



Guidance Document

Safe Handling of Picric Acid

[This is a brief summary. Read the full MSDS for more details before handling.]

Introduction: Picric acid is 2,4,6-trinitrophenol. Pure picric acid is a solid organic compound. It must be kept wet with water (usually 30% or more) because the dry solid is explosive. If necessary, deionized or distilled water may be added to stock containers of picric acid.

Uses: Picric acid has been used in munitions and explosives, for staining of microscopic specimens, and in pharmaceutical applications. At CSM picric may be used as a metal etchant and as a chemical reagent in teaching and synthesis labs.

Chemical Properties: Picric acid is an odorless, yellow, crystalline organic solid. It should always be stored over a volume of water to protect against explosion. The water phase becomes yellow with 1-2% dissolved picric acid. Picric acid is incompatible with metals including copper, lead and zinc (corrodes the metal to form shock-sensitive salts), aluminum and water (ignites after a delay), ammonia, concrete (forms explosive calcium picrate), plaster, salts, oxidizers. Picrate salts are often more explosive/shock sensitive than the picric acid itself. Avoid heat, flame, ignition sources, shock, dryness and the many incompatible materials.

Health Hazards: Acute (immediate) effects include respiratory irritation, coughing, shortness of breath. Systemic poisoning can cause headache, dizziness, nausea, vomiting. Heavy exposure can cause red blood cell destruction, liver and kidney damage, convulsions, weakness. Irritates the skin causing redness, itching and pain. May cause allergic reactions. Can be absorbed through the skin. Chronic (long term) exposure can result in liver, kidney and blood effects. Hair and skin or conjunctiva may become

yellow (not jaundice). Persons with pre-existing skin, blood liver and kidney disorders may be more susceptible.

Exposure Control: Always handle with adequate ventilation, as in a fume hood. Always wear safety glasses or goggles. Wear nitrile or neoprene or other picric acid-resistant gloves (latex is not effective). Wear a long-sleeved, buttoned lab coat, long pants and closed-toe shoes. Other PPE may be required, such as face shield, foot coverings, apron, etc.

Safe Handling: Users of picric acid must be trained in its hazards and in procedures for use and disposal. Dangerous explosion hazard when dry. Becomes increasingly shock, heat and friction sensitive as it loses moisture. If you discover dry picric acid, do not touch container, call EHS. Do not use picric acid when working alone or after hours. Do not use or store in metal containers. Do not use metal spatulas to handle solids. Use and store picric acid in containers made of polyethylene, polypropylene, Teflon, or glass. Wet wipe screw closures before sealing to prevent solids formation in threads. Very small spills may be absorbed with wet paper towels. Keep wet and collect for disposal. Call EHS (ext. 3316) for assistance with any spill. Collect all picric acid-containing wastes in plastic or glass bottles for disposal by the EHS Department.

First Aid: Immediately move victim to safe area and flush the affected area of the body with copious quantity of water for at least 15 minutes. Remove all contaminated clothing while flushing with water. If swallowed, do not induce vomiting. Give large quantities of water to conscious victim. Seek medical attention for any eye contact and for any significant skin exposure.