

# E•O•H•S•S

Environmental & Occupational  
Health & Safety Services



## BENCHSMART

*A Newsletter for the UMDNJ Laboratory Community*

### In the News

#### EPA Delays Inspection of NJ Colleges and Universities

Last winter, the Environmental Protection Agency (EPA) notified the University of their intention to inspect New Jersey and other Region II colleges and universities in spring 2000. No inspections have been conducted to date. EOHSS has learned that EPA will begin inspections October 2000. These inspections will focus on environmental regulations and cover Hazardous Waste, Air Quality, Water Quality, Underground Storage Tanks and Community Right-to-Know.

UMDNJ laboratories must be ready for a regulatory inspection at all times:

**- Hazardous Waste Management:**

Laboratories are responsible for properly managing hazardous materials (i.e., use and storage) and wastes (i.e., collection and disposal). Fact sheets summarizing these procedures are available at: <http://www2.umdnj.edu/eohssweb/publications/factsheets.htm>

**- Unwanted Chemicals:** Chemicals that will no longer be used should be disposed of through EOHSS.

**- Material Safety Data Sheets:** Lab personnel should know how to obtain Material Safety Data Sheets. They are

available online at: <http://www2.umdnj.edu/eohssweb/msds.htm>.

Contact EOHSS for assistance, if necessary.

**- Emergency Procedures:** Lab personnel should know what to do if there is a spill or medical emergency. They should follow the instructions in the EOHSS flipchart entitled "Emergency Response Guide." Post a flipchart in each laboratory, near a telephone.

**- Training:** Persons generating hazardous waste must attend hazardous waste training annually. EOHSS covers this topic during initial and refresher training for lab personnel. EOHSS conducts "on-the-spot" training during a hazardous waste drop off, lab inspections and lab clean outs. Contact EOHSS to schedule a session.

### Recent Incidents

#### Safety Recall of Certain Fisher Scientific Centrifuges Following Accident

A few months ago, a rotor on a Fisher Micro16 microfuge at the Massachusetts General Hospital (MGH) exploded. No one was hurt.

The outer shell of the centrifuge did not contain the explosion and fragments of the rotor sprayed the area. The front of the centrifuge was blown offsmashing bottles as it passed from one lab bay to another. The front narrowly missed hitting a technician's head. Another technician, who had her back turned to the centrifuge, felt rotor fragments hit her back.

The centrifuge was purchased in October 1996. Fisher has issued a recall notice for Micro16, Micro 14 and Micro 13 units. The centrifuges involved are at least two years old and the serial number must begin with the letter M.

The manufacturer of the centrifuge, Denver Instruments, stopped making it two years ago. Fisher still sells the centrifuge. There have been several recalls of the centrifuge in the past, including one to ensure that the cover of the spin chamber clamps shut securely. The MGH centrifuge involved in the incident had the recall repairs.

EOHSS has a number of centrifuge safety publications posted at <http://www2.umdnj.edu/eohssweb/lablinks.htm>. "Centrifugation Safety" and other free laboratory safety videos may be ordered online at the Howard Hughes Medical Institute web page, <http://www.hhmi.org/home/publication/3.html>.

## Unattended Operations

Recently, a fire broke out in a University of Michigan laboratory. The local fire department quickly extinguished the fire. No injuries or property damage was reported to have occurred. The person running the reaction that started the fire was not present when responders arrived. Though not the case here, the inability to determine the materials involved in a fire or other emergency could have dire consequences.

Operations using hazardous or flammable materials should not be undertaken without establishing procedures that would provide essential information to potential emergency responders. (Consult EOHSS if assistance is required.) Regardless of the hazard, people operating centrifuges, running gels, etc., should ensure that they could be reached if a malfunction occurs.

## Cryotube Explosion

In April, a researcher at a New York University reported that a vial of potentially infectious material "exploded" when he removed it from liquid nitrogen. The "explosion" most likely occurred when liquid N<sub>2</sub> leaked into the vial and expanded when removed from the cold. This was a common problem with heat-sealed glass ampules, because it was difficult to obtain perfectly fused glass with no microscopic holes. This problem was largely resolved when laboratories began using plastic cryovials with a silicone seal. Nunc\* makes a sleeve called CryoFlex that slips over the vial and is heat-sealed to keep out liquid. Even with this type of product, explosions can occur, albeit infrequently.

There are several ways to prevent this from happening:

1. Cryogenic storage vials are

designed for **VAPOR PHASE STORAGE** in liquid nitrogen freezers. This means that they are designed to sit in the cloud of extremely cold nitrogen gas that sits just above a small reservoir of liquid N<sub>2</sub> in the bottom of the freezer. Leakage of liquid nitrogen into the vial occurs when the freezer is overfilled and the vials are immersed in liquid nitrogen. This problem can be avoided by not overfilling the freezers with liquid nitrogen.

2. Visually check each cryovial prior to filling to ensure there are no defects around the rim. Cryovials should never be re-used.

3. When removing samples, pause for a moment in the neck of the dewar before bringing them into the room atmosphere - if one is going to pop, it will usually do so early in the warm-up process.

The importance of gloves and face shields can not be overemphasized. Tubes stored in liquid phase dewars, where the ampules are in canes is especially hazardous. Full face shields and gloves should be available near nitrogen freezers so no one is tempted to pull a vial without protection.

\* Information about Nunc products is at: <http://nunc.nalgenunc.com/products/catalog/handling/index.html>

## Hazardous Waste Update

### Disposal of used fixer from film/photography developing

Spent fixer from photography and film developing processes contain silver compounds. This waste must be disposed of through EOHSS as hazardous waste unless it is run

through a properly functioning silver recovery unit.

The most common silver recovery units used for small operations are a cartridge or a plastic bucket, known as a trickle tank. Both contain steel wool or another other iron source that reacts with the silver thiosulfate. As the reaction occurs, the recovery efficiency tapers off, requiring that the unit be replaced.

Steps must be taken to ensure that solutions with concentrations over the EPA limit of 5 mg/l silver do not enter the sink drain. Two units in series, with a valve between them, are recommended. The vendor servicing the unit should obtain a quarterly sample to determine when the current cartridge needs to be replaced. RWJMS Shared Equipment Services (ext. 5-4455) has a purchase order with a vendor for silver recovery services at a group rate for Piscataway, New Brunswick, Stratford and Camden facilities. Newark and Scotch Plains facilities should contact EOHSS for information on disposal of used fixer and silver recovery.

## Safety Shorts

### Autoclaves - No need to add water to tubs and common safety mistakes

Autoclaves are so common that it is easy to forget that they are capable of causing serious injury. Here are some common unsafe practices:

**Adding water to the tub.** This practice may have begun when autoclaves did not have steam generators to create adequate steam for sterilization. Modern autoclaves have steam generators and microprocessors to control the heating and cooling cycles.

