



# UNIVERSITY OF DELAWARE

## DEPARTMENT OF OCCUPATIONAL HEALTH & SAFETY

### CHEMICAL HYGIENE PROGRAM UPDATE, MAY 2009



**Expires: April 2010**

#### **Material Safety Datasheet Handling**

Over the years, some chemical suppliers have stopped sending Material Safety Datasheets (MSDS) with the shipment of the chemical or hazardous materials. To meet their obligations under the State and Federal Chemical Right-To-Know laws, the suppliers send paper copies to the Occupational Health and Safety Office. In the past, OHS sent these paper copies in Campus Mail to the users. Recently, OHS contacted Fisher Scientific and asked to have all MSDS emailed as an attachment. Fisher Scientific is the University's main supplier of laboratory chemicals. The MSDS are now emailed to the Chemical Hygiene Officer, who reviews the hazards of the material and forwards the MSDS and any chemical hygiene recommendations to the researcher who ordered the material. MSDS review and communication are an important aspect of the Chemical Hygiene Program. The new procedure permits OHS to easily send this valuable safety information out to the personnel who are using and may be exposed to the material.

Remember, a current print version of a MSDS must be available for all chemicals used or stored in the laboratory. Researchers and students should consult two MSDS resources for every chemical they plan to use before they start the experiment or procedure. This review should be used in the development of the standard operating procedure and process safety review. An annual review of all MSDS should be included as part of the annual chemical safety training refresher.

Please advise all of your researchers that they may receive MSDS and chemical hygiene recommendation directly from OHS.

#### **Oil Filled Vacuum Pump Operations in Laboratories**

Mechanical vacuum pumps used in laboratories pose many hazards. There are the mechanical hazards associated with any moving parts as well as potential chemical hazards of contaminated pump oil and subsequent release of the oil via a mist into the laboratory space. Many vacuum pumps are found improperly ventilated into the general laboratory space or laboratory ventilation system. Vacuum pumps exhaust oil mist and its associated toxic materials, depending on the specific operation, into the laboratory or laboratory exhaust. The oil mist collects on equipment, the floor and in the horizontal runs of the laboratory exhaust ductwork. The oil mist is a health hazard which can be magnified if organic solvents and other toxic materials are used with the vacuum pump systems. In some laboratories, a significant amount of oil has collected in the laboratory exhaust ductwork that then leaks into the laboratory space and is a fire hazard. The follow requirements must be adhered to if oil filled vacuum pumps are used in your operations:

- Install a manufacturer's recommended oil mist filter on the vacuum pump exhaust



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- Exhaust the filter into the laboratory ventilation if the system is used with organic solvents or toxic materials
- Maintain the oil mist filter based on the manufacturer recommendations. Some mist filters require the replacement of a filter matrix; others simply require the collected oil to be drained.
- Install a trap between the process equipment and the vacuum pump if organic solvents or toxic materials are used in the process. A trap protects the pump and the piping from the potentially damaging effects of the material. It protects people who must work on the vacuum lines or system, and prevents vapors and related odors from being emitted back into the laboratory or system exhaust.
- Detailed vacuum pump safety information can be found at <http://www.udel.edu/OHS/safetyprocedures/vacuumpump.pdf>

#### **Explosive Chemical Found in Solid Waste Container**

A laboratory, performing a cleanout, containerized multiple types of reagent chemicals into 3 solid waste boxes. OHS picked these boxes up from the laboratory and moved them to the Hazardous Waste Management Facility. While OHS Waste Staff were unpacking the boxes, they found a reagent grade high explosive; Hexanitrodiphenylamine. This compound is a 1.1D explosive and detonates due to shock and friction. The chemical was manufactured by Eastman Organic Chemical Co. and was clearly labeled with the word **EXPLOSIVE**. It was in the middle of one of the boxes. In general, it is best to contact OHS to assist with laboratory cleanouts as opposed to filling laboratory trash boxes with reagents. Most of the reagents were non-hazardous, but OHS had to de-pack every box, handle every individual container and manage appropriately. For large lab cleanouts, OHS Waste Staff will come to the lab and remove all unwanted chemicals. This allows us to sort the chemicals based on the hazard and safely handle any highly hazardous materials such as the hexanitrodiphenylamine. For small cleanouts, package reagent containers by hazard class in sturdy cardboard boxes. Go to [Chemical Storage \(http://www.udel.edu/OHS/chemcompatstorage.html\)](http://www.udel.edu/OHS/chemcompatstorage.html) for guidance on packaging by hazard class. Do not overload the boxes or stack chemical containers in more than one layer. Use sufficient packing material to prevent container damage. Place a completed [chemical waste label \(http://www.udel.edu/OHS/labwastelabel.html\)](http://www.udel.edu/OHS/labwastelabel.html) and packing slip on the outside of the box

Please note that certain laboratories, due to the lack of a sprinkler system, are prohibited by the Fire Codes from storing or using of explosive compounds. In addition, there is a special approval process for work with explosives. All laboratories must have a complete and accurate chemical inventory of **all** chemicals in the laboratory that is updated and maintained as new chemicals are brought in or used and not replaced in the Online Environmental Health and Safety Assistant Program. This will help to assure that all chemicals, including any explosives, are identified and accounted for. This particular chemical should be stored under water to reduce the shock and friction hazard, much like Picric Acid (Trinitrophenol). The chemical was completely dry and represented a significant hazard to the OHS Waste Staff. The Waste Group has changed its procedures and will not move a box of improperly

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prepared reagent chemicals from a laboratory without first completely unpacking and segregating properly.

#### **Reminder - Department of Homeland Security (DHS), Chemical Facility Antiterrorism Standard (CFATS) Update**

The University is still below the reporting thresholds for the items listed on the DHS List of Chemicals of Concern ([http://www.dhs.gov/xlibrary/assets/chemsec\\_appendixa-chemicalofinterestlist.pdf](http://www.dhs.gov/xlibrary/assets/chemsec_appendixa-chemicalofinterestlist.pdf)). However, for certain chemicals, we are approaching the limits that require notification. An accurate inventory of these items must be maintained in the Environmental Health and Safety Assistant Program (<http://ehs.facil.udel.edu:1568>). All of the information compiled in February has been uploaded into the program. There is an obligation for the University to continually assess our chemical inventories and report to DHS. Please update your inventory as necessary. Contact me if you need a log-in and a password to access the system to update or add to your chemical inventory.