

Principal Investigator: _____

Date Approved: _____

This document covers basic chemical safety protocols (CSP) for picric acid and supplements the laboratory Chemical Hygiene Plan as appropriate. Additional lab-specific safety operating procedures for picric acid may also be required. The use of any picric acid is subject to pre-approval by the Principal Investigator (PI) and/or the designated Laboratory Responsible Safety Person. DO NOT USE ANY PICRIC ACID UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL AND TRAINING.

Picric Acid

Picric acid, or 2,4,6-trinitrophenol (TNP), is a yellow, odorless crystalline solid that is mildly corrosive, highly flammable, and explosive when dry. Normally sold and stored wet, it is only slightly soluble in water. Picric acid is often used as a fixative and staining reagent in immunohistochemistry. This substance is prone to sublimation, whereupon it can react with nearby metals, bases, or other materials to form dangerous picrate salts.



Personal Protective Equipment & Personnel Monitoring

**Lab Coat**

Flame resistant lab coat.

**Gloves**

Nitrile or neoprene gloves.

**Eye Protection**

ANSI Z87.1-compliant safety glasses or safety goggles if a splash hazard is present. Consider using a blast shield for extra protection.

Labeling & Storage

Dry picric acid is sensitive to shock and friction and must therefore be stored wet, under a layer of water. **Do not** allow the solution to evaporate to dryness. Glass or plastic bottles are required, as picric acid can easily form highly sensitive metal picrate salts. **Do not** use metal spatulas when manipulating picric acid. Keep away from sources of ignition. **Do not** use glass stoppers as some material may be ground between the flask neck and the stopper, and it may explode. Clean bottleneck, cap, and threads with a wet cloth before re-sealing. Keep away from metals, amines, bases, and hygroscopic chemicals.

Engineering Controls, Equipment & Materials

Fume Hood

Use fume hood to keep exposure to picric acid as low as possible. If your protocol does not permit the handling of such materials in a fume hood, contact the Office of Environment, Health, Safety, and Sustainability (EHSS) to determine whether additional respiratory protection is warranted.

Cautions & Considerations

If an old or previously unaccounted for bottle of picric acid is discovered, **do not touch the container**. Depending on how long the bottle has been abandoned and the state of the product inside, even a minor disturbance could be dangerous. Visually inspect the contents of the bottle without moving it to evaluate its water content, looking

for signs of crystallization inside the bottle and around the lid. If there is even the slightest indication of crystallization, evaporation, or the formation of dry solids, **do not handle the container** and contact EHSS immediately. Secure the area and restrict access to the container until it can be evaluated by EHSS personnel.

Housekeeping

Spills

Notify others in the area of the spill, including your PI/Responsible Safety Person. If it is a small spill that you can easily handle, use the contents of your lab spill kit to clean it up. If it is a large spill, then evacuate the area where the spill occurred. Call Vanderbilt University Public Safety (VUPS) at 615-421-1911 or use the Vandysafe app on your smart phone. Report any exposure through Risk and Insurance Management's Origami portal and mark that it occurred in research when prompted. Both VUPS and the Origami system will notify EHS of the incident. Remain on-site at a safe distance to provide detailed information to first responders.

Decontamination

Clean contaminated surfaces with soap and water. Keep the paper towels wet and dispose of them as solid hazardous waste.

Waste

Picric acid should be collected in a sealed container as an aqueous solution. Dispose of it as hazardous waste.

First Aid & Emergencies

Skin or Eye Contact

Without putting yourself at risk, move person into fresh air. Remove contaminated clothing and accessories; flush affected area with water for at least 15 minutes. Get medical attention immediately.

Inhalation

Without putting yourself at risk, move person into fresh air. Get medical attention immediately.

Ingestion

Rinse mouth with water. If symptoms persist, get medical attention.

Waste Disposal

Refer to the laboratory *Chemical Hygiene Plan* (Section 6.7) for information on proper chemical waste disposal procedures.

