

Common Standard Operating Procedure

for work with

Chemical Pressure and/or vacuum

name/class: _____

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Date: 1-23-2013

Building: Stepan

Room Laboratory 386

#: _____

1. **Circumstances of Use:**

Various including use of Schlenk lines, glove box, solvent purification system, Schlenk flasks, Parr bombs, and glass pressure vessels.

2. **Potential Hazards:**

Explosion or implosion may occur when working with containers that are pressurized or placed under vacuum.

3. **Engineering Controls:**

Make sure the container you are using will withstand the pressure/vacuum and set up the operation to minimize the hazards of a container failure.

- If glass vessels are being used ensure they are free of cracks and chips.
- For vacuum filtering applications, use a heavy walled filtering flask. Coated glass flasks or Nalgene flasks will be less likely to produce flying sharps than plain glass filtering flasks.
- Work in a chemical fume hood if appropriate.
- For work with compressed gas cylinders, see the SOP for compressed gases.
- Pressurized apparatus shall have an appropriate pressure relief device.

4. **Work Practice Controls:**

In planning the research steps for work in a closed system, consider the effects of heat (including exothermic reactions) and cooling and ensure that the laboratory apparatus is designed to withstand the pressure or vacuum that may be created.

5. **Personal protective equipment (PPE):**

Wear PPE that will provide protection if the container fails. Minimum PPE would be safety glasses, lab coat, and standard laboratory gloves. A full face or blast shield is recommended if work is not done inside a chemical fume hood.

6. **Transportation and Storage:**

Plan ahead if it is necessary to transport containers under pressure or vacuum. Use a safety cart and/or secondary containment.

7. **Waste Disposal:**

When using the building vacuum, use a trap to capture any hazardous materials so that they do not enter the vacuum system. Any trapped chemicals must be disposed of following the chemical hygiene plan.

8. **Occupational injuries:**

As with any work-related injury, complete the work-related injury or illness report found at: <http://chemistry.nd.edu/safety/supervisors-report-of-injury-to-the-health-center.pdf>. If medical attention is needed, see <http://chemistry.nd.edu/safety/procedures-for-injury-illness-or-incident.pdf>.

9. **Emergency Procedures:**

In case of an emergency, contact the Police by calling 911 from a campus phone or 574-631-5555 from a cell phone.

10. **Training of personnel:**

All personnel are required to complete the General Lab Safety session thru RM&S. This session includes an introduction to general chemical safety. Furthermore, all personnel shall read and adhere to this SOP.