



Laboratory Standard Operating Procedure for:

## Picric Acid

***Principal Investigator (PI) Approval is Required Prior to Performing this Procedure***

### Description

*This standard operating procedure outlines the handling and use of picric acid. Review this document and supply the information required in order to make it specific to your laboratory. In accordance with this document, laboratories should use appropriate controls, personal protective equipment, and disposal techniques when handling picric acid.*

Picric acid is a high-powered explosive when allowed to dehydrate. Picric acid, when in contact with metals, can form shock sensitive metal picrates. Picric acid can be detonated by extreme heat, a blasting cap, or an electric charge.

### Potential Hazards

- The most serious hazard associated with this chemical is the risk of explosion, which is severe if the acid is dry.
- Toxic if swallowed, inhaled or absorbed through the skin. Inhalation of dust may cause lung damage. Chronic exposure may cause liver or kidney damage. It is a skin irritant and allergen.
- Refer to the safety data sheet (SDS) for additional signs/symptoms/health effects.

### Engineering Controls

Use picric acid in a lab fume hood to reduce risk of inhalation.

### Work Practice Controls

Do not use metal spatulas to remove picric acid. Clean the bottleneck, cap and threads with a wet cloth before resealing. If handling picric acid contained in a jar, gently tilt bottle to see if crystals roll over each other. If they do, the acid is dry and capable of explosion. Dried crystals may also be present within threads of screw top containers and present a detonation hazard when opening container. If acid appears dry or crystallization occurs, do not open or handle the container. Contact Environmental Health and Safety (EHS) at (313) 593-0921 immediately.

### Personal Protective Equipment (PPE)

Wear lab coat with fully extended sleeves, safety glasses or splash goggles, nitrile or neoprene or other picric acid-resistant gloves (latex is not effective), pants, and closed-toe shoes. Other PPE may also be required such as a face shield, apron, etc.

### Transportation and Storage

- Label containers with date received and date opened. Dispose after 2 years of storage.
- Store in original container in a cool, dry, well-ventilated area away from sources of heat.
- **Keep wet** – material should be a wet paste and **greater than 10% water by volume**.
- Check for evidence of dried crystals (see work practice control section) and rehydrate contents every 6 months with DI water as needed and document on bottle.

- Store separately from oxidizers, reducing agents, inorganic salts, metals (copper, lead, zinc, aluminum), ammonia, concrete, plaster, salts, gelatin, alkaloids and albumin.

### Waste Disposal

Potentially, old picric acid is an item of special concern and garners considerable attention. If old or previously unaccounted for bottles of picric acid are discovered, the following steps should be taken:

- Most importantly DO NOT TOUCH THE CONTAINER! Depending on how long the bottle has been left and the state of the product inside, even a minor disturbance could be dangerous. Crystals may have formed between the lid and the container. Any attempt to open the container could result in an explosion large enough to do serious damage to personnel and equipment.
- Visually inspect the container for product identification and check for an expiration date. If the product is relatively new, there may not be a problem. Nevertheless, treat the situation carefully.
- Inspect the contents of the bottle to determine water content and check for signs of crystallization inside the bottle and around the lid. If there is no evidence of crystal formation and the water content is fairly high, there is probably little cause for concern. If there is even the slightest indication of crystallization or low levels of water in the bottle, the situation is more serious. Contact EHS at (313) 593-0921 immediately for guidance! Immediately secure the area and restrict access. A measure of security can be obtained by lightly misting any attainable crystals (such as those that may have formed on the outside of the bottle) with large quantities of water. A water spray bottle is ideal for this purpose.
- Dry picric acid or picrate salts should not be touched or moved under any circumstances. This is a serious potential hazard.

If you feel that your laboratory may have old picric acid in your chemical inventory, contact EHS at (313) 593-0921 for a special pick-up to have it removed, but do not handle it yourself.

### Exposures/Unintended Contact



***If the employee is in need of emergency medical attention, call 911 immediately.***



- In case of *skin contact*: Flush the skin with copious amounts of water for at least 15 minutes. Seek medical attention (see below)
- In case of *eye contact*: Immediately flush eyes with water for 15 minutes while holding eyelids open. Place ice packs on the eyes while in transit to medical facility (see below).
- In case of *inhalation*: Assist conscious persons to an area with fresh, uncontaminated air. Seek medical attention (see below).

Report all work related accidents, injuries, illnesses or exposures to WorkConnections within 24 hours by completing and submitting the [Illness and Injury Report Form](#). Follow the directions on the WorkConnections website [Forms Instructions](#) to obtain proper medical treatment and follow-up.

Complete the [EHS Laboratory Incident and Near-Miss Report](#) form.

### **TREATMENT FACILITIES:**

#### **Midwest Medical Center -- *Campus Employees (including student employees)***

Mon-Fri 7:30 am - 4:30 pm

**9301 Middlebelt Road**

Romulus, MI 48174

Phone: 734-941-1000

After hours - go to:

#### **Midwest Medical Center**

Open 24/7

4700 Schaefer

Dearborn, MI 48126

Phone: 313-581-2600

#### **Henry Ford Medical Center-Fairlane -- *University students (non-life threatening conditions)***

19401 Hubbard Drive

**Dearborn, MI 48126**

**Phone: 313-928-8278**

Click [here](#) for more information.

### **Spill Procedure**

#### **MINOR CHEMICAL SPILL**

- Very small spills (<30ml) may be absorbed with wet paper towels. Keep wet and collect for disposal. Collect all picric acid-containing wastes in plastic or glass bottles and contact EHS at (313) 593-0921 for proper disposal.
- Alert people in immediate area of spill.
- Open outside windows, if possible.
- Wear protective equipment, including safety goggles, gloves and long-sleeve lab coat.
- Avoid breathing vapors from spill.
- Confine spill to as small an area as possible.
- **Do not wash spill down the drain.**
- Clean spill area with water.

#### **MAJOR CHEMICAL SPILL**

- Attend to injured or contaminated persons and remove them from exposure.
- Alert people in the laboratory to evacuate.
- If spilled material is flammable, turn off ignition and heat sources. Don't light Bunsen burners or turn on other switches.
- **Call Public Safety at (313) 593-5333 or 911 from a campus phone immediately for assistance.**
- Close doors to affected area.
- Post warnings to keep people from entering the area.
- Have person available that has knowledge of incident and laboratory to assist emergency personnel.

### **Additional Spill Links:**

- [Chemical Spill Control Information](#)

Report all emergencies, suspicious activity, injuries, spills, and fires to Public Safety by calling at (313) 593-5333 or 911 from a campus phone. Register with the University of Michigan-Dearborn [Emergency Alert System](#).

#### Training of personnel

All personnel are required to complete the **Comprehensive Laboratory Safety** session (BLS009 or equivalent) via [MyLINC](#). Furthermore, all personnel shall read and fully adhere to this SOP when handling picric acid.

#### Certification

I have read and understand the above SOP. I agree to contact my Supervisor or Lab manager if I plan to modify this procedure.

Name	Signature	UM ID #	Date

Principal Investigator \_\_\_\_\_

Revision Date \_\_\_\_\_