

Standard Operating Procedure (SOP)



NITRIC ACID

Effective Date: 8/23/2013

Revised Date: 8/23/2013

INTRODUCTION

- This SOP applies to Nitric Acid.
- Nitric acid is a strong oxidizer capable of igniting on contact or reacting explosively with many substances.
- Nitric acid will cause severe skin burns and eye damage in the event of exposure.

GENERAL LAB RULES

1. No eating, drinking, smoking, handling contact lenses, or applying cosmetics in the laboratory.
2. Persons shall wear buttoned lab coat, long pants, safety glasses or goggles and appropriate gloves when working with hazardous chemicals.
3. Mouth pipetting is prohibited; mechanical pipetting devices are to be used at all times.
4. All procedures are performed carefully to minimize the creation of splashes or aerosols.
5. Wash hands
 - after handling chemicals materials,
 - after removing gloves, and
 - before leaving the laboratory.

Additional Lab Specific Rules Here

POTENTIAL HAZARDS

- Contact with organic substances such as acetone, acetonitrile, various alcohols, dichloromethane, DMSO, (and many others) may result in fires or explosions.
- Nitric acid also reacts violently with many inorganic substances including various bases, reducing agents, ammonia, and alkali metals.

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HEALTH HAZARDS

- Concentrated nitric acid can release vapors and toxic gases (including NO₂), which can cause moderate to severe health effects, especially irritation to the eyes, skin, respiratory tract, and other mucosal membranes.
- Concentrated nitric acid causes severe skin burns. Dilute concentrations that contact skin can cause mild irritation.
- Contact with eyes can cause severe burns and permanent eye damage.
- If high concentrations of nitric acid are inhaled, severe respiratory irritation can develop, along with possible delayed effects such as pulmonary edema, which can be fatal.
- Ingestion of nitric acid can cause severe corrosion and burning of the mouth, esophagus, and stomach. As little as 10 ml of ingested nitric acid can be fatal.

PERSONAL PROTECTIVE EQUIPMENT

EYE PROTECTION



- Goggles or face shields shall be worn during operations in which NITRIC ACID might contact the eyes (e.g., through vapors or splashes of solution).
- Ordinary (street) prescription glasses do not provide adequate protection. Adequate safety glasses must meet the requirements of the Practice for Occupational Education Eye and Face Protection (ANSI Z87.1-1989) and must be equipped with side shields.

HAND PROTECTION

- Use two (2) pair disposable nitrile gloves when working with chemicals. Check chemical compatibility chart for breakthrough time when using
- Laboratory personnel should thoroughly wash hands with soap and water before and immediately upon removal of gloves.

LAB COATS, ETC.

- Button lab coats, closed toed shoes, long pants and long sleeved clothing shall be worn when handling NITRIC ACID. Protective clothing shall be worn to prevent any possibility of skin contact with NITRIC ACID.

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WORK PRACTICES			
<ul style="list-style-type: none"> • Avoid glove contact with NITRIC ACID. If gloves come into contact from a splash or spill remove gloves immediately and replace. • Decontaminate areas where NITRIC ACID has been used by washing with soap and water after work is completed. 			
SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS			
<ul style="list-style-type: none"> • Do not store with incompatible material. • Materials to avoid: Alkali metals, Organic materials, Acetic anhydride, Acetonitrile, Alcohols, Acrylonitrile, Ammonia, Crotonaldehyde, Halogenated hydrocarbon, Acids, Bases, Metals, hexalithium disilicide, Hydrogen peroxide, Ketones, metal acetylides, Water, Fluorine, Amines, Thiols, cadmium, Bromine, Copper, Hydrazine, Hydrazinium nitrate, Nitro compounds, Cyanides, Phosphorus trihydride (phosphine), Diphosphine, Halides, Organic halides, May set fire to wood or paper Polyethers, Methyl vinyl ether • Do not store in metal cabinet unless cabinet has been coated with corrosion proofing. • Keep away from sources of ignition. 			
Additional Lab Specific Special Handling/Storage Procedures			
WASTE DISPOSAL			
<ul style="list-style-type: none"> • Chemicals shall not be drain disposed unless prior approval is given by EH&S. • Excess NITRIC ACID and all waste material containing NITRIC ACID must be placed in a container labeled with the following "HAZARDOUS WASTE NITRIC ACID". • Contact EHS at x3427 for hazardous waste removal. 			
EMERGENCY PROCEDURES			
Emergency Numbers:			
Fire and Medical Emergencies		x5911 (911 on cell phone)	

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Environmental Health and Safety	x3427
Hillcrest Urgent Care (employees)	336-760-8999
Student Health (students only)	x5218
Poison Control	800-222-1222

FIRST AID

1. If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Call x5911 for medical assistance.
2. In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.
3. In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and call x5911 for medical assistance.
4. If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call x5911 for medical assistance.
5. Call x5911 and describe the extent of injuries.
6. Report all accidental exposures to EHS and Human Resources (employees) or Student Health (students).
7. Complete an [online injury/illness report](#) if there is an over-exposure to the chemical or if there is an accident involving the chemical.

SPILL AND ACCIDENT PROCEDURES

Neutralize with baking soda and absorb with spill kit absorbent. Avoid breathing vapors.

Use the chart below for spill reporting and response:

SPILL QUANTITY	PROPER SPILL RESPONSE
Spill less than 500 mL	Contact Environmental Health and Safety (x3427) and clean up spill using spill kit.
Spill greater than 500 mL	Do not attempt to clean up spill. Leave the area and immediately report to WFU Police (x5911) and EHS (x3427).