



## VACUUM SYSTEMS

are used in many labs across campus. Whether it is the house vacuum or stand-alone units, Schlenk lines or water aspirators, a small amount of prevention can lower the chance of fire, injuries, and equipment damage.

## CHECK EQUIPMENT BEFORE USE:

- Tubing should be thick walled to resist collapse, unobstructed, whole and not cracked.
- Glassware should not be cracked, chipped, or etched. This significantly weakens the glass, which may implode or explode. Consider using plastic coated or taped products.
- Use appropriate greases and tightly secure all connections.
- Check pump oil level and follow manufacturer's directions on changing pump oil. If oil is contaminated, do not operate and evaluate changing the oil safely.
- Do not store pumps in the same area as flammable materials and use secondary containment under the pumps to catch oils.

## USE MATERIALS TRAPS:

- Always use a trap to prevent solids, liquids, and hazardous gases from reaching the pump. Traps might be a filter flask, cold traps, or specialized sorbents. Volatiles like solvents or acid gases may destroy pumps, lines, and venting systems.
- Liquid nitrogen cold traps will cause oxygen to condense if the lines are not atmosphere tight. Liquid oxygen is extremely reactive with organic materials and can quick over-pressurize vessels as it evaporates. **IF YOU EVER SEE AN ELECTRIC BLUE LIQUID IN A COLD TRAP, SEEK ASSISTANCE IMMEDIATELY.** The trap should be allowed to warm slowly to room temperature while vented.
- Understand the lab rules and SOP's and use your PPE. Talk about what to do if something goes wrong, like a failed cold trap, or solvent in the pump oil.



Dangerous liquid oxygen, note the electric blue color.



Example: Vacuum pump



Example: Liquid trap. Always install to keep solids or liquids out of pump lines.

