Yıldız Technical University
Civil Engineering Faculty
Environmental Engineering Laboratory

Laboratory Safety Rules

May 2023

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LABORATORY GENERAL RULES

- Dress properly during a laboratory activity. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back, and dangling jewelry and baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed on lab days.
- **Do Not**
  - go out with your lab coat and gloves on
  - eat or drink in the lab
  - taste any chemicals or substances you are working with
  - use your mouth for pipetting substances
  - handle or use broken glass with bare hands
  - pour chemicals down the drain without permission
  - operate lab equipment without permission
  - perform your own experiments unless given permission
  - leave any heated materials unattended
  - place flammable substances near heat
  - engage in childish acts such as horseplay or pranks
  - taste or sniff chemicals

LABORATORY GENERAL RULES

- Open wounds must be sealed with adhesive bandage to prevent contamination in the lab.

- Laboratory doors have to be closed in terms of security.

- Never work alone in the laboratory. No student may work in the science classroom without the presence of an instructor.

- You have to plan your experiments/ analysis in weekdays at working hours.

- Children are not allowed to enter the laboratory.

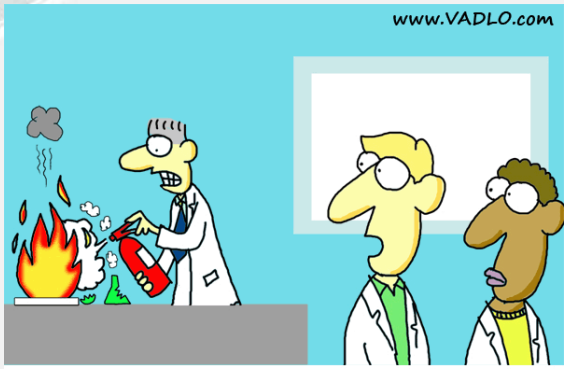
WORKING RULES IN LABORATORY

Cleaning of Study Areas

- Cleaning the laboratory working area is your responsibility.
- At the end of the laboratory studies, tools and materials that are used in the studies have to be cleaned. This is also important for safety of other lab workers in the lab.
- When a chemical is spilled, you have to clean the spill and, if necessary, the management of the laboratory must be informed.

Cleaning of Study Areas

- Wastes from laboratory studies have to be removed according to the rules that were defined by the Laboratory Administration.
- When you clean the lab tools, gloves and lab glasses have to be worn.
- COD flask do not have to be washed with cleaning acid.



"Must be a clinical fellow."

Cleaning Contaminated Glass Material

- Before washing the tools with acid solution, they have to be washed with water and dried. This is important to prevent to contamination of acid solution.
- Dried glass material have to be kept in 5% nitric acid solution for 1 day.
- After glass material is taken out from acid solution, they should be washed with water and then distilled water.
- After the clean tools are dry, you have to put them into the appropriate storage area.

Solution Preparation

- When you prepare a solution, you have to consider the security measures given in MSDSs (Material Safety Data Sheet, MSDS).
- When you use corrosive substances, protective goggles and gloves should be worn during solution preparation.
- Do not add water on acid, acid has to be added on water gradually.
- Solutions have to be prepared in required amounts.
- Chemicals have to be taken in required amounts and excess amount should not be put back into the stock container.
- Pipettes should not be dipped into chemical stock container.

Safekeeping Sample and Solution

- In order to use the refrigerator efficiently, storage containers have to be chosen to have suitable volumes.
- When the study is finished or the sample stocking time is expired, samples have to be removed from the refrigerator.
- Samples should not be kept uncovered and in unbalanced flasks in the refrigerator.

Stocking of Chemical Material

- All chemicals used in the lab have to be kept in the chemical storage room, and chemicals have to be labeled according to the standards.
- Lists of chemicals in alphabetical order are provided on the shelves. Stock container should be put back into its correct place after usage.
- Purchased chemicals have to be recorded in the list and MSDS file must be attached.
- Corrosive materials should be stored in the steel cabinett.
- Volatile chemicals should be stored at +4 C.

Labelling

- Chemicals and samples have to be labelled.
- In case of a transfer of a solution/sample into a new container, a new label has to be prepared.

Solution/Sample.....

Date..... **Retention Period**.....

Prepared by.....

Name of Analysis.....

Solution/Sample.....0.1 N NaOH**.....**

Date..25/03/05.....**Retention Period**....6 monts

Prepared by..... Ahmet Çelik**.....**

Name of Analysis.....pH adjustment.....

Solution/Sample.....Borat Tampon Çözeltisi**...**

Date.. 25/03/05..... **Retention Period**...1 monts

Prepared by..... Ahmet Çelik**.....**

Name of Analysis. .Nitrogen of Ammonia.....

Solution/Sample .. Ataköy WWTP Effluent

Date.. 25/03/05.... **Retention Period**...2 weeks

Prepared by..... Ahmet Çelik**.....**

Name of Analysis..PHD Thesis.....

The standard labels
have to be obtained from the lab!

Waste Disposal

- Household waste consisting of laboratory wastes, biological / chemical waste and broken glass have to be removed as classified.

- Microbiological waste have to be sterilized on a regular basis and must be removed after sterilization in appropriate containers.

- Wastes with sharp edges have to be removed by special containers.

- Cracked and broken glass should not be used in lab and this type of material (flask, flasks, etc..) have to be reported to lab management as the laboratory code (such as S6).

RULES OF LABORATORY INSTRUMENT/ EQUIPMENT USAGE

Air and Vacuum Lines

- Abbreviations;

Air: AIR

Vacuum: VAC

- Air and vacuum lines should not be suddenly opened.
- Connections should be checked frequently for leaks.

Pipetter Ball

- Never suck liquids with your mouth.
- When using a pipetter ball, suction of liquid into the pipetter ball is a very important problem.
- If It happens, liquid has to be poured from pipetter ball and you have to wait until the ball is dry.
- S (Suction)
- A (Air) hava,
- E (Empty)

Distiled Water

- Distiled water device should not be tempered with.
- Distiled water level in the machine must be paid attention to. If the level is low lab personel should be notified.
- Distiled water should never be pipetted directly out of a container any size.
- Ask for help from the lab personel before using the double distiled water device.

Filtration Set

- Make sure that the filter set is connected to vacuum line.

- On order to prevent to leakage of filtrate into vacuum line, you have to empty filter Erlenmeyer.

- After the filtration process, the vacuum line closed.

- After the filtration process, you must be left clean the filter set.

pH Meter

- Each pH meter may have a different calibration method.
- Before use calibration of the pH meter should be controlled.
- Keep the calibration solutions clean. Wash the probe with distiled water and dry before dipping in the calibration solution.
- Calibrated pH meter should not be switched off during the day. If there is any problem with power device should be calibrated again.

- Keep the probe vertical during measurement. Do not mix the solution ith the probe. Keeo the probe stabilized. To mix the solution use a magnetic stirrer. Be careful not to damage the probe while stirring.
- When not used the probe should be kept in the protective solution, which should be kept clean. For that the probe should always be washed and dried before putting it in the protective solution.

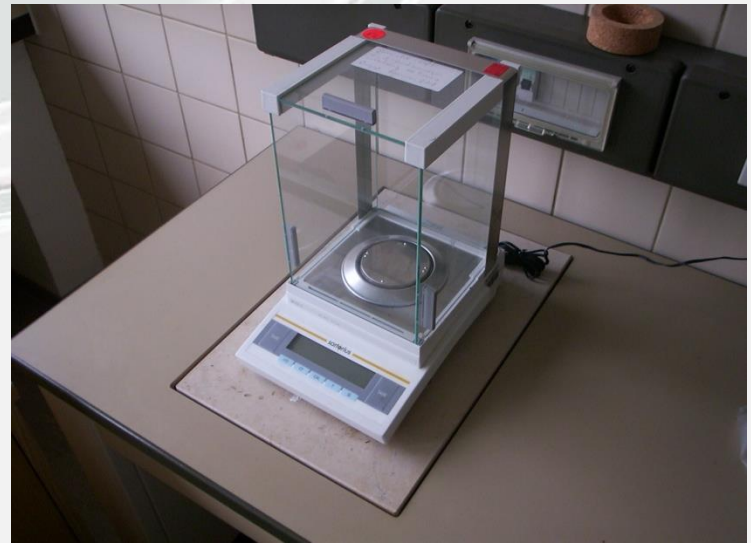
Oven/Furnace

- Temperature adjustments should not be tempered with. In case of a need of change in the adjustments notify the lab personel.
- Do not keep the lids open for a long time.
- Don’t use these devices with plastic gloves on. Always use forceps when working with high temperatures.

- Materials washed with solvents should not be put into the oven due to explosion risks.
- Sample containers and forceps should not touch the sides of the furnace.

Scale

- When not in use the lids should be closed and the scale should be free of weight.
- Always check the horizontal position of the scale. The air bubble in the water scale should be in the middle. Otherwise notify the lab personel for calibration.
- Chemical spills on and around the scale should be cleaned immediately with the brush provided next to the scale.



Fume Hood

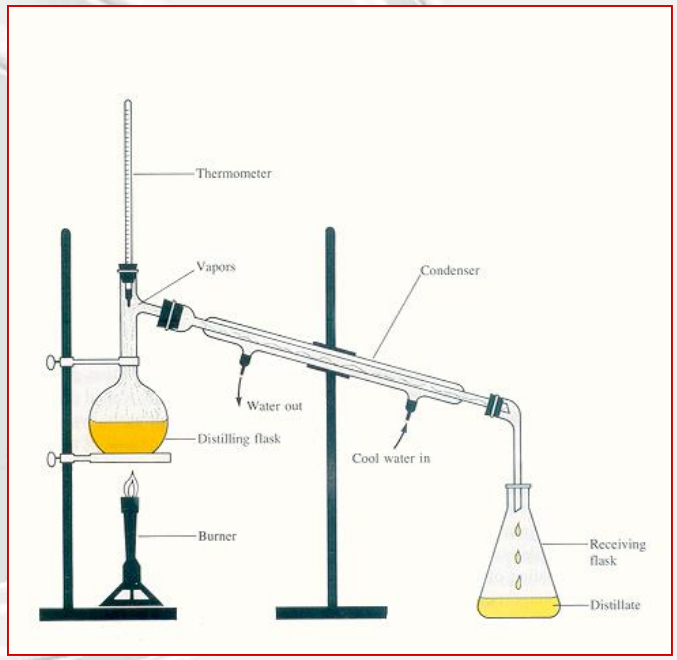
When working with concentrated acids or base and solvents, in order not to breath the toxic gases and fumes one should always work under the fume hood.

Fume Hood (continued)

- Before use the ventilation system should be switched on.
- When working under the fume hood one should always wear protective glasses.
- If heat is applied while working with toxic and dangerous substances like benzen carbon tetrachloride and mercury, one should work under fume hood.
- Don’t heat inflammable liquids (ether, acetone etc.) in an open lid container or in a room with flame. One should work under fume hood.
- When working under fume hood chemical substances should be put at least 15 cm inside the bench and the lid of the fume hood should be kept as closed as possible.
- When working with flammable chemical substances under the fume hood all the electrical connections should be done before hand.

Distillation Unit

- Prior to distillation due to explosion risks cooling water should be turned on.
- Cooling water should be controlled and made sure that it does not overheat.
- Cooling water should not be turned off before it is made sure that the water is cooled down completely.



Water Bath

- Water level in the device should be controlled frequently. If the water level is low, it should be filled with distilled water..
- Appropriate precautions should be against steam taken when working with the water bath.
- Device should be turned off after use.

Spectrophotometer

- Instructions should be read carefuly when working with the spectrophotometer.
- Device should be turned on minimum 15 minutes before use.
- Cuvettes should be dry and clean before they are out in the device. After analysis cuvettes should not be left in the device and they should be emptied, cleaned and stored appropriately.
- Device should be switched off after use.

Microscope

- Everything on a microscope is very expensive, so be careful.
- Hold the microscope firmly by the stand, only. Never grab it by the eyepiece, for example.
- Hold the plug (not the cable) when unplugging the device.
- Since bulbs have a limited life, turn the light off when not in use. If used constantly on full power the bulb will overheat and may blow (or melt the inside the housing).

Microscope

- Adjustment screws on the microscope should not be forced.
- When making the coarse adjustment, the slide should not be touch the lens.
- Always make sure the stage and lenses are clean before putting the microscope away.
- Use good quality lens tissue with appropriate lens cleaner or distilled water to remove immersion oil from 100X objective.
- Cover the instrument with a dust jacket when not in use.

Gas Tubes

- Tubes should be stabilsed with a chain to prevent falls.
- Tubes should be carried using appropriate tools.
- Caps of tubes should be closed while transportation.
- Connections of tubes should be made by technicians.
- Empty tubes should be marked and lab personel should be notified.
- Connection tubes, regulators etc should be controled daily.

Material Safety Data Sheet (MSDS)

A Material Safety Data Sheet (MSDS) is a document that contains information on the potential hazards (health, fire, reactivity and environmental) and how to work safely with the chemical product.

It is an essential starting point for the development of a complete health and safety program. It also contains information on the use, storage, handling and emergency procedures all related to the hazards of the material.

The MSDS contains much more information about the material than the label. MSDSs are prepared by the supplier or manufacturer of the material.

The Informations in MSDS

- Chemical substance / mixture and the content name
- Manufacturer information
- Contents of harmful substances
- Physical and Chemical Properties
- Fire and explosion data
- Harmful to health information
- First Aid information
- Storage information
- Reactivity and stability information
- Having information about the spill or leak
- Ecological and toxicological properties
- Special measures
- Special protection information
- Transport information
- Removal information
- Regulatory Information
- Others …

http://www.merck.de

http://hazard.com/msds/

http://www.chess.cornell.edu/Safety/MSDS/

http://www.ilpi.com/msds/

http://www.physchem.ox.ac.uk/MSDS/#MSDS

MSDS'lerde kullanılan terimler sözlüğü:

http://www.ilpi.com/msds/ref/index.html

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http://www.merck.de/en/index.html

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Merck Kimyasallar kimdir:

Merck Kimyasallar'da, yüksek kalite endüstriyel ve laboratuar kimyasalları alırsınız – artı çekici bir katma değer: Merck Kimyasallar ile çalışırken tamamen rahatlayabilirsiniz. Neden? Çünkü, ürünlerimiz oldukça güvenli ve güvenilirdir. Çünkü, sizinle yakın ortaklık içerisinde geliştirilmiş ve üretilmişlerdir. Ve çünkü, herşeyi daha iyi hale getirmek ve sizin için yeni iş alanlarının önünü açmak için yollar aramayı asla bırakmayız. Kısacası, sizin başarınız, bizim başarımızdır.

Sizin için ne var?

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Web Sitesi Kılavuzu merck-chemicals.com'u Keşfedin

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Merck Güvenlik Bilgi Formlarını (MSDS) ara

MSDS aramamız Merck'in tüm tehlikeli ürünlerini ve tehlikeli olmayan ürünlerinin çoğunu kapsayan özel bir bilgi servisidir. İngilizce temel versiyonuna ek olarak, yerel düzenlemeleri göz önüne almadan, her MSDS'in yerel dil versiyonları da mevcuttur. Merck'in MSDS'inin net bir şekilde hazırlanmış sunumu da dahil kesin veriler laboratuarda maksimum güvenliği garanti eder.

Katalog numarası gir:

Merck'in MSDS'i:

- AB mevzuatına uygun
- çeşitli yerel dil versiyonlarında mevcuttur
- dünya çapında güvenliği garantileyin

Güvenliğiniz için

Laboratuar kimyasalları kullanan herkes ilgili potansiyel risklerin tamamen farkında olmalı ve maddelerle çalışmadan önce uygun güvenlik tedbirlerini almalı. Bu güvenlik tedbirleri kimyasalların kullanımını, onlarla çalışan kişilerin kişisel güvenliklerini hem de çevresel ehemmiyeti içerir. Merck'in MSDS'i (Merck Güvenlik Bilgi Formu) bu önemli bilgileri sağlar.

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MSDS

Standart İngilizce MSDS'i yükle PDF

Belgie	PDF	Belgien	PDF	Belgique	PDF
Brasil	PDF	Bulgaria	PDF	Ceská Rep	PDF
Chile	PDF	China	PDF	Cyprus	PDF
Danmark	PDF	Deutschland	PDF	Ellas	PDF

Bu ürün hakkında
- MSDS
- Analiz Sertifikaları
- Uygulamalar
- Teknik bilgi

WARNING SIGNS
Danger Classification and Symbols

• Patlayıcı, (Explosive-E)	
• Oksitleyici, (Oxidising-O)	
• Aşırı alev alıcı, (Extremely Flammable-F+) veya şiddetli alev alıcı, (Highly Flammable-F) veya alev alıcı (Flammable)	
• Çok toksik (Very Toxic-T+) veya toksik (Toxic-T)	
• Zararlı (Harmful) • Rahatsız edici (Irritant-Xi) • Hassasiyet yaratıcı (Sensitising- Xn or Xi)	
• Korozif (Corrosive-C)	

WARNING SIGNS
Danger Classification and Symbols

• Kanserojen (Carcinogenic, Categories 1 and 2-**T**) • Kanserojen (Carcinogenic, Category 3-**Xn**)	
• Mutajenik (Mutagenic, Categories 1 and 2- **T**) • Mutajenik (Mutagenic, Category3- **Xn**)	
• Üreme açısından toksik (Categories 1 and 2-**T**) • Üreme açısından toksik (Category 3- **Xn**)	
• Çevre için tehlikeli (Dangerous for the Environment- **N**)	

EMERGENCY PLAN

Please use the emergency exit door

BEHAVIOUS TO AVOID

Do not put chemicals into the chemical room without considering the alphabetical order.

Do not leave the benches dirty and wet.

Do not keep on using broken glass material.

Do not eat with gloves on.

Do not go to the office area with your lab coat and gloves on.

Do not leave the interior windows in the offive area open.

Do not leave the scale and its surrounding dirty.

Always be careful when using the distiled water device.

Do not touch the doors and the door knobs with your gloves on.

Always keep your working area clean.

Do not use expired chemicals and solutions.

Notify lab personel if you need to work after work hours and at weekends.

You can reach laboratory safety and rules at Yıldız web address.

http://www.cem.yildiz.edu.tr/

Thank you...