

Chemical Hazard Operations

	Low	Medium	High
Examples	Buffers Glycerin	Ethanol Hydrochloric acid Hydrogen peroxide Methyl methacrylate	Ethidium bromide Formaldehyde Hydrofluoric acid Methylene chloride Phenol
Hazard Class	Chemicals that are: <ul style="list-style-type: none"> relatively harmless to slightly toxic have no potential for uncontrolled process hazards <p style="text-align: center;"><i>AND</i></p> Staff have previous experience with the type of work.	Corrosive Flammable Heavy Metal Lachrymator Neurotoxin Oxidizer Peroxide or Peroxide forming Reactive Sensitizer Toxic	Carcinogens Reproductive Hazards Acutely Toxic Severe Allergen/Sensitizer Explosive Pyrophoric Strong Corrosive Strong Oxidizers Strong Reducing agent Strong Sensitizers Unstable Water Reactive
Review	Clearance Check	Local Peer Review	Prior Protocol Review
Work Practices	Good Laboratory Practices	<i>Low Plus:</i> <ul style="list-style-type: none"> Have written Standard Operating Procedure available for procedures. Ensure that all laboratory users are familiar with SOPs. Wash hands and any other potentially exposed skin immediately after working with chemicals. Cover work surfaces with absorbent plastic backed paper to simplify clean-up. Conduct exposure monitoring and medical consultations if required by Hazard Review. 	<i>Medium Plus:</i> <ul style="list-style-type: none"> Substitute acutely toxic substances with less toxic alternative. Use the smallest amount of material practical. Everyone working with High Hazard chemicals must receive additional training on the special control measures required. Only personnel with special instruction on the hazards and safe handling of the High Hazard substances must be permitted access to the areas. SOPs for high hazard operations must include specific information on the use of designated areas, engineering controls, personal protective equipment, and decontamination procedures. Conduct a "dry run" of the experiment, without the use of the particularly hazardous chemicals. The "dry run" will serve as a training tool, and determine if adequate control measures have been selected.

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Engineering Controls		<ul style="list-style-type: none"> • Use a fume hood if material is volatile or the process may produce aerosols. • Use appropriate storage containers for raw materials and waste materials (e.g., flammable safety cans). 	<ul style="list-style-type: none"> • Containment devices, such as fume hoods or glove boxes, must be used when conducting any manipulation, handling or reaction that may result in the uncontrollable release of the particularly hazardous chemical. • Fume hoods must have a continuous air flow monitor or other mechanism for ensuring the performance of the hood. • Glove boxes must be used under negative pressure. The gloves must be checked for integrity and compatibility with the hazardous substance.
PPE		<ul style="list-style-type: none"> • Glove material must be compatible with chemical. • Laboratory coat with long sleeves worn closed (snaps are preferred). • Safety goggles. 	<ul style="list-style-type: none"> • PPE should be disposable. • Reusable PPE must be appropriately decontaminated after use. • Double gloves should be used. • PPE used with high hazard operations must be removed in the designated area. • Hands, neck, arms and face must be washed after removing contaminated PPE.
Designated Area			<ul style="list-style-type: none"> • All entrances to a laboratory or storage area where High Hazard materials are present must be posted with sign indicating the use of specific hazard classes and state "Authorized Personnel Only". • Designated areas can be the entire laboratory, a portion of the laboratory, or equipment, such as the fume hood or glove box. • The sign must include the name of the hazardous chemical or process, and the appropriate hazard warning.