

---

## ***SEE Laboratory Safety Alerts – 2024 July***

---

We would like to raise your awareness and promote safer lab practices by bringing your attention to a couple of recent incidents that have occurred in SEE labs, as well as reminding you of the lab policies in place at the university. It is crucial that you always keep in mind your responsibilities as a lab user to maintain a safe and clean workplace for everyone.

### **Recent Incidents:**

#### **(1) Centrifuge Safety:**

The centrifuge is one of the most frequently used pieces of communal equipment in our labs. While it may seem simple to operate, it requires careful handling. Despite the presence of safety guidelines next to the centrifuges, we have noticed that not all users are adhering to the guidelines.

In a recent incident, an unattended and imbalanced centrifuge was left running late at night. This imbalance resulted in loud noise and unusual shaking. Fortunately, a vigilant lab user nearby heard the noise and immediately stopped the centrifuge. Upon inspection, it was discovered that there was a 3-gram weight difference between the two centrifuge tubes, causing the imbalance.

Such incidents are unacceptable, especially considering that users receive operation training during their initial use and there are safety notices in place. Additionally, we provide an electronic balance for weighing centrifuge tubes, conveniently located on the bench behind the centrifuges.

Please remember that improper use of a centrifuge can be dangerous. Always ensure that the load is balanced by mass (not volume) at least to the nearest 0.5 gram. Do not leave the centrifuge unattended until it has reached the set speed. If the centrifuge is making unusual noise or shaking, it is important to promptly stop the centrifuge, regardless of whether the samples belong to you or not.

Centrifuge accidents can be serious. Here are two photos (found on google) of damaged centrifuges due to imbalance:



## **(2) Autoclave/Clinical Waste Handling:**

Several research groups generate clinical waste during their work. It is crucial to segregate this type of waste from general waste. Lab users must be aware that clinical waste should be packed in red, heavy-duty plastic bags provided by the Technical Office and sterilized properly by autoclave before disposal. During the use of the autoclave, users should follow the correct procedures and take necessary precautions to prevent spillage. Any accidental leaks should be reported immediately.

During a routine check of communal laboratories, the Technical Office discovered a puddle of brown, jelly-like agar on the floor caused by a broken sterilized red clinical waste bag. Further investigation revealed that the autoclave used for waste treatment was heavily soiled, with the water in the tank turning brown and the drainage pipe blocked with agar. It took approximately an hour to clear the blockage and refill the autoclave with clean water.



Please note that sharp objects should not be disposed of in clinical waste; they should be placed in the designated sharp box. Avoid overfilling the autoclave bag, and leave the bag loosely sealed to allow for steam penetration during autoclave. Once the cycle has ended and the autoclave has cooled down, tightly seal the bag and dispose of it in the clinical waste bin.

In the event of spillage, please inform the Technical Office promptly for assistance rather than leaving the mess unattended.

## **(3) Electrical Safety:**

Ensuring electrical safety within our laboratories is of paramount importance. The significant number of electrical appliances in use, particularly those without proper grounding and fuses, or those assembled by inexperienced individuals, poses considerable risks. Issues such as incorrect power ratings, improper connections, or alterations can lead to short circuits, electric shocks, or even fires.

We recently investigated a minor explosion involving a power cord connected to lab equipment. The incident was likely due to either a misunderstanding about electricity or negligence regarding the equipment's power

rating. Instead of using the intended 24V direct current (DC), the power supply was directly plugged into a 220V alternating current (AC) socket. Fortunately, the incident only caused a blast on the power cord.



During the investigation, it was also discovered that a 2-pin plug, lacking grounding and a fuse, was in use. This contravenes EMSD regulations. The electrical wires were not properly connected or protected, leading to exposed copper wires.



To enhance electrical safety within our laboratories, it is essential that lab users have a solid understanding of electricity. We discourage lab users from undertaking any electrical tasks on their devices and instruments, unless they have substantial hands-on experience, and their supervisor has approved the tasks. Lab users should be well-versed in the specific requirements, technical specifications, and safety precautions associated with the equipment they handle.

In instances like the one described, a rectifier should be used to convert alternating current into the required direct current. Always use grounded 3-pin plugs with an appropriate fuse. Grounding and fuses provide an additional safety layer by directing or cutting off electrical energy away from the user. Exposed copper wires should be fully protected with electrical tapes or wire connector nuts (preferred). These safety measures can effectively mitigate the risk of electrical shocks or short circuits.

If lab users are unsure about any aspect of electrical safety, they should promptly seek guidance. Supervisors and licensed electricians can offer valuable insights and address specific concerns. The Technical Officer can also provide helpful suggestions if needed. Any faulty equipment, damaged cords, or electrical anomalies should be reported immediately. Overlooking such issues could lead to accidents or equipment damage.

## Review of Previous Topics

### (1) Proper Attire for Wet Labs [\(Link here\)](#):

When working in a wet lab, it is crucial to follow proper attire guidelines to ensure safety and prevent contamination. Here are the essential rules for lab attire:

- Footwear: Closed-toe shoes are a must. No open-toed shoes are allowed.
- Legs: Legs must be completely covered. Avoid wearing shorts, capris, skirts, or ripped jeans.
- Tops: Shirts and tops should cover the shoulders and upper torso.
- Hair: Long hair should be tied back to prevent interference with experiments.

Remember to always wear lab coats, goggles, gloves, and other required personal protective equipment (PPE). Please always be reminded of the importance of proper attire, as there have been an increased number of violations during the summer session.



### (2) No Food or Drink in Labs:

Eating or drinking is strictly prohibited in all types of labs, including wet labs, dry labs, and computer labs. This rule is in place to ensure:

- Minimum Chemical Exposure: Wet labs deal with chemicals, reagents, and biological samples. Consuming food or drinks risks chemical contamination, especially if hands aren't washed thoroughly.
- Hygiene and Safety: Eating in a lab compromises hygiene and cleanliness. It is essential to maintain a sterile environment, and to prevent rodent invasion.

### (3) Proper Housekeeping in Labs:

Maintaining good housekeeping practices in a lab is essential for safety and efficiency. Please follow these guidelines:

- Well Organize Everything: Assign a proper place for equipment, consumables, and tools. Avoid accumulating unused items.
- Regular Cleaning: Routinely clean lab surfaces, benches, and floors. Promptly address splashes or spills to prevent accidents.
- Safety Enhancement: A clean and organized lab reduces the risk of accidents and injuries. Clear pathways and labeled storage areas promote safety.

- Professional Image: A tidy lab reflects professionalism and attention to detail. It leaves a positive impression on visitors, collaborators, and supervisors.

#### **(4) Updated Chemical Safety Guidelines in CityU:**

LSU has updated the Chemical Safety Guidelines ([Link here](#)) in April. Please check it carefully, as the content has increased to 89 pages. Notably, the responsibilities of Principal Investigators (PIs) have expanded to 20 items. Some of these responsibilities include:

- Being fully aware of the risks posed by their research materials/methods and effectively communicate these risks to their staff and students through written SOPs and training.
- Ensuring that their research members complete risk assessments before commencing laboratory work.
- Personally verifying that approved methods and precautions are being followed. This can be done by observing the behavior of members and enforcing safe work practices in line with the CityU Chemical Safety Guidelines and SOPs.
- Ensuring that members do not operate equipment or handle hazardous chemicals without proper training and authorization.

Lab users should also be reminded of their responsibilities as Laboratory Personnel outlined in these guidelines.

Let's work together to maintain a safe and efficient laboratory environment. Thank you for your attention to these matters.