**Duke OESO Guidelines for Safe Use of**

**TOXIC & HEALTH HAZARD LIQUIDS**

*Examples:* chloroform, <10% glutaraldehyde solution, 2-mercaptoethanol; also flammable: methanol, carbon disulfide, n-hexane, xylene

| Potential Hazards | • Exposure to toxic & health hazard liquids can occur through the skin (possibly after penetrating gloves), inhalation of vapors or aerosols, or by accidental ingestion or injection.  
|                  | • Acutely toxic liquids can cause death or systemic toxicity.  
|                  | • Exposure can also cause health hazards (such as cancer, reproductive effects, mutations, respiratory or skin sensitization, and organ damage) and/or irritation of the eyes, skin, or respiratory system.  
|                  | • Some liquids may also have physical hazards (not covered by these guidelines).  
|                  | • See Safety Data Sheet (SDS) for specific hazard information.  
|                  | • Create a lab SOP with specific decontamination methods for particularly hazardous liquids. |

| Selection & Purchase | • Purchase the smallest containers at the lowest concentration practical.  
|                     | • Purchase in shatter-resistant containers if available (such as plastic or PVC-coated glass).  
|                     | • Purchase gloves not quickly penetrated by the liquid for cleaning up small spills. |

| Storage & Transport | • Store below eye level but not on the floor, in a cabinet or on a shelf in a well-ventilated room. Do not store in cold rooms.  
|                     | • Keep toxic liquids away from incompatible materials (see SDS for specifics).  
|                     |   o Organic materials away from oxidizers.  
|                     | • See other guidelines for storage of flammables, oxidizers, or corrosives.  
|                     | • Transport toxic and health hazard liquids in a bottle carrier. |

| Engineering Controls | • Use a chemical fume hood with particularly hazardous and other odorous or volatile hazardous liquids when  
|                     |   o Heating the liquid AND/OR  
|                     |   o Working with open containers  
|                     | • Check with OESO to determine if small quantities or dilute solutions of toxic or health hazard liquids can be handled safely on the benchtop. |

| Work Practice Controls | • Designate a specific work area for particularly hazardous liquids and label it.  
|                       | • Line work area with absorbent, leak-proof bench pads.  
|                       | • Use in the smallest practical quantities for work being done.  
|                       | • Plan work to avoid contact with gloves*. Change gloves immediately if contaminated.  
|                       | • Change gloves* at least every 2 hours and wash hands at time of glove change.  
|                       | • Decontaminate work area with an appropriate solvent or a solution of detergent and water. |

**Minimum PPE:**
- Safety glasses
- Nitrile gloves*
- Fastened lab coat

**Risk of splash/large amounts, ADD:**
- Goggles (and consider a face shield)
- Impervious sleeves and apron (or coverall)

*Check the manufacturer’s glove guide or SDS for glove breakthrough time.

**Other**
- **Emergencies** See Emergency Response Flip Chart and/or lab specific chemical hygiene plan.
- **Waste** See lab-specific chemical hygiene plan, Lab Chemical Waste Management Practice, and Drain Disposal Practice.
- **Training** Sign signature page in lab-specific chemical hygiene plan to indicate review.
- **Questions** Contact OESO Lab Safety at 919-684-8822 or labsafety@dm.duke.edu.