



Guidelines for laboratory safety and chemical use at the Abisko Scientific Research Station

Welcome to the Abisko Scientific Research Station laboratory facilities. Laboratory work can be hazardous. Many of the materials encountered in labs are carcinogenic, poisonous, flammable, and explosive. Some of these materials and equipment may also cause severe burns, cuts, or bruises if handled improperly or carelessly. Most accidents that occur in the laboratory are a result of carelessness, impatience, improper or unauthorized experimentation, and disregard for safety rules or proper operating procedures. In order to minimize the chances of an accident in the laboratory certain rules and regulations must be obeyed at all times when one is working or observing in a chemical laboratory. Therefore, it is not advisable for anyone to work in a laboratory without proper knowledge of the dangers involved. Learn and observe the safety and laboratory rules!

The following guidelines have been developed to ensure a safe and enjoyable workplace. All users of these facilities are required to read and follow them. If you are new to lab work, especially using chemicals, you must be supervised by a mentor or collaborator. Always ask for help if you are unsure about anything in the labs. It is always your responsibility to prevent accidents in the laboratory. Be aware of what is happening around you at all times.

Always plan laboratory work before executing it. Providing for safety and avoiding potential accidents are important elements of the plan. You should understand the hazards associated with the chemicals involved before you start the experiment. If you are unsure about the hazards and the protection that you need, Material Safety Data Sheets (MSDSs) are available in the labs or online.

Chemical brought to ANS

- All chemicals must be stored in the approved ANS Chemistry Lab cabinets. These cabinets are specially designed to store chemicals are ventilated and resist fires:
 - It is perfectly fine to store chemicals temporarily in other locations, e.g. approved chemical cabinets or under fume hoods found in other lab spaces.
- All chemicals must be entered in the chemical inventory and a bar code affixed on the container:
 - Chemicals purchased at the Chemistry Store at Umeå University already have a "ChemKeeper" bar code label.
 - Chemicals purchased outside the Umeå University Chemistry Store, typically directly from a vendor such as Merck, Sigma Aldrich or VWR,



must get a barcode label. These can be obtained from karl.heuchel@umu.se (CIRC) or alisa.heuchel@polar.se (ANS).

- All chemicals must be labelled with your name and dispose by date.
- All chemicals will be inventoried each autumn. Bottles without bar codes, owner name, and disposal dates will be sent to the chemical waste facility in Kiruna.
- All chemicals will have an associated material safety data sheet (MSDS) printed and stored in the MSDS binder located at each chemical cabinet and an electronic copy (PDF) emailed to karl.heuchel@umu.se (CIRC) or alisa.heuchel@polar.se (ANS).
- ANS does not provide facilities for long-term storage of chemicals. In general, chemicals should be for projects or instrument specific and not purchased for general use without a specific disposal date.

General Responsibilities

- Users are responsible for obtaining the proper MSDS, reading them, and making sure the proper safety equipment and lab space is available before use to ensure:
 - The proper personal protection equipment (PPE), e.g. lab jacket, safety goggles, nitrile gloves, is worn at all times.
 - Work environment is properly equipped to handle use of chemicals, e.g. fume hoods, bench paper, proper glassware, eye washing station, and shower.
 - That you properly store and dispose of waste.
- Clothing should protect you from accidental spills and splashes. Wear clothing you can remove easily in case of accident. Clothes should cover the body from the neck down.
- When handling any chemicals, users, must at a minimum wear full-length pants, closed-toe shoes (no sandals), lab jacket, and safety goggles. Other protective measures may be necessary and details are always found in the MSDS, e.g. face shield, respirator mask.
- Wear eye protection (i.e. chemical safety goggles)! This applies at all times to all persons in the laboratory—even guests. Contact lenses worn with goggles are acceptable, but safety glasses and prescription safety glasses without goggles do not provide adequate protection. Increase the degree of protection (use face shields, laboratory hoods, etc.) when the hazards increase.
- Never leave experiments unattended unless you take special precautions to avoid accidents and you notify the ANS technical staff.
- “Working” amounts of chemicals or mixtures, should be stored in appropriate glassware or plastic containers (see MSDS) and be labelled with your name, contents, and disposal date.



- Storage containers should be capped or covered with parafilm when not being used
 - They should be stored in approved chemical cabinets or under fume hoods.
- Temporary storage of chemicals under fume hoods is acceptable, if they are clearly labelled with your name, chemical name, and disposal date:
 - It is your responsibility to make sure that chemicals that will react with each other are not stored under the same fume hood unless the containers are sealed and acceptable under the guidelines found in the MSDS.
- There is a fume hood and sink in both the ANS chemistry lab and CIRC dishwashing room that can handle strong acids.
- Always use clean bench paper on all lab benches and under fume hoods. Replace with clean bench paper when you are finished:
 - Contaminated wastepaper must be handled separately from normal wastepaper.
- Never lay down or store pipettes on their side to avoid contamination and/or damaging them. Always keep pipettes in a vertical position and stored on appropriate pipette racks supplied in each lab.

Safety – Personal Protection

- Use a safety shield when working with highly reactive chemicals and mixtures.
- Flames are never allowed when flammable gases or liquids are in use.
- Always alert others before lighting a flame!
- Know where to find and how to use all emergency equipment (such as fire extinguishers, eye washes, and safety showers) in the laboratory.
- Take care not to ingest anything in the laboratory! Food, gum, beverages, and tobacco products are never allowed in the laboratory.
- Never pipet by mouth!
- Tie back long hair and remove jewellery before entering the laboratory.
- Always assemble laboratory apparatus away from the edge of the laboratory bench.
- Always check your glassware and discard any with chips, breaks, or obvious flaws.
- When using a fume hood, set the equipment and chemicals back at least 15 centimetres from the front opening of the hood.
- Be certain that you understand the proper use and operation of all laboratory equipment.
- Avoid working in the laboratory alone, especially if working with highly reactive, toxic or flammable materials.



- Use fume hoods for all operations in which involve toxic, corrosive, irritating, or flammable chemicals. Be certain that the fume hood is operating properly prior to your work.
- Never put your face inside the fume hood.
- Never perform unauthorized experiments or deviate from the experimental plan, especially do not scale up the experiment.
- Make sure the chemical waste container is of the proper volume and material (plastic or glass bottle), i.e., do not use a 1 litre bottle for 100 ml of waste. Never mix chemical wastes.

Safety – Personal Protection (continued)

- Always prepare chemical stocks, standards, and mixtures under the conditions outlined in the MSDS, e.g. some chemicals must be handled under a fume hood while wearing extra PPE.
- Any chemical or chemical mixture stored under a fume hood must be logged on the log-sheet attached to the screen of each fume hood. This includes your name, chemical contents of your container, special risks, and date it will be removed and disposed.
- If you are using a lab at the same time a chemical is being used by others, you must wear the personal protective equipment as specified in the MSDS.
- Always add acid to water and never water into acid as the first drop of water reacts immediately, and the heat might be high enough to boil the water instantly, which could spray acid out of the container.
- Always wash your hands when you leave the lab, even if you wore safety gloves.

House Keeping

- You are responsible for ensuring that a clean workspace is maintained both in your own working area and in the common working areas. The laboratory environment should be at least as clean and orderly when you finish your work as when you began.
- Place broken glassware in the proper receptacles. Do not allow it to accumulate in the lab.
- Keep laboratory benches free of spilled chemicals. Clean up spills immediately as directed by ANS technical staff and following guidelines specified in the MSDS.
- Avoid physical hazards by keeping drawers and cabinets closed.
- Prevent tripping and contamination hazards—never place materials on the floor.
- Do not allow dirty glassware to accumulate. Always make sure glassware has been washed in the ANS or CIRC dishwasher before returning it to storage cabinets.
- Follow ANS protocols for disposal of chemicals. If you don't know, ask! Improper disposal results in possible personal hazard or environmental contamination:



- Never empty chemical waste into the sinks. Always read the MSDS to determine proper disposal methods.
 - If MSDS guidelines allow for diluting chemical waste with water and washing it down the sink, do so only under fume hoods with sinks and running water.
- Needles and pipette tips should only be disposed of in designated receptacles found in each lab. If you are working in a lab without a sharps container for used needles or plastic bottle for pipette tips, please contact ANS staff to get them before you start working.
- Dirty glassware and plastic bottles should be rinsed out and put in the dishracks found in the ANS or CIRC dishwashing room. Only ANS and CIRC staff and those trained by them are allowed to run the dishwashers.
 - It is critically important to rinse glassware and plastic bottles only after chemicals and residues have been safely neutralized and removed (see MSDS).
 - Procedures for cleaning container that held strong acids must be followed (see MSDS).

These guidelines contain information believed to be reliable regarding the safe use and handling of chemicals in our laboratories. It is intended to serve only as a beginning point for information and should not be construed as containing all the necessary compliance, safety, or warning information.

Remember to always ask for help if you have questions or are unsure about lab safety procedures!

Contact

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