

Safe laboratory practices

Introduction

Good lab practices are an integral part of conducting research safely. Engineering controls can limit exposure to hazards and PPE can protect the individual researcher, but making sure your behaviour doesn't expose you or your colleagues to risks is important. These safe lab practices cover many of the common routes of exposure but are by no means a comprehensive list.

This guidance provides details of basic safety practices. Specific safety requirements for your work activity and area will be detailed in local Codes of Practice and Standard Operating Procedures.

No consumption of food or drink

Never eat food, drink beverages, chew gum, apply cosmetics (including lip balm), or handle contact lenses in the laboratory.

Consuming food in the lab can pose many hazards.

- Eating or drinking in the lab can, first and foremost, increase your risk of exposure to hazardous materials via secondary contamination.
- Food or drink can leave a mess increasing the risks for contamination of your experiments and potentially attracting pests.
- Eating or drinking in the lab can also be a distraction that can lead to a spill or more serious incident.

Wear your PPE and proper lab attire

Dress for work in the laboratory. Wear clothing and shoes that cover exposed skin and protect you from potential splashes. Tie back long hair, jewellery, or anything that may catch in equipment.

Where identified through risk assessment, lab coats, gloves, eye protection, etc must be worn at all times in the lab.

- Shoes completely covering the top of the foot must be always worn when working in the lab.
- Lab coats will protect your clothes and your skin from splashes, spills, or other exposures to chemical or biological agents.
- Safety glasses or goggles will protect your eyes from physical or chemical harm. Skin will heal after minor burns or lacerations, but your eyes will not.
- Gloves protect your skin from hazardous materials your hands may meet. However, exposure can occur when removing gloves and disposing of them. Follow the steps for safe removal of gloves provided in your lab area.

Good hygiene

- Wash hands after handling any hazardous materials, and before leaving the lab.

- Keep personal items separate from lab work. This will prevent spread of hazardous reagents and cut off a potential exposure route.
- Do not apply cosmetics while in the lab. Applying anything to your face, especially around your mouth or eyes, pose a significant risk of exposure.
- Dry and cracked skin can provide a route to exposure. Using barrier creams and moisturiser to keep the skin on your hands healthy can help prevent exposure.

Use proper storage containers

This applies to individual containers, storage cabinets, and waste.

- Storing organic solvents in plastic bottles can compromise the container, just like acids in metal containers or HF in glass. Chemicals must be stored in containers made of materials that will not react.
- Flammable chemicals must be stored in fire rated cabinets. Acids and caustics must be stored in separate cabinets lined with plastic to prevent any vapours from reacting with the metal housing. Chemicals known to react violently when mixed must be stored separately.
- Chemicals with significant respiratory hazards must be kept in ventilated fire rated storage.
- As with chemical storage, waste must be stored in non-reactive containers, or containers with non-reactive liners.
- All containers must be labelled with their contents. This is crucial so those working near you and anyone visiting the lab will know what hazards may be present. Ideally the hazards present should be included on any label.

Don't work alone

Lone workers are those who work by themselves without close or direct supervision or contact with others. It is College policy to ensure that all lone working is avoided where reasonably practicable to do so. Where lone working cannot be avoided, safe working must be facilitated. See [Lone working guidance](#).

Stay focused and aware of your surroundings

- A lab can be a very busy environment. Researchers are working side by side on different projects that can have different hazards. It is important to be aware of your surroundings and the work that is going on around you.
- Work with purpose. Labs can also be an environment filled with distractions. When working with hazardous material it is critical that you focus on what you are doing and try to eliminate distractions.
- Do not use headphones in the lab. Listening to music while doing repetitive work can be relaxing but it eliminates one of your five senses used in situational awareness. If you cannot hear what is going on around you, it is possible to miss the sound of a glass container breaking or a warning from a colleague. The use of radios is permitted if there is line management approval and a consensus agreement and if the volume is not excessive.

Participate in emergency exercises

- Ensure all lab members are familiar with the lab's safety equipment and emergency protocols.
- Make sure everyone knows where the nearest manual call point, extinguisher, spill kit, first aid kit, and AED are.
- Know how to get out of your building and where to go after and evacuation.
- Organize or attend emergency drills for your lab's specific activities.

Store and Use Batteries Properly

Batteries provide reliable power for devices used both in the lab and in the field. While they are very useful for research, they do pose potential hazards. If stored improperly both lead-acid and lithium-ion batteries are potential ignition sources for fire and can cause chemical burns. Lithium-ion batteries can pose a more serious fire risk if they are charged or used improperly. Batteries must never be disposed of in the normal waste, instead they can be recycled at various locations across campus. For more information on the proper use and storage of batteries see the [guidance on the Imperial website](#).

Version History

Version no.	Effective date	Approved by	Description of key changes
01	1 Nov 2023	SJ	New document