

Standard Operating Procedure:

Laboratory Information

Department:	
Principal Investigator(s):	
Laboratory Manager/Supervisor (or designated laboratory-specific chemical hygiene officer):	
Laboratory emergency contact (name and phone):	
Laboratory phone:	
Designated area (s) of these procedures with chemical(s): (building and room):	
Agent storage location (building and room) and specifics regarding location/container/cabinets:	

Chemical Information

Chemical Name(s), including CAS No:   	Nitric Acid CAS 7697-37-2
GHS Classification and Hazard Statements (see SDS sheet provided by the chemical's manufacturer): OSHA PERMISSIBLE EXPOSURE LIMIT: 2.0 ppm (5mg/m ³) 8-hour time weighted average. Immediately dangerous to Life or Health (IDLH): 25 ppm (NIOSH, 2024) May intensify fire; oxidizer [Danger Oxidizing liquids; Oxidizing solids] Corrosive to metals [Warning Corrosive to Metals] Causes severe skin burns and eye damage [Danger Skin corrosion/irritation] Causes serious eye damage [Danger Serious eye damage/eye irritation] Toxic if inhaled [Danger Acute toxicity, inhalation]	

Signs and symptoms of exposure or release	Prolonged exposure to low concentrations or short term exposure to high concentrations may result in adverse health effects. Rate of onset: Immediate Persistence: Hours - days Nitric acid has a suffocating odor with an odor threshold of ~1ppm. The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation may cause asthma-like reactions (RADS). Exposure could cause asphyxiation due to swelling in the throat. Inhalation of high concentrations may cause pneumonitis and lung edema.
Routes of exposure	Serious local effects by all routes of exposure.
Required engineering controls: (i.e., chemical fume hood, biological safety cabinet, glove box, temperature control, humidity control, shielding, luer-lock syringe, in-line HEPA filter, etc.)	Eyewash and safety shower are required in immediate work area. Work in a certified chemical fume hood that is free of organics and other incompatibles.
Personal Protective Equipment (PPE) required for procedures:	Fully buttoned lab coat Safety goggles 5 mil NEOPRENE gloves* (Change immediately if splashed, and wash hands between glove changes) *Nitric acid penetrates lab nitrile gloves in <5 minutes. Lab neoprene (5 mil) gloves last 10–30 minutes. FOR RISK OF SPLASH/WORK WITH >100 ml, ADD: face shield, impervious apron & sleeves (or coverall), and gloves rated for nitric acid (e.g., 16–18 mil neoprene gloves).
Known incompatibilities with chemical(s):	KEEP AWAY FROM ALL IGNITION SOURCES. Separate from combustible substances, reducing agents, bases, and organic chemicals
Special storage and handling considerations:	Purchase the smallest, shatter-resistant containers at the lowest concentration practical (less than 70% if possible). Store in secondary containment in a well ventilated area. Store below eye level but not on the floor. Store away from metal and do not store under the sink.
Please list the approximate amount(s) of chemical(s) utilized in all procedures	

Please describe, in a stepwise fashion, the work practices and procedures involved in the handling and utilization of this agent.

Please be clear and complete in the description of procedures (i.e., measuring, weighing, pouring, mixing, injection, mixing, transporting, administration to animals, heating, etc.).

Be sure to include any precautionary safety steps undertaken during these procedures.

Please submit additional pages, if necessary.

- Work in a clean chemical fume hood that is free of organics and other incompatibles.
- Keep the sash lowered while reactions are in progress.
- Work should be done in a way that avoids hand/glove contact with nitric acid.
- When diluting, add acid to water slowly, in small amounts.
(Never add water to acid!)

Waste collection and disposal procedures:	Waste chemicals shall be collected in a secured area. The area shall be free from evidence of spills. A Hazardous Waste label shall be affixed to the collection container and components shall be listed on the label as they are introduced into the container. Do not date containers until the day of scheduled pickup. Additionally, the container shall be marked with the hazard class of the chemical waste (i.e., Ignitable, Toxic, Reactive, Corrosive). When the container is no more than 2/3 full, date the container and submit a pick-up request in the UK E-trax system: https://etrax.chematix.com/Chematix/
Spill procedure: Lab Specific Notes on Spill Response: For clean-up of small spills (<100 ml), neutralize with sodium carbonate from edge to center, then absorb with inert material. Do not use combustible materials such as saw dust to absorb nitric acid spills! After a spill is absorbed by inert absorbent, decontaminate work area by wiping it down with a soap and water solution.	Major spills of stock solution: Leave the area and notify others not to enter. Report the spill to the UK Environmental Quality Management Department (EQMD) at (859) 323-6280 (M-F 8am-5pm) or after hours by dialing 911 from any on-campus phone or by contacting the UK Police at (859) 257-UKPD (8573). Minor spills of manageable amount: If necessary, contact EQMD for guidance. Consult manufacturer's SDS for instructions and compatibilities for your chemical (Be aware of any materials such as paper towels or water that could be incompatible with your spilled chemical!)
Response procedures in the case of an incident or injury:	UK Employees: - After receiving first aid (refer to the chemical's SDS), report the occupational exposure to a hazardous chemical to UK Worker's Care at 1-800-440-6285. - If needed, an appointment will be made for the employee at UK UHS. - For severe emergency or injury, call 911 or proceed to the UK Chandler Hospital Emergency Department UK Students: - Call UHS at (859) 323-APPT to report an occupational exposure to a chemical hazard. - If needed, an appointment will be made for the employee at UK UHS. For severe emergency or injury, call 911 or proceed to the UK Chandler Hospital Emergency Department Additional Lab-Specific Emergency Procedures:

A copy of the manufacturer's SDS for this agent and the PI approved SOP shall be kept in the lab's Chemical Hygiene Plan (CHP). The CHP shall be stored in a location known to all laboratory personnel and is accessible during work hours.

Personnel Training

- Prior to conducting any work with (name of the chemical), designated personnel must be provided training specific to the hazard involved in working with the substance.
- The PI must provide his/her lab personnel with a copy of the SOP and a copy of the SDS provided by the manufacturer. Any further training materials must be documented and stored in the lab's Laboratory Safety Manual and available to internal UK or external oversight agency inspectors.
- The PI must ensure that his/her lab personnel have completed the initial and the consecutive annually required Chemical Hygiene trainings and Hazardous Waste training.

The undersigned have read and understood the content of this SOP and the SDS for: **Nitric Acid**

[illegible]

SOP Reviewed and Approved by:

PI: (typed name)	
PI: (signature and date)	
Lab Manager/Supervisor (typed name)	
Lab Manager/Supervisor (signature and date)	