### Duke OESO Guidelines for Safe Use of TOXIC & HEALTH HAZARD LIQUIDS

**Examples:** carbon tetrachloride, <10% glutaraldehyde solution, Cidex OPA; 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. |
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| 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. |
| Personal Protective Equipment (PPE) | 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. |
| 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. |