



### GUIDELINES FOR WORK WITH PICRIC ACID (CAS# 88-89-1)

Picric acid (also known as 2,4,6-trinitrophenol) is a yellow crystal that is slightly soluble in water and highly sensitive to heat, shock, or friction. Safety precautions recommend storing picric acid wet. Dry picric acid is sensitive to shock and friction, so laboratories that use it store it in bottles under a layer of water, rendering it safe. Glass or plastic bottles are required, as picric acid can easily form metal picrate salts that are even more sensitive and hazardous than the acid itself. Because of picric acids explosive nature it is among the most hazardous substances found in the laboratory.

#### I. Potential Hazards:

***Explosion Hazard: If allowed to dry, picric acid can become shock sensitive and explosive as it is a flammable solid.***

- Containers older than two years old may pose significant explosion potential.
- Picric acid is a strong irritant and allergen that causes local, as well as systemic allergic reactions.
- Picric acid can cause skin damage and staining at the contact site as well as systemic poisoning when ingested or absorbed.
- Inhalation of high concentrations of picric acid dust can cause temporary coma followed by weakness, myalgia, anuria (absence of urine production), and polyuria (excessive urination).
- Target organs are the blood, skin, eyes, kidneys and liver.

#### II. How to a handle picric acid bottle that is undated or unsure of the date opened/received:

- If you find an undated bottle or unsure of the date opened/received of picric acid do not touch the bottle.
- Without touching the bottle, visually inspect to determine if there may be water present in the bottle.
- Without touching the bottle, visually inspect to determine if there may be crystals that have formed near the cap.
- Evacuate the room. Close and lock the door.
- Immediately contact EHS at 372-3227.

#### III. Responsibilities of the Principle Investigator:

- The Principal Investigator is responsible for training employees and students using the material on site. The training should include a discussion of the known and potential hazards; an explanation of the relevant policies, techniques and procedures including the proper use of personal protective equipment, emergency/spill procedures and containment equipment (engineering controls).
- Limit access to picric acid to authorized users.
- Minimize the possibility of inadvertent ingestion, inhalation and direct skin or eye contact with the substance.
- Ensure picric acid has been added to the Chemical Inventory.
- Require annual training.

#### **IV. Work Practice Controls:**

- Work with picric acid in a chemical fume hood to minimize inhalation exposure.
- Read the Safety Data Sheet (SDS) prior to handling picric acid.
- Date all bottle of picric acid with "DATE RECEIVED" and "DATE OPENED"
- Call EHS at 372-3227 for immediate disposal if the received date is greater than 2 years
- Clean bottleneck, cap, and threads with a wet cloth before re-sealing.
- Do not use metal spatulas when removing or weighing material.

#### **V. Personal Protective Equipment (PPE):**

PPE must be worn when handling picric acid.

Hand Protection:

Gloves must be worn. Use proper glove removal technique to avoid any skin contact. Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with picric acid.

Eye Protection:

ANSI approved properly fitting safety glasses or chemical splash goggles are required. A face shield is also recommended in addition to the eye protection.

Skin and Body Protection:

Lab coats are required. These laboratory coats must be appropriately sized for the individual and be buttoned to their full length. Laboratory coat sleeves must be of a sufficient length to prevent skin exposure while wearing gloves. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle should not be exposed.

Hygiene Measures:

Wash hands thoroughly using soap and water immediately after handling.

#### **VI. Exposure Limits:**

- OSHA Permissible Exposure Limit (8 hours) : 0.1 mg/m<sup>3</sup> TWA; Skin.
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV): 0.1 mg/m<sup>3</sup> TWA.
- National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 0.1 mg/m<sup>3</sup> TWA; 0.3 mg/m<sup>3</sup> STEL; Skin.
- NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): 75 mg/m<sup>3</sup> (skin).

#### **VII. First Aid:**

Eye Contact:

Using an eyewash immediately flush eyes with water for at least 15 minutes. Contact TTU Police or 911 and immediately seek medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If needed use a safety shower. Contact 911 and immediately seek medical attention.

Inhalation:

If inhaled, remove to fresh air. Contact 911 and immediately seek medical attention.

WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Use compression only CPR if attempting to render aid until emergency personnel arrive.

**VIII. Storage:**

Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances, heat, sparks, flames or other ignition sources.

**IX. Waste disposal:**

Use proper personal protective equipment and properly dispose of the chemical. Follow the "Hazardous Waste Management and Satellite Accumulation Area Guide".

**X. Spill Clean-up Procedure:**

- Stop or reduce the spill if it is safe to do so.
- Contain spill with material that does not react with spilled chemical such as pads or pillows. These materials should already be available in your lab's spill clean-up kit.
- Place clean-up materials in a compatible, impervious container **with water added**. Thoroughly wash the spill site after material pickup is complete.
- Follow the "Hazardous Waste Management and Satellite Accumulation Area Guide" for disposal of the waste material.

If it is a large spill (>1 Liter), contact EHS at 372-3227 or University Police at 372-3234.

**XI. Documentation:**

"I have read and understand the "GUIDELINES FOR WORK WITH PICRIC ACID". I agree to fully adhere to its requirements."

Last	First	T number	Signature	Date