
The Waste-Paper

The Hazardous Waste Disposal Monthly Update

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Time Sensitive Chemicals *Part 2*

This is the second in a series of articles about chemicals that, when stored for prolonged periods, can develop hazards that were not present in the original formulation.

Multi-Nitro Compounds

Most multi-nitro compounds, such as those listed in the table below, are shipped with a stabilizer, usually water, to prevent them from drying out and becoming shock-sensitive over time. Some are not stable if they come into contact with a metal. Once dry, even something as simple as the friction from removing a cap or slight jostling of the material may result in detonation of the material.

Multi-Nitro Compounds

Collodian	Nitroguanidine, dry
Diethyleneglycol dinitrate	Nitrocellulose, dry
Dinitroethylene urea	Nitrostarch, dry
Dinitroglycerine	Nitro urea
Dinitrophenol	Picramic acid, dry
Dinitrophenyl hydrazine	Picramide
Dinitropropylene glycol	Picric acid, dry
Dinitroresorcinol	Picryl chloride
Dinitrosobenzene	Picryl fluoride
Dipycrylamine	Tetranitroaniline
Dipicryl sulfide	Tetranitromethane
Ethanolamine dinitrate	Tetranitrophenol
Ethyl 4,4-dinitropentanoate	Tetranitroresorcinol
Ethyleneglycol dinitrate	Trinitroaniline
Glycerol-1,3-dinitrate	Trinitroanisole
Hexanitrobibenzyl	Trinitrobenzene, dry
Hexanitrodiphenylamine	Trinitrobenzenesulfonic acid, dry
Hexanitrostilbene	Trinitrochlorobenzene
Lead picrate	Trinitrofluorenone
Lead styphnate	Trinitro-m-cresol
Mannitol hexanitrate	Trinitronaphthelene
Methyl-4,4-dinitropentanoate	Trinitrophenetol
Methylene hexanitrate	Trinitrophenol, dry
Nitroglycerine	Trinitrophenloroglucinol
	Trinitroresorcinol
	Trinitrotoluene



One example of a multi-nitro chemical developing additional hazards during prolonged storage occurred in a laboratory on another campus. Glass-stoppered bottles of collodian, a nitrocellulose derivative normally supplied in an ether or alcohol solution, had been stored long enough for all of the liquid to evaporate. Several bottles contained what appeared to be a dry material resembling a hockey puck, while others had formed ropes of solid material. Any attempt to open these containers could have produced an explosion. A bomb squad was called in.

Picric acid is the most common multi-nitro compound found on college campuses. When dry, it is more explosive than trinitrotoluene (TNT) and was used as the explosive in hand grenades during World War II. Across the country, college and university personnel have discovered containers of now dry picric acid not just in laboratories, but in textile applications, paint shops and other areas.

Laboratories using picric acid in concentrations of 70% or more may need to conduct such work in a specially designed fume hood. Picric salts may deposit on the ductwork and inner surfaces of the hood. Picric acid hoods are constructed of stainless steel and are equipped with a washdown system to prevent accumulation of potentially explosive solid deposits.

Recommendations

Like peroxide-forming chemicals discussed last month, multi-nitro compounds are time sensitive and require additional storage considerations.

- Purchase only the quantity needed in the foreseeable future.
- Mark the container with the date received and the date opened. Dispose within two years.
- Store in a cool, dry place, away from sunlight.
- If there are signs of dehydration, do not move the container. Contact EHS immediately. EHS will make arrangements for our hazardous waste contractors to handle the material. If efforts other than simple rehydration are required (e.g., remote opening), the laboratory may be required to share the cost of labor and materials.

For more information, contact [Robin Izzo](#) at 258-6259 or [Steve Elwood](#) at 258-6271.

Leaving So Soon?

Planning to graduate or leave Princeton for greener pastures (not that we know of any)? Before you go, be sure that all of the chemicals that you have been using are either disposed of or formally assigned to another person in your lab. Do not just leave your chemicals behind assuming that someone else will use or take care of them – that is how unknown chemicals and excessive chemical storage often begins.

Before you leave...

- Go through your lab with your PI or another lab worker. Look at every chemical container and be each is labeled in a manner that allows anyone in the lab to identify the contents.
- Determine which chemicals are needed for future projects and which are not.
- Ensure that someone has taken responsibility for each of the chemicals, including gas cylinders, left behind.
- Don't forget to check and clear out samples in refrigerators and freezers.
- Dispose of unneeded chemicals. If there are materials for disposal after May 26th, make arrangements for someone else to get rid of them at the next pickup.

If you have a whole lab's worth of chemicals to dispose of, we may be able to arrange for help from our waste contractor. Contact EHS at 8-5294 if you have any questions.

This Month's Waste Disposal Drop-Off: Wednesday, April 26, 2006

Lewis Thomas loading dock

- Wednesday from 1:00 - 4:30 PM
- Thursday from 8:15 – 9:00 AM
- Coordinators: [Michael Fredericks](#) (8-1351) or [Mary Zikos](#) (x8-4095)

Jadwin Hall room 124 (Physics only)

- Do not drop off waste before Wednesday
- Coordinator: [Joe Horvath](#) (x8-4364)

E-Quad room 7 (E-Quad and Bowen)

- collection room open from 2:00 - 3:00 PM
- Coordinators: [Joe Laskow](#) (8-4739) and [Joe Palmer](#)

Frick loading dock (Chemistry, Psychology, Visual Arts)

- collection room open from 1:00 - 2:00 PM
- Coordinator: [Kevin Wilkes](#) (x8-3920)

The New Face at EHS



The newest member of the EHS staff, Tonya Gruchacz, joined us as radiation safety technician this past November. Before Tonya came to Princeton University, she handled other kinds of hazards in her job as a medical laboratory technician where she worked with blood samples contaminated with HIV and Hepatitis B and C viruses. Consequently, Tonya is well acquainted with good contamination control techniques. This is Tonya's first opportunity to work in an academic setting, and so far, she loves working in this new environment at the University.

Tonya is a Jersey girl, who's not only lived her whole life in New Jersey, but actually has lived her whole life in Hunterdon County, where she lives with her husband Todd, who is a home contractor, and her daughter, Brooke (10) and son, TJ (7). Tonya's passion is reading but she also likes to spend time scrapbooking, making her own cards and participating in her kids' lives (that means she goes to a lot of baseball, softball and soccer games and has learned to hate 4th grade homework!) Tonya has also been a co-leader of her daughter's Junior Girl Scout Troop for the last four years.

Tonya's primary duties include conducting the monthly contamination surveys and compliance inspections in radioisotope-using labs and running the radiation monitoring badge program. Be sure to greet Tonya when she visits your lab.

<i>EHS HAZARDOUS WASTE CONTACTS</i>	
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