



Safety regulations for employees and students at Machine Design, ITM

These regulations are set by the management team and are valid from 2009 until further notice. Anyone who finds deficiencies in these regulations should contact the head of the department, Sofia Ritzen (ritzen@kth.se), or the administration (admin@md.kth.se).

Document date 2014-03-11

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Safety regulations: a summary

1. All employees, researchers, teachers, students, guest laboratory workers, consultants, contractors and others performing work on the premises of the department, shall have a copy of this document. Only students during scheduled laboratory work and in small groups, when teachers continuously attend, are exempt from this.
2. Flammable items and materials (wood, paper, etc.) must not be stored in stairwells, corridors, or other escape routes. Flammable liquids may only be stored in fire protection rated supply rooms or fire protection rated ventilated chemical cabinets within the department. The workshop and some laboratories may have their own lockers where smaller amounts (<1 litre) of flammable liquid may be kept.
3. It is not allowed to work unattended on the premises unless your course director or other authorized personnel assess the accident risk to be minimal. Regular office work is exempt from this.
4. Prior to construction of and especially prior to the start of laboratory experiments, authorized personnel shall ascertain where escape routes, fire extinguishers, emergency stop buttons and first-aid kits are located. Hosts of visitors are responsible for these in case of an evacuation situation.
5. Smoking and other hazardous activities, such as barbecuing, are not allowed outside of Machine Design main entrance, Brinellvagen 83, because of the risk of fire. Signs to this effect are posted.
6. Always use protective equipment where necessary and be extra careful when working with internal combustion engines, high pressure hydraulics and other machines with increased accident risk.
7. All students who intend to work in the student workshop ("teknologverkstaden") must sign for "Regulations for the student workshop" ("Föreskrifter för teknologverkstaden"), as a complement to the verbal instructions that the workshop staff provide.
8. Laboratory equipment, machinery, tools, lifting equipment, etc. may not be used without the necessary knowledge of how the equipment should be handled.
9. Within and near our EX-rated (explosion rated) spaces there are special rules for fuels, work resulting in sparks, welding, etc.
10. Wipe up spilled oil, cuttings, model foam, etc. as soon as possible to avoid slipping.
11. Do not disassemble the machine safety guards unless it is absolutely necessary and you have permission to do so. Make sure that the machine is impossible to run during this time and reassemble the machine safety guards as soon as possible.
12. High voltage power works and electrical installations must be performed by a qualified electrician. Rules for Electric Installations and Electrical Installation Guide should be followed. Live parts shall be provided with protection/insulation against direct and indirect contact that can lead to injury/accident. Check of functionality should be performed prior to start-up.
13. For ambulance, emergency services or police, call 112 and inform them that you are at KTH, Machine Design, Brinellvagen 83. Also call KTH internal emergency number 08-790 7700. Remember to meet up emergency services to guide them to the scene of the accident!
14. The fire alarm has a pulsating ringtone (from a red bell). This means instant evacuation! The burglar alarm has a constant swaying sound (from a white siren). Reassembly after evacuation takes place outside the building, see attached map.
15. If in doubt or if you have questions, contact the manager of flammable goods, chemical officer, fire prevention officer, environmental representatives or evacuation leaders. Information on who they are, is found on the notice at the entrance to Brinellvagen 83.

Safety regulations for employees and students at Machine Design

1 Extent and management of safety regulations

Responsibility for sign-out

1.1 Each head of unit is responsible for staff and students attached to the unit signing for the summary of the safety regulations. Employees and students who perform work in laboratories, workshops or similar must also sign for the safety regulations in full. Responsibility for signing rests on course director, head of unit, laboratory manager, etc.

Significance

1.2 The signing for our safety regulations, in full or summary version, means that one received a copy, read the contents and agreed to follow the same. Disregarding the instructions can cause a report of work environment offence. What constitutes a work environment offence is in the Penal Code and the Swedish Working Environment Act.

Extent

1.3 The instructions apply everywhere within the department's area and buildings.

Laboratory manager

1.4 Each laboratory, workshop and similar shall have a designated person responsible for the activity and its organization. Allocation of responsibilities and work environment tasks should be established within the activity/laboratory.

Compliance

1.5 The staff must have knowledge of the relevant regulatory requirements e.g. Work Environment Act, and the internal rules that govern the activities. The entire department shall ensure that the regulations are followed. Non-compliance shall promptly be reported to the head of unit or the head of department.

Hazardous activities

1.6 Manager of flammable goods, fire prevention officer, chemical officer, workshop manager and laboratory manager all have the right to immediately suspend hazardous activities within their area, when they deem it necessary. Risk and safety assessment is to be completed and documented before starting work.

Outside working hours

1.7 When working within the department outside of a person's working hours (regular overtime is exempt) applies that the person has to have a spare time agreement with the department. In order to obtain such an agreement is it necessary that the person have a home insurance policy that covers damage to other property. The person shall also have the appropriate skills for the spare time activities to be performed on the KTH premises. Spare time work that is not part of the department's work also needs its own accident insurance. Contact your supervisor or head of unit for more information.

Other regulations

1.8 These regulations should be seen as complementary to Swedish laws and regulations. The Work Environment Authority has, in support with 18 § Work Environment Act (1977:1166), created the regulations we have to comply with concerning equipment at work. The regulations stem from Work Environment Act SFS 1977:1160. See also AFS 2001:01. Public supervision is exercised by the Swedish Work Environment Authority.

Filing

1.9 The original of these regulations are filed by the HR manager of the department. It is also available on the intranet.

2 General rules

Preventing unauthorized access

2.1 It is the responsibility of every person associated with the department to prevent unauthorized access to the premises. Please follow the rules for door locking that apply to different spaces. Even the office doors must be closed when no one is there to improve fire safety and prevent pilfering.

Locking of doors

2.2 All doors to laboratories and workshops must be locked. Exceptions are granted only when a responsible person is present in or near the premises, and oversees them.

Principal rule

2.3 For all laboratory and workshop work, current regulations, rules and procedures, and caution should be observed.

Reporting duty

2.4 Anyone who considers that existing equipment or setups, or experiments where testing is carried out, involve a risk of personal injury, fire or other property damage, is required to notify their head of unit or head of department as soon as possible.

Experiment leader

2.5 Laboratory manager shall ensure that every experiment has a leader who is responsible for the safety and protection guidelines being followed, and who can give the affected personnel details of the experiment. In installations in public laboratories the leader is responsible for putting up information notices at the test site. See also section 4 of this document.

Instructions

2.6 For each laboratory setup that could cause damage, there must be a written risk assessment with instructions about the risks, appropriate handling, first aid and proper protective equipment.

Test equipment setup

2.7 Work spaces with test equipment in use shall be arranged in such a way that they can be easily and quickly evacuated.

Oil spill

2.8 With oil spill on the floor, there is a great risk of slipping. Wipe up immediately. If delay is unavoidable, then warning signs should be used.

Noise

2.9 During all noisy activities, care should be taken that other activities are disturbed as little as possible.

Smoking ban

2.10 Smoking is prohibited in all spaces.

Mechanical protection

2.11 Where there is a risk of personal injury and/or property damage, e.g. in case of rotating/moving parts such as shaft couplings, pivots and pulleys, adequate protection shall be arranged.

Voltage connection and disconnection

2.12 Voltage must not be connected to an experiment until this has been reviewed in detail, and verified by an experiment leader. Find out where the nearest emergency stop is located!

Switching

2.13 Switching must not be made when voltage is applied. Switching is permitted in low voltage circuits, i.e. those where the voltage is less than 50 V.

Contact with live parts

2.14 Live parts must be isolated - protected against direct and indirect contact - to the utmost extent. It is absolutely prohibited to touch live parts. Units with low voltage, such as electric welding, etc., may be exempt from this. If in doubt, ask!

Starting hydraulic power units

2.15 Hydraulic power units, test beds and other hydraulic connections must not be started until they have been reviewed in detail and verified by an experiment leader.

Oil leaks

2.16 Oil leakage from high pressure hydraulics can be dangerous. The oil may be hot, causing a risk of burns, and thin spurts can penetrate the skin. Avoid coming into contact with the oil leak. Use an emergency stop at a safe distance from the leak.

2.17 When oil or fuel leakage occurs, care must be taken to avoid the risk of fire and explosion. Keep in mind that there are plenty of hot surfaces on internal combustion engines.

Flammable goods

2.18 There is a manager of flammable goods, whose responsibilities cover the entire department. For information see the notice at the entrance to Brinellvägen 83.

2.19 Flammable items and materials (wood, paper, etc.) must not be stored or even temporarily placed in stairwells, corridors, or other escape routes. The same applies to impeding freight along evacuation routes.

2.20 A maximum of 1 litre of flammable liquids may be stored in the laboratories. (Exceptions to this rule are given in the "Classification plan, building 43:40 KTH", 1998-06-02 + revision in 2004.) Flammable liquids are those having a flash point not exceeding 100 degrees C.

2.21 Authorization by the manager of flammable goods is needed prior to the purchase of more than 1 litre of flammable liquids.

Potentially explosive areas

2.22 Some parts of the department's premises are rated as potentially explosive. These are marked in the attached drawing. For details, see "Classification plan, building 43:40 KTH", 1998-06-02.

Chemicals

2.23 Work with chemicals is always risky and can pose a danger for fire, explosion, poisoning, etc. The Work Environment Authority's Act "Chemical occupational risks" (AFS 2011:19) and "Exposure limits" (AFS 2011:18) shall be applied to all work / handling. Work with chemicals may not start before a risk assessment of hazards is made. All storage containers with hazardous contents must be labelled with name, hazard sign as well as the person responsible for the goods.

Most chemicals are toxic to the human body, so always be careful. The best protection is to have a good knowledge of various substances' chemical properties, and the reactions that may occur. Safety data for most (about 25 000) substances is available on <http://intra.kth.se/administration/klara-1.30420>, go to the product database and product directory.

Purchase of chemicals

2.24 All purchases of chemicals must be reported to the chemical officer. Inventory of chemicals, risk assessment and decisions on possible actions are made and documented in the chemicals system KLARA. All purchases of flammable products should be approved by the manager of flammable goods.

Laser

2.25 When working with laser, regulations "Artificial Optical Radiation" (AFS 2009:07) apply. See also § 14.

Electrical appliances

2.26 According to the Emergency Services, coffee makers and electric kettles for the home environment are not manufactured so that they can be constantly connected to the electricity grid. Such appliances should always be connected to a permanently installed timer on the power outlet.

Parties on the premises

2.27 In order to have a party on the KTH premises, a completed form "Application for party / gathering" is required. It is found at <http://intra.kth.se/blanketter-mallar/blanketter/sakerhet>. The form must be submitted to the head of the department for approval. In addition, the Site Services department should be notified. At the festivities, a responsible employee must be present at all times. This person must be sober. (Party participants must not have access to the lab or workshop premises during the gathering). [Further reading at intra.kth.se/regelverk](http://intra.kth.se/regelverk).

Maintenance, service

2.28 Periodic maintenance and service intervals, inspection of work equipment, machinery, lifting equipment, etc. shall be implemented and documented.

Signs, labelling

2.29 Signs and labelling is to be used when the risks are unavoidable or are sufficiently limited by general technical protection measures or work organization measures. Prohibition, warning and decree signboards shall be used where required.

3. Work instructions

Work instructions

3.1 Laboratory managers and workshop managers give instructions on the kind of work allowed in the respective laboratories and workshops, and on the persons allowed to perform it.

Assembly and disassembly of equipment

3.2 Laboratory work, including assembly and disassembly of equipment, shall not be made by a person who is alone in the room unless the work is obviously associated with very little risk.

Gas cylinders

3.3 Upright gas cylinders shall be secured so that they cannot tip over. They should be stored in a gas supply room.

Trapdoors

3.4 Trapdoors should always be closed when not in use. When work is performed, warning signs must be used.

Fire risk/Hot work

3.5 Work that involves heating or formation of sparks with subsequent risk of fire is called "Hot Work". When working with things that could lead to risk of fire ("Hot Work"), such as welding and grinding, use of hot air gun, appropriate action should be taken. "Hot work" shall not be performed without written permission. Ensure that the working equipment is free from defects – a checklist for temporary "hot work" must be used before starting work. This may include, for example, setting up a bucket of water and a fire extinguisher before the work begins. The work must be completed at least one hour before the end of the workday. When working in fire-rated areas, special rules apply.

Work during operations

3.6 When an internal combustion engine is in operation, work in the motor cell and associated support room must be executed with extra caution and only by qualified personnel.

Heavy work

3.7 Work associated with the risk of foot injuries e.g. truckdriving should be performed using safety footwear. Safety shoes are paid for by each unit.

Working with chemicals

3.8 The risk of exposure to hazardous substances should be assessed. When working with toxic, corrosive or flammable chemicals, protective gloves, glasses and clothes and respiratory protective equipment should be used if necessary. This equipment is paid for by each unit.

4. Equipment, machinery, tools

Equipment, machinery, tools

- 4.1 Equipment, machinery and tools in the workshop, student workshop (teknologverkstaden) and laboratories may only be used by those who can demonstrate sufficient knowledge of their handling and who have the ability to keep the rooms organized. The course director or the responsible personnel within each unit provide information about equipment and machinery that require special skills, and assess who has sufficient knowledge to operate the machine / equipment.
- 4.2 The workshops with tools, machinery and welding equipment are included in above mentioned equipment, machinery and tools, together with the laboratories and their tools, research equipment and measuring devices. This also includes any other equipment, simpler kinds of tools and those that require special skills to use. Equipment must be stored, installed, located and operated so that adequate protection against accidents and ill health is observed. Work equipment must be used with appropriate work positions and movements and in otherwise ergonomically correct ways.
- 4.3 Existing machine safety guards must not be removed. Designated personnel should be responsible for the control, repair, modification, servicing, cleaning and maintenance of work equipment / work gear. As long as a certain work equipment is in use, it shall be maintained so that it meets the current requirements. If safety depends on how the installation is performed, the equipment should be inspected after installation but before being put into service for the first time, to ensure that it is properly installed and working well. The same applies when the equipment is moved and installed in a new location. If a safety guard must be removed temporarily for example for maintenance, responsible, skilled personnel must first be consulted. Safety guards must unconditionally be restored before leaving the machine unattended.

Working alone

- 4.4 Equipment, machinery and tools must not be used by a person who is alone on the premises, except when the course director or other authorized personnel assesses the risk associated to be minimal.

Student workshop "Teknologverkstaden"

- 4.5 Access to the student workshop (teknologverkstaden) is granted to the people within the department who has signed for these regulations, and to those students who have signed for the regulations "Foreskrifter for teknologverkstad". Anyone who does not comply with these regulations as well as other instructions, oral or written, forfeits the right of access to the student workshop.
- 4.6 Access to the student workshop (teknologverkstaden) is normally only granted during opening hours and provided that the course director or other skilled personnel is in the immediate vicinity. During other times an agreement with the workshop manager and course director is required.
- 4.7 After the completion of work, tools must be put back in their places, materials put away and machinery and workshop cleaned.
- 4.8 When a group of students is working in the student workshop, the course director is responsible for the order in the workshop and shall monitor the work. If the order is not maintained, the workshop staff can keep the student workshop closed until the order is restored.

Lifting equipment

- 4.9 Lifting equipment, such as hoists, overhead cranes, trolleys, etc. may only be operated by persons who have received instruction on their use. Remember to never walk or stand under a suspended load.

5 Accident, fire, injury

Alarm signals

5.1 The fire alarm has a pulsating signal from a red bell. This means instant evacuation! The burglar alarm has a constant swaying sound from a white siren.

Knowledge of protection material and measures

5.2 All active staff must familiarize themselves with existing fire extinguishing equipment, medical equipment, telephones, etc., and of the measures to be taken in case of fire or accident.

Fire extinguishers

5.3 The fire extinguishers contain carbon dioxide or foam, and can also be used on fires in liquids, oils, and electrical equipment.

Alarm in case of accident, fire or injury

5.4 In an emergency, call 112. Request the fire brigade, an ambulance or the police. Inform that you are calling from KTH, Machine Design, Brinellvagen 83 and state the cause of the alarm. Remember to meet up emergency services to guide them to the scene of the accident!

Then always call the KTH alarm number 08-790 77 00. State the cause of the alarm, the address and a telephone number on which you can be reached in order for KTH's Security Group to call you back.

For events that do not require help from ambulance, fire brigade or police, only alert KTH's alarm number 08-790 77 00, around- the-clock.

All active staff present on the department's premises and carrying out work shall keep themselves updated on the KTH Intranet on the alarm instruction in case of accidents intra.kth.se/campus/sakerhet.

Reassembly

5.5 Reassembly after evacuation takes place outside the building, for the assembly point see the attached map: the car park below Brinellvagen 87.

Evacuation plans and safety officers

5.6 Evacuation plan and names of evacuation leaders, manager of flammable goods, chemical officer, fire prevention officer and environmental representatives are in all corridors on all floors.

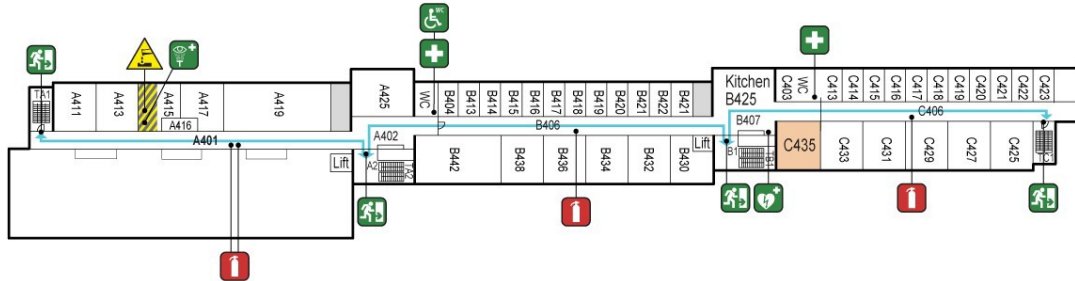
Floor Plans

Floor plans

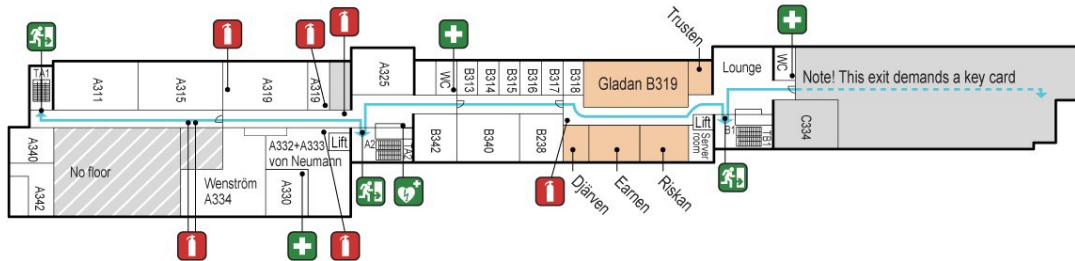
Evacuation routes	Fire extinguisher	Defibrillator	Emergency exit
Zone with explosive gas or classified chemicals	First aid kit	Eye shower	Emergency exit, accessible
Area belonging to Akademiska Hus	Classified chemicals	Accessible toilet	
Meeting room			

Please note that these are simplified floor plans

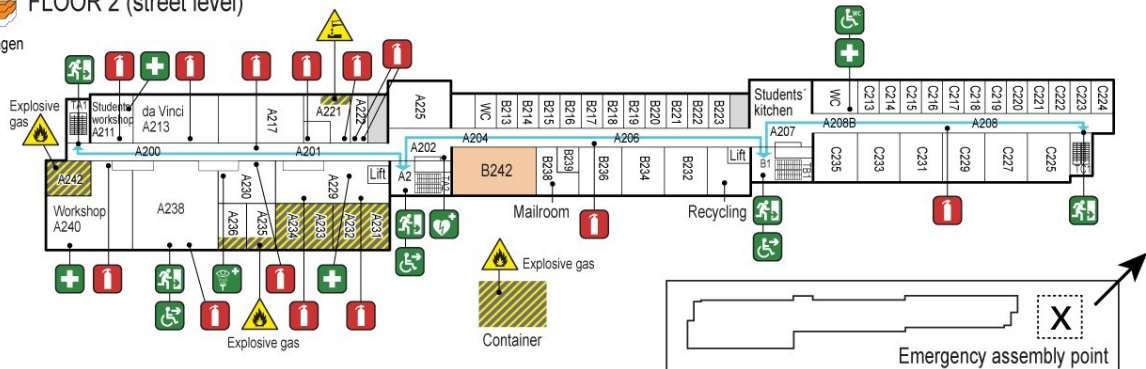
FLOOR 4
Brinellvägen



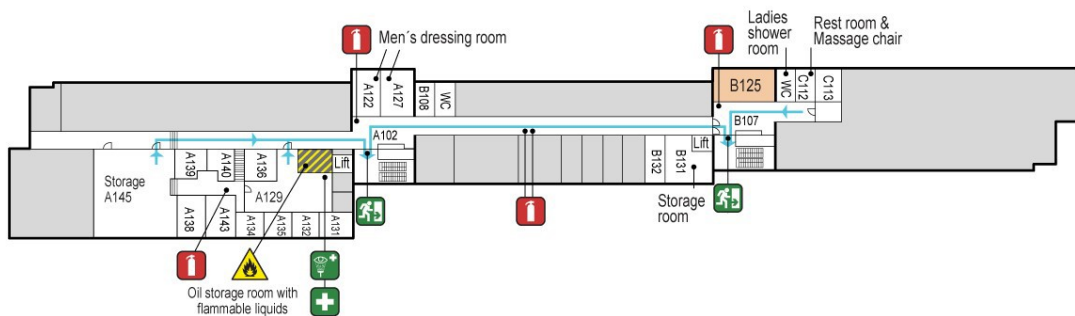
FLOOR 3
Brinellvägen



FLOOR 2 (street level)
Brinellvägen



FLOOR 1
Brinellvägen



Signing for safety regulations

I hereby declare that I have read and understood the contents of the Safety regulations for employees and students at Machine Design.

Date

Personal identity number

Signature

Printed name

This page should be signed and then handed to the administration at Machine Design.