

**UiO: Institute of Oral Biology  
Faculty of Dentistry**

**HSE handbook for employees  
at the Institute of Oral  
Biology**

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The HSE manual is updated when needed. All employees are personally responsible for keeping themselves updated about the HSE regulations that apply at the Institute at all times.

All information about HSE at the Institute is available at [Health, safety and the environment \(HSE\) - Institute of Oral Biology \(uio.no\)](#)

Updates to HSE regulations is reported on the HSE website.

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## 1. OBJECTIVES, VALUES AND ATTITUDES

### Main Objectives

- Employees shall work in a safe working environment without unnecessary risk of illness or injury by chemicals or biological factors.
- Employees shall have good working habits and attitudes towards HSE and good understanding of safety.
- Employees shall work in a safe and good psychosocial working environment where individuals are inspired and motivated to perform their best.
- The physical working environment shall satisfy the requirements set by Norwegian legislation.

## 2. PSYCHOLOGICAL WORKING ENVIRONMENT AND PERFORMANCE REVIEW

### Reception of new employees

- The Institute welcomes all new employees and wishes them to feel at home.
- The immediate manager is responsible for ensuring that the new employee is introduced to the Institute's routines and rules, and receives training in the position. The administrative leader takes care of system access and other administrative matters, the fire protection contact is responsible for the fire round, and the HSE coordinator informs about the Institute's HSE work. See also the website for reception of new employees at UiO; <https://www.uio.no/english/for-employees/employment/joining-leaving/new/>

### Performance review

The Institute conducts annual performance reviews with all employees: The head of the Institute with the permanent scientific staff, the permanent scientific staff with their technical personnel, PhD students and Postdocs, and the administrative leader with the administrative staff. For more information, see the UiO website; <https://www.uio.no/english/for-employees/employment/performance-assessment/>

### Pregnancy

The working environment must normally be facilitated so that pregnant women are not prevented from continuing with their normal work (see <https://www.arbeidstilsynet.no/tema/graviditet-og-arbeidsmiljo/> - only in Norwegian). However, University of Oslo has its own policy on pregnant women and laboratory work – in English, see [Policy for pregnant women working at laboratories - University of Oslo \(uio.no\)](#) (

In the event of pregnancy, employees should request an evaluation with their immediate supervisor as early as possible. Theme for the meeting:

- The work situation today
- Overview of conditions that could be affected by the pregnancy
- Any need for facilitation

### **Work environment surveys**

The idea is that work environment surveys are to be conducted at The Faculty of Dentistry every two years. The last working environment survey was conducted in 2015.

### **Conflict management**

UiO has clear guidelines for conflict management: <https://www.uio.no/english/for-employees/support/human-resources/hr-followup/conflict/index.html>

### **General meetings**

Regular general meetings are held (3-4 times a year) related to general topics about the development of the Institute and / or special challenges. The administration wants everyone to be involved and engaged, and participation in the general meetings is therefore considered "mandatory". The general meetings shall engage and challenge individuals to make their contribution so that the Institute achieves its common objectives.

### **Social measures**

- There is free coffee/tea every morning where we can chat informally and share professional experiences. We have a joint lunch with cakes on Fridays.
- We arrange joint excursions to cinemas, museums and walk in the woods or anything else that may be suggested. The Institute has an appointed group that receives proposals for social initiatives and is in charge of the events.

## **3. ROLE AND ASSIGNMENT OF TASKS**

A clear division of roles and tasks is a prerequisite for a good HSE work in order to comply with the requirements of HSE regulations.

The head of the Institute has the overall responsibility for all aspects of HSE. This means that the head of the Institute is responsible for ensuring that the activities at the Institute of Oral Biology are operated properly and that laws and regulations are followed. The head of the Institute can choose to delegate some of the work tasks to others. The Institute has its own HSE coordinator who coordinates general HSE work. The administrative leader initiates and coordinates the work related to the psychosocial working environment.

**All employees have a personal responsibility to ensure that rules and routines are followed and contribute to a safe working environment.**

In addition, all employees are responsible for reporting adverse events. Attempts must be made to solve HSE issues at the level where the problem exists in order to strive for local participation and sensible and technically realistic solutions.

The immediate supervisor at each level is responsible for ensuring that instructions and decisions are known and followed.

## Research activity

With regard to the research activity at the Institute, the head of the research group is responsible for all aspects of his or her own research, including the research of PhD students under his/her supervision, Postdoc researchers, and guest researchers.

The head of the research group has overall responsibility for common HSE routines in the group, for example related to training and methods for risk assessment.

## HSE in the laboratory

For each of the laboratories at the Institute of Oral Biology, one person (permanent scientific employee) has been appointed with responsibility for all aspects of HSE related to the activity that takes place at the specific laboratory. The person is also responsible for ensuring that the routines for relevant training, including instrument training (including Standard Operating Procedures, where relevant) are in place. The names of individuals that have this responsibility at the Institute of Oral Biology is listed on the Institute's HSE page: [Health, safety and the environment \(HSE\) - Institute of Oral Biology \(uio.no\)](#)

## LAMU

Matters concerning safety and the working environment that are not easily resolved locally must be sent to the local working environment committee (LAMU) at the Institute for processing.

A new LAMU has been established at IOB in June 2018:

[Health, safety and the environment \(HSE\) - Institute of Oral Biology \(uio.no\)](#)

Both the employer and employees are represented in LAMU. The HSE coordinator is the secretary in the committee.

## The Safety representative

The safety representative is represented in LAMU and is representative of all employees. The safety representative shall ensure that all activities at the Institute are facilitated and carried out in a responsible manner and in accordance with the HSE regulations. An overview of the safety representative and the deputy safety representative at the Institute of Oral Biology is listed on the Institute's HSE website. According to section 6-3 of the Working Environment Act, the safety representative has the right to stop activity that the safety representative deems dangerous.

**Safety assessment:** The Institute of Oral Biology conducts annual environmental and safety assessments. The head of the Institute, the safety representative and the HSE-coordinator carry out the assessment round. Deviations from the desired condition are reported. The administration is responsible to ensure measures are implemented. The report is stored electronically in the Institute's HSE folder.

#### **4. HSE TRAINING PLAN**

Everyone who will work in the lab (permanent scientific staff, engineers, PhD students, Postdocs and other staff) must read the HSE handbook for the Institute of Oral Biology. New employees receive introduction into the Institutes HSE routines by the HSE coordinator, as well as fire protection training by the fire representative. Employees are responsible for keeping up to date on their own field of work / lab work regarding HSE.

Each research group leader is responsible for the training of all persons associated with his/her own research activities regarding HSE routines that are specific to the group and are not described in the HSE handbook.

PhD fellows must have training in the research group they are affiliated with before they gain access to the lab. The responsible person for this is the supervisor. The training shall contain all necessary information about the group's Standard operating procedures (SOP), use of instruments / equipment and introduction to work routines in general - to avoid injuries and accidents.

Teaching staff who participate in laboratory courses must be familiar with first aid procedures. Furthermore, raising awareness in relation to HSE is an important element in the risk assessment of all laboratory courses and activities. The course holder is responsible for this.

HSE coordinator regularly informs about HSE courses arranged by UiO. Research group leaders are responsible for keeping up to date HSE measures in their areas.

#### **5. GENERAL SAFETY AND FIRST AID RULES**

All employees must act / work so that injuries and / or future health damage is avoided. Employees must comply with the rules that exist and the messages/updates that come from the HSE Institute at UiO.

##### **5.1 Emergency preparedness plan**

- In the event of acute and serious accidents, you should, as far as possible, initiate first aid or other necessary measures to save the lives and health of people who need help.
- In case of urgent need for medical help / ambulance: Call 113.
- In case of fire: First try to extinguish the fire, but take no chances. If the fire alarm is not triggered: Call the fire brigade on telephone number 110 or press the manual fire alarm in the hallway. Evacuate the building.
- In case of serious situations, call security from OUS on telephone 23 07 46 70.
- Sikresiden.no is a mobile-adapted website that provides information on what to do when and if something happens: <https://www.sikresiden.no/?locality=179>

The address of the Institute of Oral Biology is Sognsvannsveien 10, 0372 Oslo.



- Ingestion of chemicals:

Drink plenty of water (diluting effect). Get medical attention. Call the Poison Information Center (tel. 22 59 13 00 - <https://helsenorge.no/Giftinformasjon>), see the Safety Data Sheet of the chemical for detailed information.

- Inhalation of toxic gases, vapors or dusts:

Ensure access to fresh air and keep the person completely calm. Contact a doctor / ambulance. If the patient is unconscious and out of breath, start cardiopulmonary resuscitation (cardiac massage and mouth-to-mouth method).

- Poison in the digestive tract:

Drink plenty of cold water. Poison Information Center, tel. 22 59 13 00 can provide further information regarding relevant substances. Contact Ullevål Hospital, Medical Dept., Emergency Institute, tel. 02770.

- Electrical shock:

Remove the injured person from the power source. In case of cardiac arrest: Call 113. Start cardiopulmonary resuscitation by pressing hard and fast (about 100 per minute) in the middle of the chest.

- Wounds from glass shards or similar:

Rinse with cold tap water. Stop bleeding, apply an emergency dressing, use the "single-person package" or "blood stopper" provided in the first aid kit. Seek medical advice before sewing.

- Burns:

Rinse the injury site with cold water from the nearest spring. Then keep it immersed in water (15 - 20 ° C). Continue treatment even during transport to the doctor and during any waiting in hospital. In case of major burns: Call 113 for an ambulance.

- Frost damage, superficial:

Dip the damaged area in a water bath with a temperature of 40-42 degrees C, do not rub. Contact a doctor.

- Frost damage, deep:

If the injured person has no sensation in the area, the skin is firm and immobile in relation to the tissue below: Call 113.

- Fainting:

Provide a clear airway by removing clothing from the neck. Lay the person in a stable side position, loosen tight clothing, check heart rate and respiration. Check that the tongue does not block the airways. If necessary, immediately start cardiac massage and artificial respiration (mouth-to-mouth). If more people participate in the lifesaving, you alternate between heart massage and artificial respiration. This must continue until ambulance personnel take over.

- Shock:

Reassure and observe the patient. Call a doctor.

- In case of splashes in the eye: Always consult a doctor: National Emergency Room, 116117
- In case of other major injuries: Always contact a doctor: National Emergency Room, 116117

### **5.3 First aid equipment**

First aid cabinets in the corridors by the labs contain:

- One-man packages
- Plastic / sterile wound dressing
- Bandages
- Wound washcloth
- Gel for burns
- Mouth-to-Mouth Cloth
- Eye cleanse
- Ice bag
- Scissors
- Tweezers
- Gloves

Note where the cabinet is located so you avoid searching in the case of an accident. Check content, report deficiencies to the HSE coordinator.

Emergency shower. Check where the nearest emergency shower is located so you do not have to look in case of an accident. The emergency showers receive an annual check for functionality.

Mandatory first aid equipment in laboratories:

- Eye shower associated with washing/distilled water in a bottle
- Absorbent for chemical spills.
- Gas mask. When collecting chemical spills outside the fume cupboard, a gas mask must be used if the chemical emits toxic / hazardous vapors.
- Fire extinguisher. All laboratories must have a 2 kg CO<sub>2</sub> device / fire blanket. Notice where it is located and how it is used. All fire extinguishers are inspected every year by an external company.

### **5.4 Waste disposal procedures**

Normal waste: UiO practices waste recycling, food waste is emptied daily, plastic and other waste are emptied by the cleaners once a week.

Paper waste: Containers are placed on the M floor on Tuesdays. Users must themselves make sure to empty their waste paper boxes in this container.

Glass waste is collected in suitable containers, e.g. marked plastic buckets. Dispose in waste container at ramp.

NB! Chemical bottles and glassware must be completely empty and cleaned before disposal. Equipment of glass that has been in contact with biological materials at risk must be sterilized before disposal.

EE waste: Electrical and electronic waste (EE waste), example: White goods, cables, computer equipment, office machines, measuring instruments, circuit boards, monitors, etc. can be disposed in the cages/netting baskets for EE waste located in the basement outside the workshop and cleaning premises, marked "EE avfall"

Large quantities / large packages that do not fit in the cages/netting baskets must be placed on a pallet so that Norsk Gjenvinning can pick it up there. Contact the HSE coordinator for assistance.

#### **Chemical waste:**

- IOB contact: Ann-Kristin Ruus, [a.k.ruus@odont.uio.no](mailto:a.k.ruus@odont.uio.no)
- To find out if your waste should be classified as hazardous waste, read the safety data sheet. The safety data sheet provides information on the hazardous properties of the chemical (see Hazard symbols), whether protective equipment is required and how to handle the waste. More information is available at: [www.econline.no](http://www.econline.no)
- Declaration: Chemical waste must be declared before it is collected by the supplier. Fill in the electronic declaration form at [Avfallsdeklarering.no](http://Avfallsdeklarering.no).
- Containers with chemicals must be placed in approved packaging boxes or from Norsk Gjenvinning and placed in room A1.M022, Hazardous waste.
- Absorption mats must be placed between the containers in the packaging box.
- Chemicals of the same type must be in the same packaging box, ie one for acids, one for bases, one for solvents, etc. (see separate form).
- Use original packaging if the quantities do not become too large.
- A separate label is filled in and glued to the return jug. It must state, among other things, the waste material number and EAL code. The label and waste guide book can be found at Ann-Kristin Ruus or Emnet.
- Collection is done under the auspices of UiO Norsk Gjenvinning.

#### **Radioactive waste:**

- Under 10 Bq: Radioactive waste is disposed of with normal hazardous waste.
- Over 10 Bq: - Radioactive waste must be delivered to the Institute of Energy Technology (IFE).

#### **Hazardous wastes:**

Biological waste, contaminated disposable equipment and syringe tips are packed in yellow plastic hazardous waste bins. When the boxes are full, they must be closed properly and placed in room A1.M022, Hazardous waste room.

#### **Collection of hazardous waste:**

The yellow boxes with hazardous waste are collected by Norsk Gjenvinning once a week for incineration and new boxes are refilled.

## **6. FIRE INSTRUCTIONS**

Everyone must be familiar with the nearest escape routes, the location of the nearest fire extinguishing equipment and how to use it, and the fire alarm. The building is equipped with automatic fire alarm based on smoke detectors and heat detectors. In case of fire, the fire brigade is automatically notified.

In case of fire: Try to extinguish it quickly, but take no chances.

Anyone who discovers a fire must notify others in the vicinity / neighboring room. Use manual caller, if possible immediately call line 22856666, VA center (or 23074670), if the alarm is not triggered automatically. Manual fire alarms are located in corridors. Notice where the nearest manual fire alarm is located.

In the event of a fire alarm, the building must be evacuated immediately. Close the gas tap, close, but do not lock, all room and corridor doors. Check on your neighbor, help the disabled. Use the nearest emergency exit and, - do not use elevators.

The fire brigade / fire manager (Technical Institute) decides when you can enter again.

Keep escape routes clear and tidy. It is not permitted to place cabinets or other furniture in corridors since it prevents escape routes.

Fire technical manager at IOB:

Olav Schreurs, o.j.f.schreurs@odont.uio.no

tel. + 47 228 40361

Room M052 (office) M028 (lab, tel. + 47 228 40 293).

## **7. LABORATORY WORK: SAFETY AND WORKING ENVIRONMENT**

Objectives for safety and working environment in the laboratories:

- To ensure that employees have good work habits and attitudes.
- To ensure that employees work in a safe working environment without unnecessary risk of illness or injury due to exposure to chemicals or biological factors.
- To ensure that everyone has the same basic rules to relate to and the same expectations of each other in the work place in order to prevent accidents and injuries.

## 7.1 Responsibilities and general guidelines

### Responsibility of scientific staff

The permanent scientific staff (associate professors and professors) are responsible for individuals associated with their own research activities. They must ensure that all activities are carried out within the framework of the systematic HSE work. This involves:

- Evaluating the research fellows / student's knowledge of the general HSE rules.
- Assessing hazards before starting laboratory work.
- Providing safety data sheets, possibly delegate to engineer, for all chemicals that are used.
- Providing the necessary information and training to the person who carries out the work.
- Being responsible for ensuring that research fellows / students receive training in how to use the necessary equipment in the lab.
- Ensuring, or delegate to an engineer, that research fellows / students record all experimental work.
- Ensuring, or delegate to the engineer, that chemicals are labelled.
- Regularly evaluating activities, order and cleaning.
- Ensuring that chemicals are disposed of in accordance with current routines, or delegate to an engineer.

Supervisors for foreign language students / research fellows also have an additional responsibility to make sure that the current routines are understood, and that the conditions do not otherwise present safety difficulties for them.

### Responsibility of course leaders

The course coordinator must ensure that safety is maintained during implementation of the laboratory courses and other types of courses.

### The responsibility of the room manager

For each room (laboratory, freezer, instrument room, etc.) there is a room manager.

A complete list of room managers at the Institute can be found on IOB's HSE website:

[Health, safety and the environment \(HSE\) - Institute of Oral Biology \(uio.no\)](#)

The person in charge of the room must:

- Supervise and know the activities that take place in the room.
- Ensure that there are guidelines for how to use the laboratory and instruments (including standard operating procedures (SOP) where applicable).
- Ensure that activities are carried out according to the established guidelines.

- Ensure adequate labelling of workplaces and chemicals in the laboratory.
- Ensure that relevant protective equipment are available.
- Ensure that cleaning staff and employees from the technical department or external companies can carry out their work without hindrance and without risk, for example, to ensure the room has the necessary updated exterior signage/labeling, and things do not stand on the floor so that cleaning is not hindered.
- Be available (or represented by a deputy) when conducting security rounds of the room.

### **The responsibility of all employees**

All employees are obliged to know and comply with current health, environment and safety instructions for their workplace. They must plan and carry out their own work so that danger is avoided and report to the immediate manager about conditions they consider dangerous. Injuries, accidents and near misses must be reported using the form for notification of HSE deviations in CIM. Link to the notification form for adverse events:

[CIM \[Universitetet i Oslo\] - Avvik \(uio-cim.no\)](http://uio-cim.no)

### **The role of the safety representative**

Supervise the activities in the laboratories and report deviations from the accepted standard to the administration.

#### **Order**

- Each employee is responsible for cleaning his/her workplace in the laboratory at the end of working hours. The laboratories must be kept clean and tidy at all times. Lights are be turned off, gas sources are closed, windows are closed and laboratories must be locked when leaving.
- Chemicals and equipment must not be lent or removed from the place of use without the consent of the room manager or instrument manager. The instrument or room manager must be informed of defective equipment.
- Every user of chemicals must have access to an electronic chemical register (ECOOnline). Those responsible for registering purchased chemicals must maintain and update the safety data sheet for chemicals at their specific location.
- Specific rules may apply to some laboratories. Everyone is obliged to familiarize themselves with the local work routines that may apply.
- Violation of the HSE rules must be reported to the HSE-coordinator by the person who discovers the violation

#### **Special conditions**

- It is highly advisable not to wear a laboratory coat outside of the laboratory. It is highly recommended to hang the laboratory coat in the laboratory before leaving the laboratory.

- It is forbidden to eat and drink in the laboratory. Cups, glasses, bottles or the like that are intended for food or can be confused with such must not be brought in / stored / placed in the laboratory.
- It is forbidden to store chemicals in containers that are intended for food or can be confused with such as cups, glasses or the like.
- During visits and guided tours of the laboratory, the tour guide must ensure that risky work does not take place at the same time.

### **Personal protective equipment**

Personal protective equipment must be available at the laboratory and used if conditions require.

- Standard clothing when working with chemicals is a laboratory coat and goggles (regular glasses do not replace goggles). Contact lenses can be worn in combination with safety goggles.
- Wear solid trousers and footwear, not shorts and sandals, when working with chemicals.
- Gloves must be available in all laboratories.
- Gas-masks, face shields and any other necessary equipment must be provided when needed.
- Fume cupboards must always be used for handling and mixing hazardous chemicals. When weighing harmful compounds, either the weight can be moved into the fume cupboard, or an approved mask can be used.

### **First aid equipment**

First aid equipment should be readily available in each laboratory.

- Emergency shower should be installed in or just outside the laboratory.
- Eye shower connected to a sink, alternatively an eye-washing bottle must be in place.
- First aid kits must at least contain: plasters, scissors, individual packages, bandages, wound cleanser.
- Fire blanket: at least one fire blanket must be available in laboratories where activities take place that could result in a fire.

### **Fire fighting**

- All laboratories must be equipped with a fire extinguisher (CO<sub>2</sub>).
- There should be at least one fire blanket in each laboratory where activities take place that could result in a fire.
- In the initial phase of the fire, it is usually easy to stop it. It is therefore important to act quickly while the fire is small. The correct choice of fire extinguisher is important:

- **Fire in hair and / or clothing:** Fire blanket or wool blanket (possibly moistened with water) and emergency shower. If you are alone and do not have an emergency shower nearby, you can roll around on the floor to put out a fire in your clothes.
- **Fire in an open vessel:** Prevent the supply of oxygen by placing something tightly over the opening (book, glass plate). If the tub is on a hot plate, turn off the heat and gently pull the tub away from the plate. If a powder device is used, be careful not to spray the liquid.
- **Fire in organic substances on laboratory bench or floor:** Use CO<sub>2</sub> or powder apparatus.
- **Fire in electrical equipment:** Use CO<sub>2</sub> or powder appliance or water if it can be used risk-free in relation to nearby chemicals.
- **Fire in wood:** Use Water, when it can be used risk-free in relation to nearby chemicals, or powder apparatus.

## 7.2 Safe job analysis (SJA)

[Procedure for safe work; management of work with chemicals, biological agents and genetically modified microorganisms. - University of Oslo \(uio.no\)](#)

SJA is a step by step analysis of job operations. It is used in routine operations associated with risk. The purpose of the analysis is to identify hazards and risks and to eliminate or reduce these by identifying measures. It is designed to protect workers and the environment from injuries and accidents.

### Responsibility

- Supervisors must ensure that SJA is done where this is necessary, and that it is implemented and followed.
- All employees must follow these routines. Each individual is responsible for ensuring that the procedure is followed.

### A secure job analysis includes:

- Dividing the job operation step by step.
- Review of all hazards (ergonomic, biological, chemical, physical, mechanical).
- Existing hazard prevention measures, e.g. safety routines, personal protective equipment, surveys and training.
- Possible identification of new measures with the responsible person and deadline for implementation of measures.

All job operations must be risk assessed. Events that can be linked to the hazards must be assessed on the basis of probability and consequence.

## **Availability**

Outlined SJAs must be available where the job operation is performed, for example as a notice, in SJA binders or electronically.

Form for Safe Job Analysis - see forms on the website in the link:

[Risk assessment procedure - University of Oslo \(uio.no\)](#)

## **7.3 Work in fume hood**

### **Goal**

To establish general basic rules for all work in fume cupboards. The rules must contribute to high safety in the laboratory.

### **Responsibility**

The room manager in each laboratory is responsible for ensuring that the rules for work in the fume hood are followed.

### **Procedure**

- Make sure that the fume cupboard is cleared of unnecessary equipment, bottles, etc. before starting work. Bottles and equipment destroy the laminar flow pattern in the cabinet and reduce the extraction effect. Unnecessary equipment also increases the consequences of a possible fire.
- Wear suitable gloves where necessary.
- Select working position (sitting or standing) based on the risk of splashes of liquids and the duration of the work. Never bend your head into the cabinet while the experiment is in progress.
- Place the work (volatile liquids, dusty material, etc.) as far as possible in the center of the cabinet. Here, the cabinet usually functions best. Work with calm movements in the cabinet to ensure that you do not create turbulence and get polluted air into the breathing zone.
- Clean and wash after work. The fume cupboard should not be used for storage. Flammable, corrosive, irritating liquids, chemicals and the like should be put back in the chemical cabinet.
- Do not expose others or yourself to unnecessary health hazards. Use fume cupboards. Transport of chemicals between chemical cabinets and fume cupboards must be done with minimal risk to yourself and others in the laboratory.
- For experiments involving the use of hazardous chemicals, ECOOnline (safety data sheet) must be easily accessible on a PC near the laboratory.
- The amount of chemicals in the fume cupboard is limited to what is necessary for the work in question.

#### **7.4 Use of gas cylinders**

- Gas cylinders should only be handled and used by knowledgeable personnel.
- Gas cylinders must be firmly attached so that they cannot tip over. The gas cylinder is under high pressure (normal maximum pressure approx. 200 bar), which can send the gas cylinder like a rocket through the wall if the gas cylinder overturns and the gas regulator is switched off.
- The outside of the laboratory door must be marked with a warning sign for gas cylinders. The room manager is responsible for this task.
- Users of gas cylinders must familiarize themselves with the contents of the safety data sheet of the gases they use.

### **8. CHEMICAL MANAGEMENT**

[Policy for handling of chemicals - University of Oslo \(uio.no\)](https://www.uio.no)

#### **Goal**

To establish routines/ rules for handling chemicals in order to prevent accidents and injuries. The routines/ rules shall contribute to high safety in laboratories.

#### **Responsibility**

- The research group / research group leader is responsible for making sure that outlined safe chemical handling routines are understood and implemented.
- All employees must follow these routines.

#### **Procedure**

All employees must keep laboratory records for all experimental work and the records are the property of the Institute.

#### **8.1 Ordering, purchasing and registration of chemicals**

Ordering and purchasing at the Institute of Oral Biology:

All purchased chemicals (both hazardous and non-hazardous) must be registered in the chemicals register, ECOOnline.

All chemicals must be risk assessed before and after they are purchased.

All chemicals must undergo an assessment before they can be ordered for the first time:

- Do we have facilities and equipment for handling the chemicals?
- Do special measures have to be taken before the chemicals can be used?
- Do we have storage facilities that meet the requirements?
- Can the chemicals pose a safety risk (for example narcotics)?

- What other hazards are associated with the chemicals?
- How should you dispose of the waste?
- If the risk assessment shows that someone can be exposed to carcinogenic or genetically harmful chemicals, it must be reported to the HSE coordinator or the administrative leader.

The risk assessment is performed by each user of the chemical. The scope of the assessment depends on the hazard level and quantity of the chemical. Upon receipt, the correct marking and approved safety data sheet must be available.

## **8.2 Obtaining, using and archiving of safety data sheets (Chemical register)**

[Procedure for chemical inventory - University of Oslo \(uio.no\)](#)

### **Goal**

- The Institute of Oral Biology has a chemical register that ensures that everyone who works with chemicals can easily become acquainted with the associated dangers and protective measures.
- Everyone should use the chemical register actively.

### **Responsibility**

- The research group / research group leader must ensure that the routines are implemented and followed.
- All employees must follow these routines.

### **Requirements for chemical register at the Institute of Oral Biology**

- All chemicals must be registered in ECOOnline, and be close to the place of use. They must be in Norwegian.

### **Routines when purchasing chemicals**

- When purchasing chemicals, the person responsible for obtaining chemicals must ensure that the safety data sheets are registered and updated and that the file is available to everyone who uses the chemicals.

### **Routines when using chemicals**

- The user of the chemicals is responsible for reading the safety data sheets before using the chemicals.
- When working with hazardous substances, the research group leader is responsible to ensure that everyone in the group works safely.

## 8.3 Risk assessment

[Risk assessment procedure - University of Oslo \(uio.no\)](#)

### Purpose

This procedure describes how to do a risk assessment before starting new experiments with chemicals. The procedure is designed to protect workers and the environment from injuries and accidents.

### Scope

This procedure applies to anyone who performs practical laboratory tests. If the experiment has been previously evaluated or there is an SJA (Safe Job Analysis), a new risk assessment is not necessary. The Safe Job Analysis must be easily accessible to users electronically on the internal page of the research group or in paper form in the laboratory.

All employees who are to carry out laboratory work must undergo the necessary HSE training before starting the work. The leader of the research group is responsible for ensuring that everyone associated to the group has received the necessary training.

### Responsibility

- Supervisors must ensure that the routines are implemented and followed.
- All employees must follow the routines and each individual is responsible for ensuring that the routines are followed.
- The person performing a high-risk experiment is responsible for informing others working nearby. Danger signs must be hung on the fume hood or laboratory door while the experiment is in progress.

### Risk assessment of laboratory course

- The person responsible for each laboratory course at the Institute is responsible for ensuring that there is an updated risk assessment.
- Everyone who starts a new experiment should do a risk assessment before starting the experiment in order to identify hazards.

A simple risk analysis is be done by asking three simple questions.

- What can go wrong?
- What can we do to prevent it?
- What can we do to reduce the consequences if something happens?

Risk assessment shall take into account the hazards associated with the chemicals that are used and the execution / handling of the process. Assessment is based on data sheets, chemical literature and on experience from similar processes.

The risk assessment should be written in the laboratory journal. The method ensures the following:

- i) increased focus on safety
- ii) minimized risk
- iii) practical feasibility

For risk assessment of experiments, you can use the form available at UiO HSE pages and paste this into the journal: [Risk assessment procedure - University of Oslo \(uio.no\)](#)

If the experiment has been performed previously and documentation for risk assessment is available, it is sufficient to refer to this.

### High-risk experiments

When an experiment is considered to be of high risk, this must be documented and the risk assessment must be approved by the leader of the research group before the experiment begins.

The following additional assessments are often required:

- **Alternative Reagents:** Evaluate the possibility of using alternative and less hazardous reagents or solvents.
- **Equipment failure and operational reliability:** In cases where special equipment and experimental setups have been used, these must be secured against possible failure, for example, power outages or stops during the reaction.
- **Additional protective equipment:** Appropriate protective equipment must be used.

## 8.4 Labeling of chemicals

### Goal

Chemicals must be labeled in accordance with regulations so that:

- The health hazard of any exposure to chemicals can be assessed.
- Necessary first aid for exposure to hazardous chemicals can be implemented.
- An emergency can be handled in a responsible manner.
- Proper waste management of chemicals can be done.

### Labeling of chemicals

Labeling of chemicals that are acquired, stored, used and synthesized at the Institute must be in accordance with the Chemicals Regulations. For chemicals that are acquired, stored and used in our facilities, packaging and containers must be marked in a consistent manner and in a language that is understood. The label must contain unique chemical name.

Hazardous chemicals must also be marked with:

- Danger symbol and hazard designation - see chemical register.
- Warning phrases (H and P phrases) - see chemical register.

### **Labeling of solutions**

A minimum requirement for labeling solutions include:

- Name of responsible person.
- Identification (chemical name, descriptive name, number referring to laboratory journal or other).

### **Labeling of internally produced chemicals**

Labeling of packaging for internally produced chemicals shall be such that important information is maintained in the event of a leak or breakage.

The marking shall contain the following:

- Chemical name, date of manufacture and responsible person.
- If test data are not available to assess the classification of internally produced chemicals, these must be labeled with a special hazard symbol with the hazard designation "Unknown hazard".

### **Labeling of chemical waste**

Waste containers that contain chemical waste must always be marked: «Chemical waste».

## **8.5 Internal transport of chemicals**

- The person who transports chemicals must look over the hazard marking on the chemicals before the transport takes place and be aware of the hazards in the event of an accident.
- The person carrying out the transport must be familiar with the information in the HSE data sheet on handling spills and have access to or know about the location of suitable protective equipment, fire-fighting equipment and absorbent before the transport takes place.
- New chemicals that are transported must be in original packaging.
- For each type of transport, the need for shock absorbers and the necessity of collection vessels are to be risk assessed. When transporting bottles, use a bucket.
- Incompatible chemicals are kept separate so that they do not come into contact in the event of leaks (see compatibility list on the Institute's HSE page)
- A report should be written routinely on all accidents and near-accidents with internal transport of chemicals.

In the event of a spill, the injury site is secured. Keep unauthorized persons away. Spilled chemicals are handled according to the instructions in the chemical register. Evaporation of volatile liquids with a flash point lower than room temperature can give an explosive atmosphere.

Disable ignition sources if possible, increase ventilation, evacuate the nearest rooms. If you do not manage a situation yourself based on available resources, contact the Guard and Alarm Center on tel. 22856666. Activate the fire alarm to empty the building of people in case of great danger and inform rescue crews about the danger of explosion.



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## 8.6 Handling of chemicals in the laboratory:

### Purpose

The purpose of this routine is to inform about the most important rules for handling chemicals during laboratory work to prevent accidents and limit the extent of accidents. The routine also includes how fire, chemical spills, injuries / first aid and calling for help should be handled.

### General laboratory work

Work with chemicals must always take place in a fume cupboard. If this is not possible, other measures should be taken to avoid exposure. Chemicals must be handled in such a way that one's own and others' exposure is minimized. Necessary measures to achieve this will depend on the properties of the chemical and must be considered in each individual case.

- Risk assessment must be done before starting new laboratory experiments.
- Only approved chemicals and correctly labeled chemicals should be used.
- Safety data sheets for the chemicals must be read and the necessary precautions are taken before the chemicals are used.
- Personal and other protective equipment must be used in accordance with the chemicals' safety data sheets and risk assessment.
- The bench / exhaust where the work takes place must be cleared of unnecessary equipment before and during the work. Waste and residues of chemicals must be handled in accordance with current waste management routines.
- The amount of chemicals and solvents that are stored in the laboratory for a long time must be as little as possible.
- All risky laboratory work and work where employees may be exposed to chemicals must take place in fume hood or under extraction arm.
- Pay special attention to containers where there may be overpressure.

## **Chemical spills**

- Prevention of chemical spills must be part of the risk assessment prior to the work. A tidy workplace is also a prerequisite for preventing chemical spills. Protective equipment must be in place and used. Absorbent must be used to collect liquid chemicals, and gas mask must be used.
- In the event of chemical spills, the risk of exposure of other employees must be assessed and whether it is therefore necessary to evacuate the laboratory.
- Chemical spills must be collected as described in the safety data sheet. During collection, it may be necessary to use extra protective equipment.

## **8.7 Storage of chemicals**

### **Purpose**

The procedure describes general guidelines for storage of chemicals, including self-produced chemicals. By storage, it is meant storage of a chemical that is not to be used for the ongoing work. Proper storage of chemicals reduces the likelihood that the environment will be affected by the chemicals, and will reduce the extent of damage should an accident occur.

### **Definitions**

#### **Incompatible chemicals**

Chemicals that react with each other and form toxic and / or explosive compounds, gases or heat. Examples are oxidizing and reducing agents, acids and bases and combinations thereof.

#### **Secondary protection container**

Container / vessel that captures spills if primary packaging is damaged. The container must be made of a durable material.

## **PROCEDURE**

### **General (storage in the laboratory)**

- All chemicals must have their defined storage space, which must be separate from the workplace. The storage space must be tidy and clear.
- Storage space and chemical containers must be marked with the correct hazard symbols.
- Detailed information on requirements for each chemical's storage conditions and labeling is found in the chemicals' safety data sheets.
- Chemicals should be returned to their dedicated storage space after use. Workbenches and fume cupboards must not be used for storing chemicals.

Chemicals that are no longer used, and chemicals whose expiration date has expired, should preferably be removed from the storage site and delivered for destruction.

Contact Ann-Kristin Ruus for destruction of old chemicals: [a.k.ruus@odont.uio.no](mailto:a.k.ruus@odont.uio.no)

## **General safety rules**

In general, when storing chemicals, the "first in - first out" rule must be used to prevent chemicals from getting too old. If the chemicals do not have a date stamp on the packaging, the date of receipt is applied.

## **Incompatible chemicals**

Incompatible chemicals should be stored separately using a separate storage location, to ensure that contact between the chemicals is impossible in case of leaks.

## **Flammable substances, liquids and gases**

Flammable substances, liquids and gases must be stored in fireproof cabinets or rooms. The cabinet and the room must be marked with a fire hazard symbol. Containers for storing flammable goods must be in a safe location. Accessibility should be considered in connection with any fire fighting. Do not store more flammable goods in the laboratory than is absolutely necessary.

## **Shared cold room (A1.M013A) and freezer room (A1.M013B and A1.M013C)**

Everything stored in a shared cold room and freezer room must be clearly marked with the substance name, responsible person and date. Unmarked items will be removed.

Joint cleaning in the rooms above must take place at least once a year.

## **Substances with several degrees of danger**

Some chemicals have several degrees of danger. In such cases, the greatest danger will be mentioned first – in order: Flammable substance, Oxidizing substance, Acids, Bases, Other

Chemicals that, for example, are both flammable and oxidizing, must thus be stored in a fireproof cabinet.

## **Dry chemicals, liquids (non-flammable)**

Chemicals that are not in use are stored in the specified storage location. Chemicals stored in laboratories must be stored in separate shelves or cabinets. Diffusion-tight packaging must be used.

Liquids / oils are stored in ventilated cabinets.

## **Chemicals stored in the refrigerator / freezer**

Refrigerators should mainly be used for chemicals that are temperature sensitive. Since refrigerators do not have ventilation, the chemicals should be stored in suitable diffusion-tight containers to the extent possible.

Refrigerators and cold rooms must be inspected at least once a year and emptied of chemicals that will not be used in the near future.

## **Self-produced chemicals**

When storing self-produced chemicals, a suitable closed container must be used.

The container must be marked with the chemical name, date and responsible person.

## **Ethanol**

Ethanol must be kept locked up.

### **Acids and bases**

Acids and bases must be stored in dedicated cabinets marked with the correct hazard symbol. Acids and bases should preferably be stored separately and placed in a suitable secondary protection container.

### **Corrosive substances**

Corrosive substances should be stored as low as possible, and in all cases below head height. This is to reduce the risk of personal injury if the container overturns.

### **Gases**

Gas cylinders must be stored upright, and fastened with a chain or similar to prevent the cylinder from tipping over. The chain must be mounted above the center of gravity of the bottle.

## **8.8 Handling chemical waste**

It is forbidden to pour chemicals, that are harmful to the environment or cause odor in the building, in the sink.

For procedures for chemical waste, see local procedures for chemical waste on the Institute's HSE page: <https://www.odont.uio.no/iob/om/hms/avfall.html>

IOB contact: Ann-Kristin Ruus, deputy: Solveig Stig.

## **8.9 Facilitation of laboratory work during pregnancy**

When an employee is pregnant, the employer is obliged to ensure that the employee is not exposed to harmful influences by providing the necessary facilitation or relocation.

If the pregnant woman is to perform experiments with the use of chemicals, risk assessment must be carried out with regard to avoiding any exposure to chemicals that are classified as harmful to the fetus.

## **9. WORK INVOLVING BIOLOGICAL MATERIALS**

### **Purpose**

All work with biological factors at the Institute must be in accordance with the legislation (Working Environment Act with regulations).

### **Scope**

This procedure applies to the Institute of oral biology and applies to all areas where there is activity with biological factors. The procedure applies to all research and teaching activity with biological factors.

## **Responsibility**

The head of Institute has the overall responsibility for all laboratory activities at IOB. All communication to the Norwegian Labor Inspection Authority must be signed by the head of Institute.

The research group / research group leader is responsible for ensuring that all laboratories in their own section where there is activity with biological factors in infection risk class II is pre-approved.

## **Approach**

This procedure is based on UiO's general procedure for laboratory safety; management of activities with chemicals, biological factors, genetically modified organisms and radiation sources. Together, these procedures must ensure that activities with biological factors takes place in a responsible manner and is in accordance with relevant regulations.

### **Work in an environment that may cause exposure to biological factors:**

- Activities with biological factors in infection risk class 2 are allowed only in approved laboratories.
- Biological factors should be treated with caution as they may cause disease in humans. Therefore, all work with Biological factors class 2 organisms must at all times have an updated risk assessment, so that measures that reduce exposure to the lowest possible level are considered at all times.
- Biological factors, such as bacteria and cell lines, must be stored well marked and securely closed in separate incubators adapted to the purpose.

### **Hygiene and cleaning:**

- It is required that there are dedicated washbasins in all laboratories at the Institute where there are activities with biological factors class 2.
- Workbenches must be clean at all times.
- Work surfaces must be clean before work begins. Work surfaces must be disinfected and cleaned after use.
- Workbenches and equipment must be disinfected regularly with a suitable chemical detergent or UV light. This is to prevent the transmission of infection from potentially infectious material, or its spread in the environment.
- Provide necessary health examinations and any vaccinations.

### **Disposal of biological factors**

See local waste disposal procedure: <https://www.odont.uio.no/iob/om/hms/avfall.html>

### **Deviations and accidents**

Reported as an unwanted incident or injury according to UiO's routines.

## 10. WORK INVOLVING RADIATION AND RADIOACTIVE SUBSTANCES

### Goal

Radioactive substances, ionizing and non-ionizing radiation sources must be handled in accordance with the guidelines so that the risk to one's own and others' health and safety is minimal.

### Responsibilities

The head of Institute has overall responsibility. Radiation protection coordinator at IOB; Ann-Kristin Ruus: a.k.ruus@odont.uio.no

Phone + 47-22840326

Room M052 (office), M058, M061 (lab)

The Radiation Protection Coordinator shall ensure that all work at the Institute of oral biology is carried out within the framework of good radiation protection practices.

The individual user is responsible for following the current routines at all times.

### Definitions

Radiation sources, two main categories are considered here:

- Ionizing radiation sources such as radiation from radioactive material, X-ray machines and electron microscopes.
- Non-ionizing radiation sources; Class 3B and 4 lasers, NMR machines, shortwave ultraviolet (UVC) radiation and other sources of potentially harmful electromagnetic radiation.

### Work with radioactive substances

Work with radioactive substances must only take place in designated laboratories at IOB. Radiation protection procedures must be in place and familiarized with before work begins. Everyone who plans to work with open radioactive sources must take a three-day mandatory user course in radiation protection.

Currently, there are activities with the following radiation sources at IOB: Open radiation sources involving work with  $c^{14}$  in Biofilm-lab and with uranyl acetate in the EM-lab. In addition, there are two Electron Microscopes (closed radiation source) in EM-lab.

### Tasks for local radiation protection coordinator:

- Ensure that there are readily available manuals and SOP routines based on safe job analyses.
- Provide relevant protective equipment.
- Ensure relevant marking of rooms.
- Provide a specific training routine.

- Make sure to keep a register of authorized users up to date.
- Ensure the use of a logbook during instrumentation.
- Provide action cards in the Institute's contingency plan when relevant.
- Ensure that magnetic fields and other relevant information are mapped and easily accessible.
- Report changes in use of radiation sources to UiO's central radiation protection coordinator who reports further to the Norwegian Radiation Protection Authority.

## 11. WORK WITH GENETICALLY MODIFIED MICRO-ORGANISMS

<http://www.odont.uio.no/iob/om/hms/GMM/>

### Goal

Activities with genetically modified microorganisms (GMMs) must take place in accordance with national guidelines so that the risk to health and the environment is minimal. See the following link for Regulations on the contained use of genetically modified microorganisms:

<http://www.lovdato.no/cgi-wift/ldles?doc=/sf/sf/sf-20011221-1600.html>.

### Definitions

**Microorganisms:** Any cellular or non-cellular microbiological entity capable of reproducing or transmitting genetic material.

**Genetic technology:** Techniques that involve the isolation, characterization, modification and insertion of genetic material into living cells or viruses.

**GMM:** Genetically Modified Microorganisms.

### Responsibilities

The head of Institute has overall responsibility. The supervisor/room manager is responsible for applying for approval of the area where research/teaching with the contained use of GMM will take place. The application must be sent to the Norwegian Directorate of Health in advance before the work starts.

The contained use of genetically modified microorganisms (GMMs) shall only take place in laboratories that have been approved for this use and within the framework for research activity with GMMs that has been applied for and approved by the Norwegian Directorate of Health. The activities must be carried out and the laboratories must be designed in accordance with the Regulations on the contained use of genetically modified microorganisms.

**Approved laboratories for the use of GMM at IOB:** The following laboratories are approved for the use of GMM at containment level 2 as of September 17, 2021: A1.M009abc, M011A, M012, M029, M031, M032, M034, M039B, M058, M062, M063, M064 and M083. Laboratories for

containment level 2 must have a biological hazard label on the door. The person in charge of the room shall ensure that it is marked with a biological hazard label on the door. Only authorized persons should have access.

**Training:** The supervisor/room manager must ensure that new users receive the necessary training in the use of GMMs and are familiar with the routines. The supervisor must have a protocol with an overview of those who have received such training.

**Risk assessment:** There must be a written risk assessment for working with GMM before the it is started. The risk assessment must be recorded in the researcher's laboratory journal.

**Working with GMM must take place in accordance with the "Security Checklist-Biological Chemistry":** Wear a lab coat and gloves. Never touch door handles with gloves. Equipment should not be touched with contaminated gloves. Do not leave the laboratory area with the lab coat on.

**Waste:** Biological hazardous waste must be autoclaved before treated as other laboratory waste. The autoclave must be cooled and without pressure when opened. Biological waste with less risk must be placed in yellow hazardous waste containers. At IOB, room A1.M037B is used for sterilization of waste using GMM.

#### **Accident preparedness.**

**Spills:** Disinfect immediately with 70% alcohol in spray bottle. The cloth should then be autoclaved or placed in yellow hazardous waste bins depending on the level of risk.

If one gets GMM material on oneself, disinfect with 70% alcohol before washing. If GMMs are spread to areas outside the approved laboratories, this must be reported to the supervisory authorities. All accidents must be reported as an adverse event in the CIM, see

[Procedure for management of HSE deviations - University of Oslo \(uio.no\).](#)

## **12. ELECTRICAL HAZARD IDENTIFICATION**

### **When using electrical equipment:**

- Make sure that the mains cord and plug are not damaged by heat, corrosion or mechanical damage.
- Make sure that the outer cover of the mains cord is fixed in the socket (in the strain relief).
- Errors must be reported to the laboratory manager, administration leader or the HSE-coordinator.

**First aid in case of electric shock:** Remove injured person from the voltage source.

**In case of cardiac arrest:** Immediately start artificial respiration and cardiac massage.

### **13. REGISTRATION OF PERSONAL INJURIES, ACCIDENTS AND NEAR-ACCIDENTS**

#### **Personal injuries**

All personal injuries, accidents and near misses must be reported using the form for HSE deviations in CIM, see [Procedure for management of HSE deviations - University of Oslo \(uio.no\)](#). This is important in order to take measures so that undesirable events do not recur.

Registered HSE deviations are automatically sent to the HSE-coordinator for analysis. Administrative leader reports the injury to NAV if the injury entails medical treatment or if the injured person so wishes.

The administrative leader reports statistics on of HSE deviations to the Local Working Environment Committee (LAMU).

### **14. PRIVACY POLICIES**

Employees who handle sensitive personal information must have a course in privacy protection provided at the University of Oslo.

### **15. INFECTION PROTECTION PROTOCOL**

Common guidelines for infection control have been prepared at the Odontological educational institutions: <http://www.odont.uio.no/om/hms/retningslinjer-for-smittevern/>

### **16. PROTECTIVE EQUIPMENT**

Common protective equipment is located in the Risk Waste Room (A1.M022).

### **17. PROCEDURES FOR DISCARDING OLD EQUIPMENT**

No equipment is thrown away until it has been inspected for reuse.

### **18. REGULATIONS AND GUIDELINES**

- The Working Environment Act.

See <http://www.lovddata.no/all/nl-20050617-062.html>

- Regulations on systematic health, environment and safety work in enterprises (Internal Control Regulations).

See: <http://www.lovddata.no/cgi-wift/ldes?doc=/sf/sf/sf-19961206-1127.html>

- Chemicals. Guidance

See: <https://www.arbeidstilsynet.no/tema/kjemikalier/>

- The Substance Register Regulations.

See: <http://www.lovdatab.no/cgi-wift/ldles?doc=/sf/sf/sf-20000414-0412.html>

- Substance file. Guidance

See: <https://www.arbeidstilsynet.no/tema/kjemikalier/stoffkartotek/>

- The laboratory. Safety and working environment. Guidance.

See: <https://www.arbeidstilsynet.no/tema/kjemikalier/laboratoriearbeid/>

- The safety representative's tasks and role. Facts page from the Norwegian Labor Inspection Authority.

See: <http://www.arbeidstilsynet.no/fakta.html?tid=78516>

- Regulations on protection against exposure to biological factors (bacteria, viruses, fungi, etc.) in the work place.

See: <http://www.lovdatab.no/cgi-wift/ldles?doc=/sf/sf/sf-19971219-1322.html>

- Regulations on the design and layout of workplaces and work premises (Workplace Regulations)

Chapter 1. Introductory provisions. Chapter 5. Marking and labeling. Chapter 8. Work in environments that may cause exposure to biological factors.

See: [https://lovdatab.no/dokument/SF/forskrift/2011-12-06-1356?q=biologiske+faktorer\\*](https://lovdatab.no/dokument/SF/forskrift/2011-12-06-1356?q=biologiske+faktorer*)

- Regulations on the performance of work, use of work equipment and associated technical requirements (regulations on the performance of work)

Chapter 1. Introductory provisions. Chapter 3. Work where chemicals can pose a danger to workers' safety and health. Chapter 6. Work in environments that may cause exposure for biological factors. Chapter 11. Facilitation of the use of work equipment. Chapter 31. Register of exposed workers.

See: <https://lovdatab.no/dokument/SF/forskrift/2011-12-06-1357>

- Regulations on action values and limit values for physical and chemical factors in the work environment as well as infection risk groups for biological factors (regulations on action and limit values)

Chapter 1. Introductory provisions. Chapter 6. Classification of biological factors. Appendix 2: List of classified biological factors (risk groups for infection).

See: [https://lovdata.no/dokument/SF/forskrift/2011-12-06-1358?q=biologiske+faktorer\\*](https://lovdata.no/dokument/SF/forskrift/2011-12-06-1358?q=biologiske+faktorer*)

- The Pollution Control Act.

• See: <http://www.lovdata.no/all/nl-19810313-006.html>

- The waste regulations. Guidance

See: <http://tema.miljodirektoratet.no/no/Tema/Avfall/>

- Hazardous waste guide.

See: <http://www.norsas.no/Farlig-avfall/Farlig-avfallsveileder-2009>

- The Radiation Protection Act.

See: <http://www.norsas.no/Farlig-avfall/Farlig-avfallsveileder-2009>

- The Radiation Protection Act.

See: <http://www.lovdata.no/cgi-wift/wiftldles?doc=/usr/www/lovdata/all/nl-20000512-036.html&emne=str%C5levern&&>

- The Radiation Protection Regulations.

See: <http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20031121-1362.html>

See: <http://www.lovdata.no/cgi-wift/wiftldles?doc=/usr/www/lovdata/all/nl-20000512-036.html&emne=str%C5levern&&>

- The Radiation Protection Regulations.

See: <http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20031121-1362.html>