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

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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) Proper Chemical Waste Handling:**

Chemicals are generally hazardous, and so is the chemical waste generated. Lab users must ensure proper chemical waste disposal and not treat them as general garbage.

A recent incident involved a janitor discovering an abnormally heavy trash bag in a research lab's trash bin. The bag contained over ten bottles (250ml each) of nanoparticles in organic solvents, which should be handled as chemical wastes.



Many substances and chemicals are classified as chemical waste and must not be disposed of in regular trash bins or sinks. Failure to comply with proper disposal procedures can result in fines and imprisonment for the waste producers. It can also cause injury to janitors and environmental damage. Please adhere to the proper chemical waste disposal procedures at CityU (Link: <https://www.cityu.edu.hk/vpre/studentlan/lsu/chemical-waste-disposal-guideline.pdf>):

- 1) **Identify Chemical Waste:** Refer to Appendix A of the Chemical Waste Disposal Guideline to determine if a substance is classified as Chemical Waste under the Waste Disposal (Chemical Waste) (General) Regulation <CAP 354C>. If unsure, consult the Technical Office.
- 2) **Routine Chemical Waste:** For spent chemical waste generated routinely during experiments (e.g., acids, alkalis, organic wastes), follow the instructions in the attachment titled “New Arrangement of Chemical Waste Collection in SEE (from 2023-09-01)” for proper disposal.

- 3) **Disposal of Stock/Unused Chemicals:** For disposal of stock or unused chemicals (preferably in bulk quantity), a request is required to be submitted to EPD and/or a licensed chemical waste collector. Please consult the Technical Office for the proper procedure.

Many researchers should be familiar with the handling of spent chemical waste (acids, alkalis, and organic wastes). It may look simple and easy, but it requires careful handling to prevent accidents.

In another incident, during a routine waste collection, an organic waste bottle suddenly broke with its bottom detached from the bottle completely, causing a spill of ~4L of organic waste. Fortunately, the waste bottle was contained in a secondary container, which collected the spill. This incident underscores the importance of using secondary containers to hold leakage of chemicals. It can also prevent the spread of incompatible chemicals, which could lead to more serious accidents.

This incident may have been caused by pressure built up from organic chemicals reacting inside the tightly closed bottle, or gradually damaged from daily handling.

**To ensure safety, please:**

- 1) **Proper Labeling:** A Chemical Waste Log Sheet (see attachment) should be attached to the chemical waste bottles. Users should check and fill it in before transferring waste into them.
- 2) **Secondary Container:** Use secondary containers to store chemical waste bottles to contain any potential spills.
- 3) **Avoid Overfilling:** Leave sufficient headspace (20-30% of the container) to allow for expansion and minimize spill risk. Do not tightly close the bottles.
- 4) **Check for Damage:** Regularly inspect chemical waste bottles for damage, such as cracks.
- 5) **Request for Bottle Replacement:** If you need to replace any waste bottles, keep empty 2.5L or 4L solvent bottles (acid: glass or plastic, base: plastic, organic solvent: glass) and inform the Technical Office to provide waste labels and bottle replacement.
- 6) **Communication:** Inform the Technical Office immediately of any damaged containers or concerns about chemical waste storage.

**(2) Housekeeping:**

Maintaining a clean and organized laboratory environment is essential for safety, efficiency, and compliance with regulatory standards. Proper lab housekeeping minimizes the risk of accidents and contamination. Despite regular inspections, several areas require improvement:

- 1) **Cluttered Workspaces:** Several workbenches were cluttered with unused equipment, lab supplies, chemical containers, and personal items, hindering workflow and increasing accident risks.
- 2) **Improper Storage:** Chemicals and reagents were found in inappropriate locations, such as improper chemical segregation, liquid chemicals placed on high shelves, chemicals on office/computer desks.

This poses spill, exposure, and contamination risks. Gas cylinders were not secured to a fixed surface or gas cabinet, posing risks of falling heavy objects.

- 3) **Unlabeled Containers:** Reagent containers without proper labeling were found, making it difficult to identify contents and posing hazard risks and difficulties when disposal is needed.

**To ensure a safe and efficient housekeeping in laboratory environment, please:**

- 1) **Keep Workspaces Clean and Organized:**

- a. Regularly tidy up or clear workbenches of unnecessary items and equipment.
- b. Store personal items away from lab benches in a designated area, such as a clean cabinet.
- c. Assign storage spaces for lab supplies to prevent them from scattering around the lab.
- d. Ensure research staff or students clear up their workspaces before departing. This is crucial for accommodating new members each year.

- 2) **Proper Storage of Chemicals and Gas Cylinders:**

- a. Store chemicals in different cabinets according to their hazard classifications and compatibility.
- b. Avoid storing chemicals in areas where they may be easily knocked over.
- c. Secure all gas cylinders to a fixed surface or gas cabinet to prevent falling.
- d. Ensure all reagent containers are properly labeled with their contents and hazard information.
- e. Clean up spills immediately using appropriate materials and methods.

- 3) **Maintain Clear Emergency Exits and Access to Safety Equipment:**

- a. Never block emergency exits, fire extinguishers, or eye wash/body wash stations with lab supplies.
- b. Ensure all pathways and exits are free of obstructions at all times.

- 4) **Regular Inspections:**

- a. Conduct regular self-inspections of your work area to ensure good housekeeping standards.

**Recent Update of CityU Regulation:**

**CityU's Biological Safety Guidelines** (Link: <https://www.cityu.edu.hk/vpre/studentlan/lisu/guidelines-for-biological-safety-in-the-laboratory.pdf>)

The key amendments include:

- The inclusion of an obligation of PI to provide vaccination to students or staff who will engage in using infectious agents.
- The addition of section 4.4 about Biohazard Worker.
- The addition of section 5.6.2.1 about BSL2+ Measures and Requirements.
- The addition of section 5.6.3 about Vaccination.
- The addition of 5.6.4 about Biohazard Worker Registration.
- The addition of 5.6.4.1 and 5.6.4.3 about Pre- and Post-Exposure Management
- The addition of section 13 about Animal Biosafety and Biosecurity

## **Revision to the Previous Safety Alert**

SEE Laboratory Safety Alerts – 2024 July

<https://www.cityu.edu.hk/see/research/laboratory-safety/see-laboratory-safety-alerts>

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