NSLS ES&H HIGHLIGHTS

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Proper Containers for Cryogens

Recently, two researchers working at the NSLS were injured when a dewar ruptured. The dewar was, in reality, a coffee thermos with a screw top which had been transported in the passenger compartment of an airliner. The thermos contained vials of liquid and biological samples cooled by shaved dry ice. Typically, the screw top was kept loose to allow the CO_2 gas to escape. The evening the thermos arrived at the NSLS, the screw top was tightened enough such that gas could not escape. How this occurred is not known for certain. The following day, the owner could not remove the screw top and solicited the help of a colleague. Neither person fully appreciated the fact that they were, in fact, working with a type of bomb. The top of the over-pressurized thermos ruptured, spraying the two researchers with its contents and creating projectiles which landed over 20' away. All parties were extremely lucky that they walked away with minor injuries. The results could have been much worse.

As a result of this incident, the following rules are now in effect:

1. No cryogenic dewar at the NSLS may be used with a screw top. If the dewar has threads at its neck, a loose-fitting Styrofoam plug must be used.
2. Only proper dewars are to be used for the storage and transportation of samples kept in cryogens.

Beamline Spokespersons and Local Contacts must enforce these rules. Operations Coordinators will monitor this enforcement. Thermoses with screw tops which are used as cryogenic vessels will no longer be tolerated on the NSLS experimental floor.

Dry Ice

Use Styrofoam containers with loose fitting tops when transporting or storing samples in dry ice.

Liquid Nitrogen

Use a CryoPak Series Biological Shipper or its equivalent when transporting samples in liquid nitrogen. The absorbent filler holds several pounds of liquid nitrogen, thus no free liquid can pour out if the unit is tipped over. The foam necktube core allows venting of the nitrogen gas. A hardshell container may be purchased for long distance shipping purposes.

Training and Information

- Cryogenic safety training should be part of Beamline Operations and Safety Awareness (BLOSA)
- "Cryogen Safety" web-based training (http://training.bnl.gov; #HP-OSH-025)
- BNL SBMS Cryogenics Safety Subject Area
- http://intranet.bnl.gov/esh/cms/search/msds_query.asp, enter "dry ice"
- http://intranet.bnl.gov/esh/cms/search/msds_query.asp; enter "liquid nitrogen"

Transportation Regulations

BNL SBMS Transportation of Hazardous and Radiological Materials Offsite Subject Area