

WORKING- AND SAFETY-REGULATIONS

**DEPARTMENT OF GENETICS,
MICROBIOLOGY AND TOXICOLOGY**

STOCKHOLM UNIVERSITY

This folder contains rules and regulations for working in the department. During the first week every newcomer has to study this document carefully, get complementary information from the Group leader and Safety representative, and sign the form (last page) that the introductory information has been received.

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IN CASE OF EMERGENCY

- **First-aid kits** are available in the corridors of the E and F buildings of Arrhenius laboratories.
 - **Safety equipment.** A locker with gas mask, fire blanket, protective gloves and an explosion-safe torch is located in each corridor.
 - **Emergency showers and eye-flush devices** are situated in each laboratory.
 - **Fire.** An evacuation plan is posted in all corridors. Here, information concerning evacuation routes, fire posts, hand-held fire extinguishers and carbon dioxide extinguishers, are available.
Memorandum: Rescue, warn/ alarm, extinguish
Evacuation: Gathering on the field at the front of the Arrhenius laboratories.
 - **Electricity.** The main switch for the electricity located in the corridor for each laboratory, must be turned off in case of fire
 - **Gas.** The main regulator for the gas supporting each laboratory is located in the pulp cabinet in the corridor. This must be turned off in case of fire.
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IMPORTANT TELEPHONE NUMBERS

- Ambulance	112
- Fire brigade	112
- Police	112
- Swedish Poisons Information Centre (emergency)	112
- Swedish Poisons Information Centre (no emergency)	33 12 31
- Health care contacts (Vårdguiden)	32 01 00
- Stockholm University alarm-phone	16 42 00
- Major safety delegate at SU	16 42 68
- Work Environment Engineer (skyddsingenjör)	16 22 51,
- Section for Public Safety	162216 dagtid,
-“-	16 42 00, natt

The safety group at GMT

A group with representatives from each section of the department handles the safety and security aspects.

- Dag Jenssen	Head of Department	163108, 0706103108
- Mats Harms-Ringdahl	Safety, Radioactivity	164109
- Vacancy	Safety representative	
- Ingrid Faye	Scientist	161272
- Margareta Ohné	Study director	164161
- Anders Nilsson	Study director	164549
- Anne Lagerqvist	Student Safety delegate	163107
	GMO	

IN CASE OF PERSONAL INJURY

Burn injuries. When burn from corrosive acids (but not from heat); immediately remove clothes from the injured body-surface. Rinse with large volumes of water for at least 30 minutes. A special fire blanket and bandages marked Water-gel is available in order to limit pain, coldness, and to protect the skin from infections. Make sure that the injured person gets instant transport to the hospital. Persons with burn injuries might also need treatments for shock (see below).

Shock. A person that has been exposed to severe burns, acid burns, electric injury, or a major blood loss, can suffer from disturbance on the blood circulatory system. Shock is recognised by the following symptoms; paleness, sweating of palms and forehead, shivering and nausea. When a person is shocked he/ she should be placed with the feet in a high position in a warm and draught-free room. Make sure that the person can breathe freely and keep him/ her warm with blankets until the ambulance arrives.

Eye injury. Rinse with water or saline (0.9% NaCl) for long time.

Emergency service for eye injuries is situated in St. Eriks sjukhus, Flemmingatan 22. Phone (vx): 672 30 00, direct 673 31 61. During daytime also at Danderyds sjukhus (direct phone 655 64 24) but you have to phone and check that the doctor is on duty.

Cut wounds. For severe cut-wounds with bleeding, - clean and remove possible glass shatter or similar from the wound and restrict the blood flow by tying a cloth or bandage (with pressure) over the wound. Call an ambulance: phone 112 or transport the wounded person to Danderyds sjukhus phone: 655 50 00

INTRODUCTION

The aim of “Working- and Safety-Regulations” is to give quick summarized safety information to new personnel, e.g. guest scientists, exam-workers, graduate students, post docs, and technical staff.

For more detailed information and knowledge, the folder “Arbetsmiljöparmen” must be consulted.

Responsible for the implementation of safety regulations is the Head of the department. The leaders of the research groups are responsible for the safety of his personnel and, accordingly, must give accurate information concerning all safety routines.

All personnel working in the laboratories are obliged to report any safety risk that is observed at the department, which can be reported to the group leader, the safety representative or directly to the head of the department.

ASPECTS OF SAFETY AND PROTECTION

General considerations

It is the responsibility of each individual to plan and conduct his/her works in a safe way without causing danger or disturbing other people or environment within or outside the laboratories. When introducing a new laboratory technique, the safety aspects must be considered. This must be done BEFORE starting experiments or ordering new chemicals or reagents that are labelled as hazardous for humans. Consult your group-leader and/ or other lab-personnel already when planning the experiments.

Every person in the lab is responsible for;

- that reasonable order is obtained at the working-areas,
- that equipments are handled in a proper way,
- that the workspaces are kept free from unnecessary equipments and consumables,
- that the safety regulations are followed.

The floors in the laboratories must be kept free from all objects. Electric adaptor devices are NOT allowed on the floors.

In order to assure good ventilation and the function of fume hoods, all windows of the laboratory should be kept closed, also during summer.

In the absence of magnetic holder device, doors connecting fire cells must be closed.

Visitors are only allowed to access the laboratories when accompanying personnel that have insight in the safety regulations.

Service-personnel should not get access to the laboratories unless they are informed about the potential safety aspects connected to on-going experiments or special equipment e.g. radioactive material etc.

Each one being in the laboratory outside the ordinary working time (08.00 –17.00) should be able to identify him/herself with an identity card upon order from a security guard.

Personnel are not allowed to work in the laboratories alone at times other than ordinary working time (08.00 –17.00).

Undergraduate students are only allowed to work in the laboratories during ordinary working time.

Ongoing unguarded experiments, which have potential health risk, must be labelled with accurate risk labels, name and phone number of the investigator.

Broken glass and aluminium waste must be deposit in specially marked containers.

It is not allowed to bring private animals or smoke within the buildings of Stockholm University.

It is not allowed to eat, drink or bringing foods into the laboratories.

All personnel must urgently report, not only accidents, but also incidents without any personal or material damages to both safety delegate and head of department.

In case of accident that requires medical treatment there is a report duty according to Swedish law (arbetsmiljölagen). The safety representative assists with the report.

Equipments to be used for personal protection.

Each person working in the laboratory shall find out where to get a laboratory coat (which should be used when working in the lab), and where to place dirty laboratory coats. The laboratory coats must NOT be used in common areas outside the laboratory.

Protective glasses are obligatory when there is a risk for explosion or splashes of poisons, corrosives, genotoxic compounds. Specific classes adapted for work with an unprotected UV-source. Unless obviously unnecessary, the need for other equipment for individual protection, e.g., gloves, full-face visor, and respiratory protection device, should be considered in every situation.

Locate the eye-showers, emergency showers and make sure you understand how to use them.

Fire and alarm equipment.

There is a half-day course held at the university on how to handle fires. It is compulsory for all personnel to attend this course (undergraduate students are not included here) which runs two times a year.

The laboratories are provided with equipment for fire protection which is implicated by law. It is important for everyone's safety that each person can correctly handle the equipment and is aware of its location. Read the instructions!

Recognise where the fire extinguishers are located in the laboratories and learn how they work. Get to know the location of the fire posts in the corridors.

Each corridor has a plan for evacuation, get familiar with it and especially locate the emergency exits.

It is important to keep the corridors and working-spaces free from equipment that could possibly block any passage in case of emergency.

For each laboratory there is a main gas regulator that can be used to restrict the gas flow in the laboratories. Learn where it is situated and use it in case of fire in the laboratory.

Open handling of flammable solvents is not allowed – such work has to be carried out in a hood. No electrical equipment can be used in the hood at the same time. There are restricted areas in room E412 and E416 where methanol can be used. Ask your group leader/supervisor about the routines in your laboratory.

The fire brigade is NOT automatically being alerted when the fire alarm sounds. You have to call them yourself (phone 112)!

To extinguish fires

Major fires are extinguished with a CO₂-extinguisher, be cautious with the use of water. Use gas mask if the smoke is extensive but be aware for low oxygen levels.

Burning chemicals: Extinguish all burning flames with a CO₂-extinguisher. Remove all flammable material, especially solvents.

Fire in (minor) containers is suffocated by the use of a wooden plate, a lid, or equivalent.

Burning clothes: Use the emergency-shower or force the person to the floor and use a lab-coat or a fire-blanket.

HANDLING OF CHEMICALS

General

A general strategy in the laboratory is that all chemicals are to be regarded as being potentially harmful to health and should therefore be used with the proper precautions.

It falls on the individual investigator to get accurate knowledge about possible health effects of the specific chemicals that he/she is handling.

For chemicals that are classified and labelled owing to their properties of being dangerous to health or the environment, such information is available in the safety data sheets that are enclosed with the chemicals on delivery. Folders with relevant safety data sheets are available for the laboratories in each corridor. Information on a majority of the chemicals used in the laboratory is available at www.miljo.su.se. Enter the database KLARA and search the chemical. Information can also be obtained from several databases (Classification List, Riskline, N-Class, Restricted Substances Database) at the website of the Swedish Chemicals Inspectorate (www.kemi.se).

It is important to realise that lack of classification and labelling with respect to health effects does not imply that a specific chemical is harmless. It might implicate that existing toxicological data are not sufficient to meet current criteria for classification and labelling used by the authorities.

Health effects and exposure

Chemicals causing health effects are assigned to one or several of seven categories depending on which of the inherent health-damaging properties listed below they show.

- General toxicity after a single short exposure
- General toxicity after repeated or prolonged exposure
- Corrosive and irritant properties
- Allergenic or sensitising properties
- Carcinogenic properties
- Mutagenic properties
- Properties toxic to reproduction

The strength of a health-damaging effect varies between chemicals. A person working in a laboratory may be exposed to a chemical by:

- ingestion
- absorption through the skin
- inhalation
- injection

In order to prevent such exposures, laboratory work should be performed in compliance with the guidelines below and, last but not least, with common sense.

Guidelines for laboratory work with chemicals

Be aware of the increased risk for accidents and mistakes when routine work gradually builds up a composite feeling of skilfulness, monotony and tediousness. A person may become so familiar with the daily work that the possible hazards with handling of chemicals might be forgotten.

Dangerous chemicals should be stored in fire resistant lockable cabinets with continuous ventilation. Flammable compounds, oxidizing compounds, toxic

compounds, acids and basic compounds and radio labelled compounds are stored separately.

Do not store chemicals above head height, especially not corrosives.

When handling of chemicals could result in contamination of the air by health-damaging or explosive dusts, vapours, fumes or gases, the work should be carried out in a fume cupboard.

Fume cupboards can 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 labelled so that the contents are evident to any person in the laboratory.

Never return used chemicals to their original containers

Vacuum containers should only be opened in the fume hood.

Avoid exposing chemicals and solvents to direct sunlight.

Contact lenses should not be worn when chemicals are handled, since gases and vapours can become concentrated under the lenses. If a chemical splash occurs, the lenses make it almost impossible to immediately irrigate the eyes thoroughly. Soft lenses are particularly dangerous as they may gradually absorb vapours.

Pipetting of solutions by mouth is not allowed.

Keep hands away from mouth and face when handling chemicals.

Wash hands after handling chemicals or even better every time you leave the lab to avoid contaminations in the offices and the lunch-rooms.

Handling and storage of carcinogens belonging to groups A and B requires special permission by the authorities (AFS 2005:17). Personnel that have that handling permission have been informed and taking instruction from the specific documents regulating the experimental conditions under which experiments can be performed.

Some general considerations concerning some commonly used chemical compounds: **Ethidium bromide** is a powerful mutagen but requires no permission to be handled. Nevertheless protective gloves must be used and investigator must be extra careful to avoid contamination when working with it. Solutions, or gels, containing more than 0.1 µg/ml should be disposed in specially marked waste containers.

Phenol. Always use protective gloves and work in the fume hood. Phenol solutions and contaminated tubes, tips, etc are disposed in specially marked wasted bottles that are sent for destruction.

Polyacrylamide. Solid acrylamide must not be used if not necessary. If so, it must handled in a specified hood. Protective gloves, mouth and nose protection must be used while weighing. Use liquid forms, if possible.

Appropriate containers have to be used for the disposal of dangerous chemical waste. The category of chemical waste in a container must be properly indicated by a specific label before it is delivered to the deposit in room M212.

WORKING WITH RADIOACTIVE SUBSTANCES

Working with ionizing radiation (SSI FS 2000:7,8,9) and radioactive isotopes, such as ^{32}P , ^{14}C , ^{35}S and tritium (^3H), requires strict precautions and all work is regulated by “Strålskyddslagen (SFD 1988 nr 220” www.ssi.se). “Statens Strålskyddsinstitutet” is responsible authority. A special permit is required for this type of work at GMT. This permit determines which radioactive isotopes are allowed at the department and the highest level of activity that can be stored in the laboratories of GMT during a certain time. There might be other restrictions depending on which isotope is used in a specific experiment.

Any people that organise laboratory work involving isotopes at the GMT department are responsible for providing adequate handling information. Personnel that work with isotopes must be informed and having taken instruction from the specific documents regulating the experimental conditions under which experiments with isotopes can be performed. In addition all personal working with radioactive materials or sources of such must take a compulsory in Radiation Safety administrated by Security Department. Personal must also attend one seminar per year to update knowledge.

WORKING WITH BIOHAZARDOUS MATERIAL AND GMM/GMO

Genetically modified organisms (GMO) (FJVFS 2001:20; 2003:28, FIFS 2004:2) and genetically modified micro-organisms (GMM) (AFS 2000:5) are all organisms, cells and bacteria with foreign genes inserted. A foreign gene is a gene or a changed gene from another organism than the one the gene is inserted in. The definition is included in an article (2001/18/EG) by the European Union (EU) that can be found on the internet: http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_106/l_10620010417en00010038.pdf. Special permissions and demands exist on genetically modified organisms; use of GMM/GMO shall always be preceded by a risk evaluation.

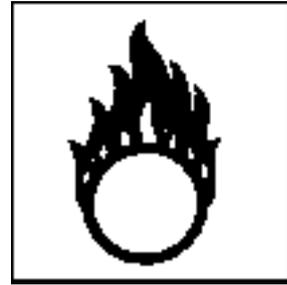
Any person organising laboratory work involving GMM/GMO at the GMT department are responsible for getting special permission and providing adequate handling information. Personnel that work with GMM/GMO have been informed and taking instruction from the specific documents regulating the experimental conditions under which experiments with GMM/GMO can be performed.

Information on biobanks: Socialstyrelsen (SFS 2002:297; SFS 2002:746; SOSFS 2002:11)

LABELS



Corrosive



Oxidizer



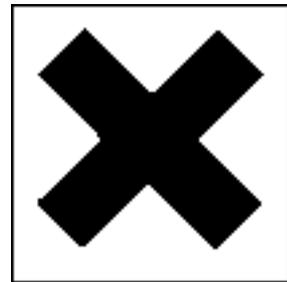
Explosive



Flammable



Flammable liquids



Harmful or irritant



Toxic



Warning symbol for biohazard

Department of Genetics, Microbiology and Toxicology (GMT)

I hereby declare that I have read and understood all regulations that in the folder
“WORKING- AND SAFETY-REGULATIONS”.

Date

Signature

Name

The signed paper is removed from the folder and given to the department secretariat.
The rest of the folder is kept and consulted when needed.