



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 Environment, Health and Safety (EHS) at (810) 766-6763 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 (810) 766-6763 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 (810) 766-6763 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).

Contact EHS for advice on symptoms of chemical exposure, or assistance in performing an exposure assessment.

Report all work related accidents, injuries, illnesses or exposures to UM-Flint DPS. Additionally, employees and supervisors must be sure to report the injury to EHS and complete and submit the [Illness and Injury Report Form](#) to WorkConnections within 24 hours. Follow the directions on the WorkConnections website [Forms Instructions](#) to obtain proper medical treatment and follow-up.

If you were involved in or observed an incident or near miss, please complete the [EHS Laboratory Incident and Near-Miss Report Form](#). This will be valuable in improving laboratory safety on UM-Flint campus.

TREATMENT FACILITIES:

<u>MAJOR INJURIES</u>	<u>MINOR INJURIES –During Business Hours</u>	<u>MINOR INJURIES –After Business Hours</u>
<p>Genesys Hospital One Genesys Parkway Grand Blanc, MI 48439 (810) 606-5710</p> <p>Hurley Medical Center One Hurley Plaza Flint, MI 48503 (810) 262-9000</p> <p>McLaren Hospital Flint 401 South Ballenger Hwy Flint, MI 48532 (810) 342-2000</p>	<p>Genesys Occupational Health Network 1460 Center Rd. Burton, MI 48509 (810) 715-4620 Mon. to Fri. 7:30 am to 10 pm Sat. & Sun. Noon to 8 pm</p> <p>McLaren Flint-Burton OCC Center 1459 S. Center Rd. Burton, MI 48509 (810) 496-0900 Mon. - Fri. 8 am to 8 pm Sat & Sun 10 am to 2 pm</p>	<p>Downtown Flint 420 S. Saginaw St. Flint, MI 48502 (810) 762-1550</p> <p>Genesys East 1096 S. Belsay Rd, Suite F Burton, MI 48509 (810) 743-3351</p> <p>Genesys North 4154 W. Vienna Rd Clio, MI 48420 (810) 686-7397</p> <p>Genesys South 8447 N. Holly Rd Grand Blanc, MI 48439 (810) 603-0856 Mon. - Fri. 6 to 10pm / Sat. & Sun. 1-10pm</p>

Click [here](#) for more information on the UM – Flint Emergency Preparedness and Response Plan.

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 (810) 766-6763 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 University of Michigan-Flint Department of Public Safety (DPS) at 911 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:

- www.oseh.umich.edu/pdf/chemspil.pdf
- <http://www.oseh.umich.edu/emer-chemical.shtml>

Report all emergencies, suspicious activity, injuries, spills, and fires to the UM-Flint Department of Public Safety (DPS) at 911 from any university telephone or (810) 762-3333 from cell phone or non-university telephone. Register with the [University of Michigan-Flint Emergency Alert System](#) via Wolverine Access. Also, preprogram the UM-Flint DPS telephone number (810) 762-3333 into your cell phone for quick, easy use.

Training of Personnel

All personnel are required to complete Laboratory Safety Training. Documentation of the training is required. This training can be accomplished by completing the **Comprehensive Laboratory Safety** session (BLS009 or equivalent) via [MyLINC](#), or UM-Flint EHS on-line training or other equivalent approved by EHS. 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 _____