



CENTRIFUGE EXPLOSION DAMAGES LABORATORY

Cornell University has reported that a centrifuge explosion occurred in one of their laboratories (check it out at <http://www.ehs.cornell.edu/lrs/CentrifugeSafety/CentrifugeDamages.htm>). According to the university, samples were running in a Beckman L2-65B ultracentrifuge using a large aluminum rotor that had

been used for this procedure many times before. Approximately one hour into the operation, the rotor failed due to excessive mechanical stress caused by the "G" forces of the high rotation speed. The subsequent explosion completely destroyed the centrifuge. The safety shielding in the unit did not contain all the metal fragments. Fragments ruined a nearby refrigerator and an ultra-cold freezer in



addition to making holes in the walls and ceiling. The unit itself was propelled sideways and damaged cabinets and shelving that contained over a hundred containers of chemicals. Sliding cabinet doors prevented the containers from falling to the floor and breaking, however, a shock wave from the accident shattered all four windows in the room, destroyed the control system for an incubator, and shook an interior wall causing shelving on the wall to collapse. Fortunately, the room was not occupied at the time and there were no personal injuries. The cause of the accident is believed to be the use of a model of rotor that was not approved by Beckman for use in that model of ultracentrifuge.

What can we learn from their misfortune? Anyone who uses a centrifuge should be trained in the proper operating and maintenance procedures and understand the restrictions of the equipment. Beckman Coulter has a pamphlet available entitled "Rotor Safety Guide", which can be obtained from their local sales office or sales representative by referencing document number DS-625B.

DID YOU KNOW?



Any appliance or equipment (desk lamp, microwave, coffee pot, refrigerator, lab equipment, etc.) plugged into an extension cord for 90 days or more is an OSHA citable violation. Permanent use of temporary wiring (i.e., an extension cord) is not allowed. It doesn't matter whether it's a three-prong industrial cord or a two-prong type, it's still a violation. If the item is within six feet of a receptacle, an approved power strip (one that contains an internal circuit breaker) may be used. If it is further away than that, contact Site Support to see about providing an outlet closer to the appliance or equipment so the extension cord is no longer needed.

TOXICS IN THE NEWS: PHTHALATE ESTERS

Former Surgeon General C. Everett Koop, currently a senior scholar at the C. Everett Koop Institute, Dartmouth College, discusses the results of a report on di(2-ethylhexyl) phthalate (DEHP) and diisononyl phthalate (DINP), both phthalate esters, from a panel that he chaired sponsored by the American Council on Science and Health on his web site at <http://www.drkoop.com/news/focus/june/phthalate.html>. DEHP is the primary plasticizer used in many medical devices such as plastic IV bags, and DINP is found in baby teething ring and vinyl toys, both of which were targeted last fall as being unsafe. After conducting an extensive review of the scientific literature, Koop's panel of scientists concluded that DEHP in medical devices is not harmful to even highly exposed people, and that eliminating DEHP in these products could actually cause harm to some individuals since it imparts important physical characteristics critical to the function of medical devices. They also concluded that toys containing DINP posed no threat to children under normal use.

ARE YOU OUTDATED?

Do you remember when the EHSO introduced the computerized inventory program? Did you pick up disks at training and never actually use them? Things have definitely changed! The EHSO now has bigger and better versions of both the Windows and MAC inventory programs. Why not update and use the newest version available? Just send your old disks to the EHSO and we'll send you the new version, or you may get the program and instructions for use at our website at: <http://w3.ouhsc.edu/ehso/inventory>.



LAB SAFETY CORNER



SAFETY ALERT

EM Science has published an alert regarding the discovery of potential safety issue with the poly-fitment drip ring located at the lip of the bottleneck in ACS Reagent grade acids and corrosives. A small percentage of the drip rings have been found to be either cracked or broken. This defect could cause dripping/spillage during pouring or leakage upon resealing the bottle. A list of potentially affected products includes: acetic acid, ammonium hydroxide, nitric acid, and sulfuric acid. If you have these products from EM Science, please contact them at 1-800-222-342 ext. 415.

DIETHYL PYROCARBONATE

Diethyl pyrocarbonate (DEPC) is used in biological research laboratories to block enzyme activity associated with RNA preparations. DEPC is colorless and odorless but decomposes on exposure to moist air to produce ethanol, carbon monoxide and carbon dioxide, causing internal pressure in the container. All new containers purchased from Sigma are equipped with pressure-releasing caps, but extreme caution should still be taken. When handling containers of DEPC, always work in a chemical fume hood with the sash lowered AND wear a protective face shield, lab coat, and natural rubber or nitrile gloves. Unopened bottles are packed and shipped under nitrogen and are reported to be stable for up to one year. Opened bottles should be used within six months. All containers of DEPC should be kept dry and refrigerated.

At least one OUHSC employee has experienced the pressure release from DEPC first hand. While working in a fume hood with the sash lowered, the employee was removing the outer plastic cap-retainer band when the bottle cap and inner plug were blown off due to the internal pressure. The employee was not wearing a face shield or goggles, resulting in the vaporized chemical spraying onto the employee's face and into the room. The employee proceeded immediately to the safety shower/eyewash and was then taken to the emergency room for medical attention.

Another recent OUHSC incident involved the receipt of a DEPC container that appeared to have ruptured in transit. The department immediately contacted the EHSO, who coordinated with the vendor to have the container properly disposed (at the vendor's expense).

If your laboratory has an old container of DEPC that has not been properly stored, or does not have a pressure-release cap, DO NOT OPEN OR MOVE IT. Contact the EHSO immediately for proper disposal.

ETHIDIUM BROMIDE

Ethidium bromide is commonly used in molecular biology research laboratories for visualization of nucleic acids. The compound is an odorless red crystalline solid, is soluble in water, and fluoresces a red-orange under ultraviolet light. Ethidium bromide is typically purchased in powder or solution form and is moderately toxic, a potent mutagen, and can be absorbed through the eyes and skin. Acute exposures are irritating to the eyes, skin, mucous membranes, and upper respiratory tract. Because ethidium bromide is strongly mutagenic, it should be regarded as a reproductive toxin and a possible carcinogen.

Preparation of ethidium bromide solutions from dry solids should be performed in a chemical fume hood to prevent exposure by inhalation. Containers of solid ethidium bromide should be tightly closed and stored in a cool dry well-ventilated area away from strong oxidizing agents. When handling ethidium bromide solids or solutions, chemical splash goggles, lab coat, and natural rubber or nitrile gloves should be worn at all times. In case of contact with eyes, immediately flush eyes with copious amounts of water for at least 15-minutes. In case of contact with skin, immediately wash skin with soap and copious amounts of water. Chemical exposures should be immediately reported to the laboratory supervisor and medical attention sought.

When working with ethidium bromide solutions, try to minimize the potential for spills. Work areas where ethidium bromide solutions are prepared or used should be organized and designated with warning signs, which are available from the EHSO. Ethidium bromide work areas can be checked with an ultraviolet (UV) light to identify contamination. (When an ultraviolet light source is used in your work area avoid exposing unprotected skin and eyes to intense UV sources. A protective face shield and long sleeve lab coat should be worn when standing near the source or for prolonged periods.)

Trace amounts of ethidium bromide in electrophoresis gels should not pose a hazard. Higher concentrations, such as when the color of the gel fluoresces dark pink or red under a UV lamp, should not be placed in the laboratory trash or placed with biohazard waste that will be autoclaved. The EHSO recommends the following:

- Less than 0.1% ethidium bromide, place in the laboratory trash.
- More than or equal to 0.1%, place in biomedical waste stream for incineration.

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Gloves, test tubes, paper towels, etc. that are contaminated with ethidium bromide should also be disposed in the biomedical waste stream that is destined for incineration. BFI (1-800-364-8899) currently holds the OUHSC biomedical waste contract and will deliver boxes and liners, pickup, and incinerate the waste for \$12.50 per box. All boxes should be labeled for incineration only.

Solutions containing ethidium bromide should be treated using the method presented in the OUHSC *Laboratory Safety Manual* or filtered using systems commonly available from laboratory supply providers for that purpose. The used filters should be placed in a biomedical waste box that is labeled for incineration only. The resulting solution should be checked using UV light to detect fluorescence to ensure complete deactivation and poured down the drain with copious amounts of water.

VENDOR MISHAPS

Have you ever received a chemical shipment with the wrong item or a damaged/unusable item? DON'T let the vendor tell you, "That's OK, just keep it and we'll send you a replacement," unless you can really use the item. Disposal costs for unused/unwanted chemicals often far exceed the purchase costs, so the EHSO would like to see the vendor (not OUHSC) pay for its mishaps. Recently, we coordinated the return/disposal of a damaged chemical container (it happened to be DEPC - see the article on page 2), saving the University approximately \$175 in disposal costs (the cost of the chemical was \$50). If this happens to you, contact us and we will be glad to coordinate with the vendor.

SURPLUS CHEMICALS

The EHSO has the following chemicals available **free** of charge (for University uses only). Contact Tim Havel at the EHSO at 405/271-3000 or Tim-Havel@ouhsc.edu.

Acetone	Methylene Chloride
Acetonitrile	Molybdenum
Ammonium Hydroxide	Molybdc Trioxide
Ammonium Molybdate	Nitriloacetic Acid
Ammonium Sulfate	Quabain
Amyl Alcohol	Palladium
Benzoic Acid	Papaverine Hydrochloride
Butyl Chloride	Pentoxifylline
Calcium Oxide	Petroleum Ether
Carbon Tetrachloride	Phenyl Phenol
Dioxane	Phenylalanine
Ethanol	Phenylenediamine
Ethyl Acetate	Potassium Ferrocyanide
Ethylene Glycol	Potassium Sulfate
Ferric Chloride, Anhydrous	Quinine Sulfate
Glucosamine	Selenium Metal
Hexane	Sodium Carboxymethylcellulose
Lactophenol Aniline Blue Stain	Sodium Fluoride
Lithium Chloride	Sodium Tungstate, Dihydrate

Manganese Oxide
Manganous Chloride
Mercuric Oxide, Solid
Methanol

Sulfuric Acid
Toluene
Xylene

TRANSPORTATION/TRANSFER OF BIOLOGICAL MATERIALS

There are countless different biological materials (and the materials known or suspected to contain them) that are purchased, transported, handled, and transferred within a research community. Biological materials include infectious agents of human, plants or animals as well as the toxins that may be produced by microbes and by genetic material potentially hazardous by itself or when introduced into a suitable host. The regulations that govern the transportation and transfer of these materials encompass at least nine regulatory and standard setting organizations. Although some of these regulations are compatible, there are conflicts among them..

Transport regulations are aimed at ensuring that the public and workers involved in the transport of a biological material are protected from the biological material within a package. Protection is achieved through proper packaging, labeling, documentation, and training of all workers who are involved in the transportation chain. The agencies with transportation regulations include OSHA, the Public Health Service (PHS), the World Health Organization (WHO), the Department of Transportation, the Postal Service, and the International Air Transport Association.

The transfer (exchange between facilities) of biological materials (both import, export and domestic exchange) has additional regulations aimed at ensuring that the change in possession of biological materials is within the best interest of the public and the nation. These regulations require documentation of the need for the agent, the facilities where it may be used, and the personnel involved. Agencies regulating transfer include PHS, WHO, the Department of Agriculture, and the Department of Commerce. There are often user fees associated with these regulations.

If you will be packaging, transporting, importing, exporting, or transferring biological materials and would like assistance with compliance with these regulations, contact the EHSO.

YOU SAY POTATO, I SAY POTATO

Used motor oil and pump oil - is it "used oil" or "waste oil"? Since 1992, there has been a regulatory distinction between "used oil" and "waste oil" and the management practices associated with each. "Used oil" is any oil that has been

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POTATO (continued)

used and, as a result, is contaminated by physical or chemical impurities. "Used oil" is exempt from hazardous waste management rules and is typically reused as fuel. "Waste oil," however, by regulatory definition, is oil that has been mixed with or contains hazardous waste, and must be handled as hazardous waste. The difference is important. Iowa State University was recently cited by the US Environmental Protection Agency for improper storage of "waste oil" when in actuality it was "used oil" in an improperly labeled container.

If your department generates "used oil", follow these procedures:

- Collect the oil in separate containers and do not mix it with anything else. Use storage containers that are in good condition (no severe rusting, apparent structural defects or deterioration and have no visible leaks).
- Label the container "**Used Oil**", and, to meet Hazard Communication requirements, include the appropriate Chemical Abstract Service (CAS) number and the hazard associated with the oil (check the manufacturer's label or MSDS to get this information).

"Waste oil" should be labeled and handled differently. Contact the EHSO if your department generates "waste oil".

FALL 1999 TRAINING SCHEDULE

The EHSO has announced the Fall/Winter 1999 Safety Training Schedule. Don't forget. EVERY employee must receive safety training annually.

HEALTH CARE

The health care sessions are designed for those who have direct patient contact such as in a clinic-type setting, including front line reception employees. These sessions address hazard communication, fire safety, tuberculosis, and bloodborne pathogens.

Initial

Tuesday, November 2, 1999
1:30 - 4:00 p.m.
BSEB West Lecture Hall

Refresher

Thursday, November 11, 1999
1:00 - 2:00 p.m.
BSEB West Lecture Hall

Wednesday, October 27, 1999
1:30 - 2:30 p.m.
City Plaza,
Northwest Conference Room
Tulsa Campus

LABORATORY

The lab sessions are designed for lab employees who work with chemicals or biological material and address hazard communication, lab safety, fire safety and bloodborne pathogens. (One *Laboratory Safety Manual* is issued to each lab. PLEASE bring the lab's copy of this manual to these lab sessions.)

Initial

Thursday, November 18, 1999
1:00 - 4:30 p.m.
BSEB West Lecture Hall

Refresher

Thursday, December 2, 1999
1:00 - 2:30 p.m.
BSEB West Lecture Hall

OFFICE

These sessions are designed for those employees who do not fall into either the "health care" or the "laboratory" setting. Examples include office personnel, faculty who have no lab or patient contact responsibilities, housekeeping and maintenance personnel.

Refresher

Thursday, October 28, 1999
1:00 - 2:00 p.m.
BSEB West Lecture Hall

Wednesday, October 27, 1999
11:00 a.m. - 12:00 noon
City Plaza, Northwest Conference Room
Tulsa Campus

It is IMPORTANT that you register to reserve your space in one of the following ways:

- On-line at <http://w3.ouhsc.edu/ehso/olsu.htm>
- Call 405/271-3000
- Fax to 405/271-1606
- E-mail to mary-baisch@ouhsc.edu
- Tulsa Campus employees can call Connie Gould at 918/838-4644

All sessions will start PROMPTLY at the time indicated. Any time changes will be forwarded to those who pre-enroll.

Reservations on the basis of disability may be made with Mary Baisch, OUHSC, EHSO, 800 Northeast 15th Street, Room 301 (ROB 301), Oklahoma City, OK 73104. Further information may be obtained by contacting the EHSO at 405/271-3000.