

## Safety Tip Sheet – Chemical Hazards

To determine the hazards of chemicals you work with and how to protect yourself from those hazards, follow these steps:

1. Review the Safety Data Sheet (SDS) information for chemicals before you begin work with the chemicals. While it is not required to have a printed copy of the SDS in your work area because of the availability of SDSs on-line, it is a good idea to have a printed copy of the most commonly used chemicals available in order to quickly provide them to emergency responders in case of fire or chemical exposure. SDSs are available on-line typically at no cost from the manufacturer or seller of the chemical. The University's preferred vendors, such as [Fisher Scientific](#), [Sigma Aldrich](#) and [VWR](#) all provide on-line access to their SDSs. (More information can be found on the [EH&S Safety Data Sheet](#) web page.)
2. The following are excellent sources of information on chemical hazards.
  - a. Laboratory Chemical Safety Summaries found in Appendix 10 of the National Research Council's "[Prudent Practices in the Laboratory – Handling and Management of Chemical Hazards](#)," Updated Version (2011).
  - b. "[Sax's Dangerous Properties of Industrial Materials](#)," Richard J. Lewis, Sr., 12<sup>th</sup> Edition
  - c. "[Bretherick's Handbook of Reactive Chemical Hazards](#)," Edited by P.G. Urben, 7<sup>th</sup> Edition
  - d. The American Chemical Society Division of Chemical Health and Safety, "[Journal of Chemical Health & Safety](#)," published by Elsevier
  - e. Contact [EH&S](#) if you have chemical safety questions
3. Where possible, substitute safer (less toxic and less reactive) compounds and use the smallest amount of hazardous chemical practicable for your reaction or work.
4. Review not only the acute and chronic health hazards of chemicals, including carcinogenicity, mutagenicity, and reproductive hazards, but also the physical and reactive hazards of chemicals, such as fire, explosion or boiling liquid/expanding vapor hazards.
5. Review incompatible chemical reactions and hazards, and the hazards of scaling up operations.
6. Review routes of exposures and recommended procedures to prevent exposure and protect from physical harm.
7. Follow the requirements in the [Danforth](#) and [Medical School](#) Chemical Hygiene Plans (CHPs) and complete the "LABORATORY HAZARD ASSESSMENT CHECKLIST" (Appendix 3) found in the CHPs.
8. Use engineering controls, such as properly operating chemical fume hoods and glove boxes to prevent or minimize exposures, and always wear personal protective equipment (PPE), such as safety goggles, lab coats, proper gloves, pants or full-length dresses, and closed-toe shoes, when working with chemicals.
9. If engineering controls cannot be used, contact [EH&S](#) to determine if and what additional protections are required, such as a [Respiratory Protection](#) program. (It is the University's policy



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that when practicable, engineering controls should be used to keep chemical exposures below OSHA Action Levels, instead of using respirator protection.)