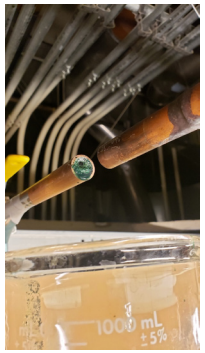
ENVIRONMENTAL HEALTH AND SAFETY
THE UNIVERSITY OF UTAH

Lessons Learned

What Happened:

On February 9, 2021, EHS received notification that the house vacuum line being used in biological safety cabinets are regularly being contaminated with liquid, which can solidify (see images next column), preventing the vacuum system from providing adequate suction or can damage the vacuum pumps. This also raises the possibility that facilities personnel who repair the clogged lines and pumps will be exposed to hazardous chemical or biological materials. The specific issues were:

- Aspiration traps were not emptied prior to them becoming full allowing materials to be sucked into the house vacuum system.
- Vacuum systems were not properly protected by using High Efficiency Particulate Air (HEPA) filters to prevent materials from being drawn through the house vacuum lines.
- Facilities personnel were not provided with appropriate information from lab staff, regarding the potential hazards present and the correct personal protective equipment required for working in the lab spaces.
- Facilities personnel were not trained on how to respond to an exposure to hazardous materials.



What Went Right:

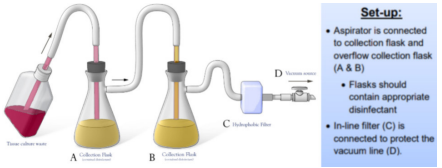
The building Lab Liaison notified EHS immediately after learning of the issues with the vacuum lines and potential employee exposure to hazardous materials. The building Lab Liaison, facilities manager, and building safety chair met with EHS to discuss and implement procedures on how to properly protect house vacuum lines. EHS personnel provided Fact Sheets describing the correct set up for Aspiration Flasks and requested the Lab Liaison circulate these to lab personnel. EHS personnel conducted a walkthrough of each lab space in the buildings of concern and logged all spaces that do not have proper vacuum line set-up. EHS will conduct training for the facilities team on the differences between biological safety cabinet & chemical fume hoods, vacuum/aspiration flask set-up procedures, personal protective equipment, and procedures to follow in the event of an exposure.

Vacuum Lines

Lessoned Learned:

This incident emphasizes the importance of verifying that vacuum/aspiration flasks are set up and maintained correctly to protect personnel from exposure to hazardous materials and protect the house vacuum system. Vacuum lines that do not have the appropriate protections in place will lead to the line clogging and the potential for permanent damage of the main vacuum pump. Furthermore, it will put personnel at risk to exposure when repairing the line. These types of safety issues will be prevented by:

- Properly setting up the vacuum lines system, when aspirating hazardous materials.
- Proper set up includes a collection flask (containing appropriate disinfectant, a second flask for over-flow, and an in-line HEPA filter between the flask and the vacuum valve (see image below).



- Wearing the appropriate personal protective equipment when working on vacuum lines used for laboratory work.
- PI's providing facilities personnel with information regarding the potential laboratory hazards prior to entering them space.
- Training staff on post-exposure procedures. If an exposure occurs, the person must wash the site of exposure, notify their supervisor and EHS that the exposure occurred, and go immediately to the Occupational Medicine Clinic to be seen by a health care professional. In case of an emergency and if immediate assistance is needed, call 911.

The following guidelines will help ensure you are provided with information pertaining to biological safety cabinets and clean benches:

- Contact EHS to discuss questions or concerns regarding vacuum line set-up and use.
- You can view the Vacuum Traps for Biohazardous Waste Fact Sheet at: https://ibc.utah.edu/_resources/documents/fact-sheets-and-sops/vacuum-traps-for-biohazardous-waste_fact-sheet.pdf
- An Aspiration Flask Setup and Use SOP template that can be edited by the PI can be found in the SOP Templates section at https://ibc.utah.edu/library.php