3) may be stored in the open laboratory space for each corridor. Larger volumes, up to 50 liters, must be stored in specially designed ventilated and fire protected cupboards.
* You must use eye protection when handling acids or bases. Contact lenses should not be used when you work with chemicals.
* Never pipette by mouth.
* Do not eat or drink in the laboratory.
* Wash your hands frequently.
* Benches should be kept clean and tidy. When you leave the lab at the end of the day close the windows, switch off the lights, and close the doors. Instruments that are being run overnight must be marked with the name of the user and the date.
* Order new material before it runs out.
* Pasteur pipettes, and other sharp items should be placed in an empty plastic bottle to be marked with the label “smittförande avfall” or “stickande/skärande”. When full placed sealed in the waste box.
* When hazardous waste box is full, seal the carton, label with what it contains, place it inside the laboratory and call "Godsmottagningen" (1169) and ask for the retrieval of the waste material.

***Liquid nitrogen (LN2) and dry ice (solid CO2)***

Handling of liquid nitrogen is potentially hazardous, mainly due to the severe freeze injuries that might occur if drops e.g. hit the eyes. Therefore, whenever pouring liquid nitrogen, it is mandatory to wear a protective shield for your face or tight protection goggles.

Further, use only vessels appropriate for LN2. Never try to store liquid nitrogen or solid CO2 in an airtight vessel. Whatever temperature you place the vessel in; nitrogen will evaporate and build up a pressure inside the vessel, which might cause an explosion.

Do not use the elevator when transporting liquid nitrogen or solid CO2. Never handle LN2 in small facilities without suitable ventilation. Handling of large volumes of LN2 demand O2 alarm.

***Fume hoods***

Procedures for work in the fume hood will be pointed out at the introduction to your local laboratory facilities. Fume hoods have automatically regulated ventilation and door position.

Please make sure that you close the fume hood window after use to save energy.

***Ice machines***

There are ice machines on floor 3, room 53529 (KV) and room 53539 (BVF) and at floor 4 at HGEN next to the freezers in the corridor (room 54548).

***Ultrapure water***

Equipment for ultrapure water is located on floor 3, room 53529 (KV), and on floor 4, room 54538 and 54537 (HGEN)

***Special laboratories***

- LABORATORY ANIMALS

Work with laboratory animals must be done in the animal facility at VHC and only after special permission from the Animal experiment committee has been granted. Entrance to this facility is allowed only after participation in a special course.

Contact: VHC-Reception

Phone: 018-673010 or mail slulabdjur@slu.se

- RADIOACTIVE WORK

See the appropriate document for your local lab.

**Contact Radioactive safety:**
maria.naucler@slu.se
Tel. 018-67**1924**

**Committee for Radioactive safety:**
stralsakerhetskommitten@slu.se

**SLU expert on Radioactive safety:**
Enn Maripuu
stralsakerhetsexpert@slu.se
Tel: 018-611 55 60

- WORK WITH MICROORGANISMS

Follow the local rules adapted to each lab.

Laboratory work with genetically modified microorganisms (GMM), like bacteria, fungi, viruses or protozoa, requires permission from “Arbetsmiljöverket”. In general, plasmid cloning and work with *E. coli* and yeast is considered as “F”-activity, whereas work with replication competent viruses is classified as “L”-activity or higher. For more information how to classify your own work see http://www.av.se/teman/gmm/. It is important to know that the group leader is responsible for the work carried out with a GMM in his/her laboratory. Each GMM used in the group has to be classified according to its potential hazard to health and the environment. The documentation from such risk assessments has to be archived.

Used glass pipettes should be placed in buckets with disinfectant. Contaminated glassware or plastics that will be reused must be disinfected or placed in steel boxes before being sent to the washing department. Disinfection is normally done by submerging or filling the flask, beaker etc. with an active Virkon solution or a 1% SDS solution for approximately 30 min. Contaminated solutions should be similarly disinfected or autoclaved before being poured out into the sink.

Before and after completion of your work, clean the working area with 70% ethanol and wash your hands thoroughly.

In case of an accident, e.g. a spill of large volumes of medium, the liquid should be absorbed and the area extensively cleaned with an active Virkon solution or 70% ethanol. Vermekulit, which can be obtained from VHC-Service, is excellent for absorbing contaminated liquids. During the decontamination period, appropriate measures to seal-off the contaminated area should be taken.

- WORK IN THE CELL CULTURE ROOM

Follow the local rules adapted to each lab.

Do not enter the cell culture room with street shoes!

Disinfect the hood with 70% ethanol before and after your work.

Use the highest airflow when you are working in the hood.

All work material (pipettes, boxes, dishes etc.) is to be stored in a special cupboard. Take out what you require and put everything back after use. Observe that all items placed inside the hood will disturb the airflow and reduce the proper functioning of the sterile bench.

Mark all your medium bottles/culture plates with name and date. If you have any infection in your cell culture, immediately remove infected cultures, disinfect the culture vessel before discarding, clean the incubator and inform your colleagues. Use Virkon or sodium hypochlorite for disinfection.

After your work is done, remove all items from the hood and disinfect with 70% ethanol the working area including the suction tubing.

Used glass pipettes are placed in buckets nearby the hoods.

Turn off the gas and vacuum if used.

Turn off the microscope and put on the dust cover.

Dirty glassware and empty pipette boxes are to be sent back to the central washing up unit. Find out the dishwashing rules in the cell lab that you are using.

- WORK WITH ANTIBIOTICS

It is important to avoid emissions of antibiotics into the eco-system. A distinction is drawn between antibiotics with a short (easily degradable) and a long (stable) environmental shadow. The former may be poured down the sink in the small quantities used at VHC, since they will break down before reaching the eco-systems. The latter require special treatment (boiling/autoclaving/pH treatment) before being poured down the sink.

Antibiotics can always be treated as “Hazardous waste”. Antibiotics that cannot be destroyed by boiling, autoclaving or pH treatment **must**be deposited as “Hazardous waste”. If there is no contamination of infectious agents the waste can be deposited as "Pharmaceutical waste".

In addition, there may be reason to deposit special antibiotics as “Hazardous waste” in cases where characteristics are unknown or where the antibiotic is the last possible treatment for multi-resistant bacteria (e.g. **Vancomycin**). Antibiotics used as pharmaceuticals for animals and solid antibiotics (ampoules, tablets etc.) should be handled as "Pharmaceutical waste", including cytostatic.

VHC: s rules on handling specific antibiotics are as follows:

Beta-lactams: **Penicillin**, **Ampicillin**, **Carbenicillin** are easily degradable and can easily be poured down the sink.

Aminoglycosides: **Gentamycin**, **Neomycin**, **Streptomycin**, **Geneticin** (G418) are to be autoclaved (or boiled) before being poured down the sink. **Kanamycin** is not destroyed by normal autoclaving and is handled as infectious waste.

Others:

* **Chloramphenicol** tolerates boiling but breaks down quickly in the environment. May be poured down the sink.
* **Amphotericin**=Fungizone is to be autoclaved (or boiled) before being poured down the sink.
* **Erythromycin** is easily degradable and can be poured down the sink.
* **Puromycin** is to be autoclaved (or boiled) before being poured down the sink.
* **Sulphadoxine** is to be autoclaved (or boiled) before being poured down the sink.
* **Tetracycline** is to be autoclaved (or boiled) before being poured down the sink.
* **Blasticidin** is to be treated as "Infectious waste", characteristics unknown.
* **Ciprofloxacin** is to be treated as "Infectious waste", tolerates autoclaving.
* **Enrofloxacin** is to be treated as "Infectious waste".
* **Nalidixic acid** is to be treated as "Infectious waste".
* **Vancomycin** is to be treated as "Infectious waste" or, if possible, substituted. Highly stable, last antibiotic that is effective in treating multi-resistant staphylococci.
* **Zeomycin** is to be treated as "Infectious waste", characteristics unknown.
* **Zeozin** is to be treated as "Infectious waste", characteristics unknown.