# Laboratory safety and management

Department of Molecular Biosciences, Wenner-Gren Institute (MBW)

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# 1. Introduction

This document will give guidelines about the rules and working routines at the department, but it should not be regarded as complete. For more information about laboratory safety at the department please refer to the documentation available at the department server: PUB>LABORATORIESÄKERHET – laboratory safety.

During your first week at the department, you must read this document and then sign the laboratory safety form (found on the last page of this document and also available on the MBW homepage) to confirm that you have received and understood the information. If you have any questions, please ask your group leader or the MBW lab manager. We also encourage you to participate in the "Introduction to New Employees" information session, conducted by the MBW lab manager and HR Officer. This session covers laboratory and fire safety and provides an introduction to the services offered by the Technical and Administrative group. Additionally, it is a great opportunity to meet new colleagues. The dates and times for this session can be found in the MBW calendar.

The highest decision-making body at the Department of Molecular Biosciences is the Department Board, which includes representatives from researchers, PhD students, and technical/administrative staff. You can read more about MBW's organization and decision-making processes here. The Head of the Department is responsible for all activities within the department, including the work environment and safety regulations. However, the Head of the Department can delegate responsibilities. More information regarding delegation can be found in the document “Work Environment at MBW and Assignment of Work Tasks” (available on the MBW homepage).

It is the responsibility of the group leader to familiarize new employees with the safety regulations and provide the necessary information and support to ensure that work can be carried out safely. The group leader is also responsible for continuously and systematically identifying and assessing risks in the workplace, both psychosocial and physical. Risk assessments are performed and documented in accordance with Swedish law and the procedures established by Stockholm University and the department.

Everyone working in the laboratories at MBW is responsible for planning and conducting their work safely, without causing harm or disturbance to others or the environment, both within and outside the laboratory. This includes maintaining good order in work areas, handling equipment properly, and following safety regulations. The group leader and/or the person responsible for specific equipment will provide instructions, but it is everyone's responsibility to use the equipment correctly. If you have any questions or need to discuss laboratory regulations, do not hesitate to ask others, especially your group leader.

### 1.1 Contact information

Below is a list of contact persons at MBW, involved in different aspects of safety and security:

| | |
|---|---|
| **Head of department** | Neus Visa (neus.visa@su.se) |
| **Lab manager** | Maria Ekoff (maria.ekoff@su.se) |

| | |
|---|---|
| **Work environment and environment committee** | HR officer at MBW (Van Le Sabrie) |
| **Safety representative** | Martin Säflund (martin.saflund@su.se)<br>Munira Akhter (munira.akhter@su.se)<br>Lilly Levin (lilly.levin@su.se) |
| **Management flammable products** | Neus Visa (neus.visa@su.se) |
| **Evacuation leaders** | Read more here |
| **KLARA** (registration and management of chemicals) | Kicki Ryman (kicki.ryman@su.se) |
| **Radioactive work safety representative** | Andrzej Wojcik (andrzej.wojcik@su.se) |
| **Waste management** | Monika Björk (monika.Bjork@su.se) |
| **Biosafety representative SU** | Ann-Kristin Östlund Farrants (anki.ostlund@su.se) |

## 2. Aspects of safety and protection

### 2.1 General considerations

- Discuss the local rules, including safety aspects, for your laboratory with your group leader.
- It is not allowed to eat, drink or bring food or drinks into the laboratories. Avoid touching the face when working in the laboratory to avoid injuries or contamination.
- Wash your hands often and always when you leave the laboratory to avoid contaminations in the offices and lunch rooms.
- Never use gloves on door handles etc. outside the laboratory.
- The floors in the laboratories should be kept free from all objects, including electrical wires and devices.
- In order to assure good ventilation and the function of fume hoods, the windows in the laboratory should be kept closed.
- Never enter the elevator with hazardous chemicals, liquid nitrogen, gas or hazardous waste.
- Lab coats should be used when working in the laboratories. The lab coat should not be used in common areas outside the laboratory, including lunch rooms. The need for other personal

equipment (gloves, protective eye-glasses, full-face visor, and respiratory protection) should be considered in every situation.

- Hazardous substances must be handled in a fume hood.
- Last person to leave the laboratory or office: switch off the light and instruments that unintentionally have been left on. Make sure that the windows are closed and that doors are locked.
- Children must not be taken into the laboratories.
- Smoking is not allowed indoors and it is restricted outdoors at Stockholm University.
- Pets are not allowed at Stockholm University.

### 2.2 Risk assessments

A written risk assessment should be conducted to prevent personal injuries, health issues, and environmental impact while ensuring legal compliance. The department has general templates to be used in i) regular operations in the lab, reorganization measures and construction ii) risk to exposure to chemicals, iii) biological substances and iv) in case of pregnancy/nursey. It is your responsibility to understand the risks, and follow the instructions provided by the risk assessment and your group leader.

The department periodically assesses the risks associated with our overall activities in the lab to minimize any impact on the surrounding environment.

**Legislation:** see Table 1.

**Contacts:** group leader, lab manager (Maria Ekoff)

### 2.3 Work with allergenic chemicals

Allergic reactions can be caused by some chemical products and certain processes, leading to skin allergies, asthma, or breathing problems. Allergenic chemicals are listed in KLARA. There are special requirements to take into consideration when working with allergenic chemicals, these may include training and medical check-ups (AFS 2023:10 8 §4; AFS 2023:15). Please refer to your group leader for details.

**Contact**: group leader, KLARA manager (Kicki Ryman), Chemical compliance officer at SU (Hanna Gustafsson)

### 2.4 Work with laboratory animals

Work with laboratory animals might involve a risk of developing allergies and employees should therefore be offered a medical exam prior to beginning their work and subsequently, if symptoms arise that indicate an allergy (arbete med försöksdjur).

**Contact**: group leader

### 2.5 Working alone in the laboratory

Undergraduate students, including those doing Degree Project (*examensarbete*) are not allowed to work in the laboratories, unless someone else from the same research group (PhD student, supervisor, group leader) is present (in the laboratory or in the office).

Avoid to perform any precarious steps in an experiment when you are alone in the laboratory. Always make sure that someone knows where you are, if you plan to work evenings or weekends. Tell someone if you will work with liquid nitrogen (LN2) or get samples from LN2 tanks alone.

### 2.6 Pregnancy

Special precaution has to be taken during pregnancy and during breast feeding. Discuss with your group leader to ensure safe working conditions. Centrum för arbets-och miljömedicin (at Stockholm Health Care Services) gives advisory service about risks in working environment and environment during pregnancy. **If you are pregnant, a written risk assessment is requiered**.

For more information: https://www.camm.regionstockholm.se/patientmottagning/arbets--och-miljomedicinska-mottagningen/om-du-ar-gravid/

**Legislation:** see Table 1.

**Contacts:** group leader, Human Resources Officer at MBW (Van Le Sabrie).

## 3. Information concerning accidents

### 3.1 In case of personal injury

First-aid equipment, emergency eye washes and showers are available in corridors and in laboratories. Be sure you know where to find and how to use them.

There are several automated external defibrillator-AED (*Hjärtstartare*) at campus. The closest AED is found at Arrhenius, house E- entrance, floor 3.

AEDs are designed to be easy to use, with simple audio and visual commands. When you remove the AED from the cupboard, the alarm goes to the section for Safety and Security and to the external alarm center at the University. Call **112** and, if possible, send out a person to meet the ambulance.

### 3.2 In case of fire/danger

Emergency exit plans are posted in every corridor. There you will find information concerning emergency exits, location of fire extinguishers, alarm buttons, blankets etc.

For further information, please read the documents here.

### 3.3 Evacuation

Review the emergency exit plan for the corridor where you work. The designated gathering point for MBW is the field in front of the Arrhenius laboratories, outside G-salen (Hans G Boman-salen). If any colleagues are missing at the assembly point, inform your evacuation leader (utrymningsledare). See more information here.

### 3.4 Important telephone numbers

- In emergency situations:
  - **SOS Alarm: 112**
  - **SU-security and safety: 08-16 22 16 or 08-16 42 00**
- **SU-security guards: 08-16 42 00**
- Stockholm University (SU) switchboard: **08-16 20 00**.
- For health information and contacts (Vårdguiden): **1177**.
- SU Student heath: **08-674 77 00**
- Health care company (Avonova): **08-120 125 00**
- Closest hospital, Danderyd Hospital: **08-123 550 00**.
- For poisoning-related inquiries, contact the Swedish Poisons Information Centre (*Giftinformationscentralen*): **010-456 6700** (Mon-Fri 09:00-17:00)**.** In case of emergency poisoning: dial **112**, the emergency number in Sweden, and ask for Poison Information (24-hour service).
- In case of eye injury, call **08-123 231 00** if you experience problems and want to seek care**.** The St. Erik Eye Hospital (Eugeniavägen 12, Solna) is open every day between 8 am and 4 pm and takes care of accidents and other acute sight-threatening conditions.

### 3.5 How to report accidents/incidents

The IA system (Work Environment Information System) is the University's digital platform for reporting incidents at work, incidents on the way to or from the workplace, occupational injuries, crimes, occupational illness and environmental deviations.

Link to IA: Rapportering i IA-systemet

### 3.6 Safety and security App – for your safety

There is a security app available for students and staff at Stockholm University. In the app, the user gets a shortcut to the incident reporting (IA) system, contact details for the security function, and notifications with security information relevant to those on campus.

Download "SU säkerhet" from the App Store (iPhone) or Google Play (Android).

## 4. Common equipment

Before using shared equipment, consult your group leader and the designated responsible person for that specific equipment to receive proper instructions on its use and maintenance. Report any broken or malfunctioning equipment to the responsible person or to service.mbw@su.se.

A list of common equipment and contact persons can be found at the department server PUB>APPARATUR – lab equipment>APPARATLISTA

See more information here.

# 5. Handling of chemicals

### 5.1 General information

Everyone working with chemicals needs to be aware of the risks and procedures are needed in order to prevent and avoid accidents. More detailed information is available in the Chemical Management Procedure. Chemicals are classified and labeled according to their potential effects on human health and environment. The classification is used to determine the adequate safety precautions needed. It is important to understand that lack of classification and labeling does not necessarily imply that a specific chemical is harmless. It might implicate that existing toxicological data are not sufficient to meet current criteria for classification and labeling used by the authorities.

Always store and handle chemicals according to the regulations, see the Material Safety Data Sheet (MSDS). It is also important to know if chemicals can be stored together of if they need to be stored separately. Information about chemicals held at MBW and Stockholm University, MSDS for chemicals, and template for risk assessment are available in the KLARA system (Stockholm University´s system for managing chemicals).

More information about KLARA, and how to use the system:

https://medarbetare.su.se/en/support-and-service/tools-and-systems/safety-and-environment/klara---system-for-managing-chemicals

### 5.2 General considerations

- Before you start working; read, understand and plan your work according to the risk assessment and information provided by your group leader.
- Be aware of that during routine work there is a possible increased risk for accidents and mistakes, due to the gradually created feeling of skillfulness and/or monotony.
- Flammable chemicals are stored in designated ventilated cabinets, optimally in fire safety cabinets. Flammable chemicals that need to be stored cold, must be stored in spark-free fridges or freezers.
- Do not store hazardous chemicals above chest height.
- Fume hoods must not be used for permanent storage of chemicals, since the containers obstruct the airflow.
- All bottles, flasks, tubes, beakers etc. containing chemicals or preparations should be properly and clearly labeled with content, name of user and date. If the content is toxic, flammable, explosive or corrosive, this should also be CLP labeled.
- In case of spill, effective absorbents must be available for immediate use.
- Exicators under vacuum should only be opened in the fume hood.
- Never return chemicals, once taken out, to their original containers.
- Avoid exposing chemicals and solvents to direct sunlight.
- Work safely when transporting chemicals.

### 5.3 Chemical of special concern

- **A-substances** are chemical carcinogenic substances that are forbidden to handle. In exceptional cases, these substances can be handled after getting legal permission from Swedish authorities (Arbetsmiljöverket in this case). List of A substances: https://www.av.se/halsa-och-sakerhet/kemiska-risker-och-luftfororeningar/tillstand/kemitillstand/amne---grupp-a/
- **B-substances** are carcinogenic and/or sensitive (may cause serious damage to skin or respiratory track) compounds can be only be handled after getting legal permission from Swedish authorities (Arbetsmiljöverket). List of B substances: https://www.av.se/halsa-och-sakerhet/kemiska-risker/tillstand/ansok-om-tillstand-for-kemiska-amnen-grupp-b/?hl=B-ämne
- **CMR-substances** are chemical substances classified as carcinogenic, mutagenic and/or toxic for reproduction. Hazard statements H350 (may cause cancer), H340 (may cause genetic defects), H360 (may cause harm to fertility or to the unborn child). These compounds can be handled after having preformed a documented investigation, showing that it is technically impossible to replace the product with a less harmful alternative. After the investigation, a risk assessment is demanded to identify potential work risk and prevent them. Risk assessments for CMR substances are performed in KLARA.
- **Allergenic substances** have hazard statements: H317 (may cause an allergic skin reaction), H334 (may cause allergy or asthma symptoms or breathing difficulties if inhaled). Special instructions and risk assessment should be provided by your group leader before handling allergenic chemicals.

**More information about routines for handling of chemicals at Stockholm University:**

kemikalier (SWE)

Legislations: see Table 1.

## 6. Working with biological material

### 6.1 General information

Biological agents (such as viruses and bacteria), genetically modified organisms (GMO) and genetically modified microorganisms (GMM) are classified into four risk groups, according to their ability to infect humans and the consequences of an infection. The risk classification is used to determinate the level of security, required to protect human health and the environment when working with these biological materials. Laboratories are divided into four containment levels, depending on which protective measures they contain, the so-called biosafety level (BSL 1, -2, -3, -4). The various containment levels have been adapted for the use of agents with similar risks (risk group classification).

### 6.2 General considerations

- Before you start working; read, understand and plan your work according to the risk assessment and information provided by your group leader.
- Biological agents, GMM and GMO must be clearly labeled and stored safely in designated freezers, fridges and incubators.
- In case of spill, effective decontamination agents must be available for immediate use.

- See also working routines in section "*Handling of chemicals"*, paragraph 5, General considerations.

**Information about Biosafety at Stockholm University:**

https://medarbetare.su.se/stod-och-service/sakerhet-och-beredskap/laboratoriesakerhet

**Information about handling GMM and GMO at Stockholm University:**

**GMM (SWE)**

**GMO (SWE)**

**Legislations**: see Table 1.

**Contacts**: group leader, Biosafety representative SU (Ann-Kristin Östlund Farrants)

### 6.3 Research on human material or personal data

Ethical approval is required for studies involving human material or personal data that allows for the tracking of individuals. However, when conducting research on buffy coats obtained from blood banks, no permit is necessary, as the identity of the samples cannot be traced. For work on biobank samples, an MTA usually needs to be written between the biobank and the researcher. The biobank holds an Ethics Permit, and the researcher also needs to submit a project-specific ethical application. For more information and template for evaluation, if a permit is needed, see *Routine for Ethics Review of research involving human material or personal data* (PUB/LABORATORIESÄKERHET - laboratory safety/Dokumentationssamling/2. Styrdokument, stöddokument och lokala rutiner - General regulations and local routines/2.2 Lokala institutionsrutiner för laboratoriesäkerhet - MBW local routines /Ethics / Routine Ethics Review MBW.doc).

**Legislations**: see Table 1.

**Contacts**: group leader, Biosafety representative SU (Ann-Kristin Östlund Farrants), head of department (ethics review permit)

## 7. Working with radioactive substances

All staff working with radioactive substances must take a compulsory course in Radiation Safety, administrated by the section of Safety and Environment Stockholm University.

Contacts: Margaretha Vickes (margaretha.vickes@su.se) or Mats Jonsson (matsj@kth.se ).

Radioactive work is divided into four categories of toxicity based on the nuclide involved, and three categories depending upon the risks associated with the substance. The classification is used to determinate the level of security required to protect human health and environment.

Before you start working; read, understand and plan your work according to the risk assessment and information provided by your group leader. Everyone at MBW have access to a designated isotope lab situated at F363. Please follow the safety guidelines and instructions of the lab when you use it, and contact MBW lab manager should you have any questions regarding this room.

More information and guidelines for working with radioactive substances can be found in PUB/LABORATORIESÄKERHET - laboratory safety.

More information about routines with radioactive substances and waste disposal at

Stockholm University:

handlaggningsordning-for-ledningssystem-for-stralsakerhet

radioaktivt (SWE)

**Legislations**: see Table 1.

**Contacts**: group leader, Radioactive work safety representative (Andrzej Wojcik)

## 8. The Experimental Core Facility (ECF)

In order to work at ECF, you need to discuss and plan for this, together with your group leader and the ECF management. Animal experiments must be evaluated and approved by a regional ethical committee on animal experiments. The experiment cannot start until it has been approved by the ethical committee. If you plan to work with laboratory animals, you must have the appropriate certifications. If you do not have a Laboratory Animal Science (LAS) certification, start by discussing your tasks with your group leader. Then, sign up for the LAS theoretical courses by emailing **tillstandshavarkansliet@su.se**, including details about the tasks you will be performing. If you already have a LAS certification, discuss your tasks with your group leader and send your certification along with information about your upcoming work to **ecfadmin.mbw@su.se**. If your certification was issued outside of Sweden, you must also complete the Swedish ethics and legislation course, which can be registered for using the same process as signing up for the LAS theoretical courses.

**Legislations**: see Table 1.

**Contacts**: group leader, head of facility (Sandra Oerther)

## 9. Waste Management

Waste from laboratory work can be harmful to human health and environment. At MBW, we classify the harmful waste as: biological/infectious/sharp, chemical and low radioactive waste.

**Information about disposal procedures at MBW:**

"Hantering av farligt avfall/Hazardous waste management" document, found in each laboratory. *During 2025 the disposal procedure guidelines at MBW will be updated.*

**Read more about the disposal routines at Stockholm University:**

laboratoriesakerhet (SWE)

**Legislations**: see Table 1.

**Contacts**: group leader, technical group

## 10. Sterilization Facility

**General considerations:** Live biological materials are not allowed in the sterilization facility; glass- and plastic- ware from cell-labs need to be treated using an established method at your lab before brought to the facility. Any labeling or tape must be removed from glass- or plastic-ware.

More information about routines and schedules for the sterilization facility can be found at

PUB> Instruction for sterilization facility.

**Contacts**: Technical group (sterile.mbw@su.se), Lab manager

## 11. Swedish authorities, legislations and links

Our routines and rules follow the recommendations and laws formulated by Swedish authorities. List of important Swedish authorities:

- **The Swedish Work Environment Authority** (Arbetsmiljöverket): www.av.se
- **Acts and regulations about work environment** (Lagar och andra regler om arbetsmiljö): https://www.av.se/en/work-environment-work-and-inspections/acts-and-regulations-about-work-environment/
- **Check lists for risk assessment** (Checklistor för riskbedömning):

  https://www.av.se/arbetsmiljoarbete-och-inspektioner/publikationer/checklistor
- **Website of the authorities responsible for the regulations of activities involving GMOs**:

  (Webbportal gentekniknämden): https://www.genteknik.se/
- **The Swedish Radiation Safety Authority** (Strålsäkerhetsmyndigheten**):** www.stralsakerhetsmyndigheten.se
- **The Swedish Board of Agriculture** (Jordbruksverket): www.jordbruksverket.se
- **Medical Products Agency** (Läkemedelsverket): lakemedelsverket.se
- **Swedish Civil Contingencies Agency** (Myndigheten för samhällsskydd och beredskap): www.msb.se
- **Swedish Chemicals Agency** (Kemikalieinspektionen): www.kemi.se

## 12. Selected legislations from the Swedish Work Environment Authority

| AFS Number | Prev. AFS | Title |
|---|---|---|
| AFS 2023:1 | AFS 2001:1 | systematiskt arbetsmiljöarbete |
| AFS 2023:2 | AFS 2015:4 | planering och organisering av arbetsmiljöarbete |
| AFS 2023:2 | AFS 2007:5 | Gravida, nyförlösta och ammande arbetstagare |
| AFS 2023:2 | AFS 1999:7 | Första hjälpen och krisstöd |
| AFS 2023:2 | AFS 1993:2 | Våld och hot om våld |
| AFS 2023:10 | | risker i arbetsmiljön |
| AFS 2023:10 | AFS 2018:4 | risker i arbetsmiljön - Smittrisker |
| AFS 2023:10 | AFS 2011:19 | risker i arbetsmiljön - Kemiska riskkällor |
| AFS 2023:10 | AFS 2009:7 | risker i arbetsmiljön - Artificiell optisk strålning |
| AFS 2023:10* | AFS 1990:11 | Arbete med försöksdjur |
| AFS 2023:10 | AFS 2012:2 | Belastningsergonomi |
| AFS 2023:11 | AFS 2017:3 | arbetsutrustning och personlig skyddsutrustning – säker användning |
| AFS 2023:12 | AFS 2020:1 | utformning av arbetsplatser |
| AFS 2023:13 | AFS 2011:2 | risker vid vissa typer av arbeten (innesluten användning av GMM) |
| AFS 2013:14 | AFS 2018:1 | gränsvärden för luftvägsexponering i arbetsmiljön |
| AFS 2023:15 | AFS 2019:3 | medicinska kontroller i arbetslivet |
| | | |

* ) also 2023:1, :11, :12, :13 and :15 applies for certain aspects when working with laboratory animals