

BioSide Lines

April 2005

The Newsletter of the Office of Biological Safety, UW-Madison Safety Department

www.fpm.wisc.edu/biosafety

Reducing the Risk of Sharps Injury

A high degree of precaution must always be taken when handling any item in the laboratory that can penetrate skin, such as razor blades, scalpels, needles and syringes, slides and cover slips, pipettes, and capillary tubes. Substitute plasticware for glass wherever possible, and use medical sharps only when unavoidable. Medical sharps are dangerous by design and should be eliminated wherever possible. Syringes which re-sheath the needle, needleless systems, and other safety devices should be used when possible.

The following recommendations are based in part on guidelines recently agreed upon by the Occupational Health program and Research Animal Resource Center out of concern for the high risk of recapping needles. It has general applicability to laboratory use of needles and syringes whether or not animals are involved.

Guidelines for the Use and Disposal of Syringes

- 1) Draw up the solution to be injected close to the time and place of its administration. Avoid carrying syringes around in your hand or pocket. Place them in a secondary hard plastic container for transport.
- 2) When materials are drawn up into a syringe with one needle (e.g., 18 gauge) and the administration will be done with a different needle (e.g., 27 gauge), consider using a syringe with a screw-on-type of needle, such as Luer-Lok™. This device will reduce the difficulty of removing and attaching needles to the syringe barrel.
- 3) Have a sharps container at the point of use. Minimize the distance or length of time one walks around with syringes and needles, whether filled for injection or empty.
- 4) Unused syringes and needles should be stored in clean cabinets or drawers, not out in the open.
- 5) Place a syringe and needle in an appropriate sharps container IMMEDIATELY after use without recapping when it is reasonable to do so. This should always be the first choice!
- 6) Disposable syringes should be discarded at the end of a work session. They should not be saved and reused over an extended period.
- 7) Do not hand-pass exposed needles/syringes/sharps from one person to another. Use a predetermined neutral zone or tray for placing and retrieving. Verbally announce when sharps are being placed in the neutral zone.
- 8) Recapping needles should be extremely rare, but there may be some exceptions. If recapping is necessary based on specific circumstances, use a one-handed technique. **Never use two hands to begin the needle recapping process.** To recap a needle using the one-handed technique:
 - a. Insert the syringe needle tip deep into the plastic protective cap on a flat surface.
 - b. Press the tip of the plastic cap against an inanimate object in order to secure it in place or secure the cap with the same hand that is holding the barrel.



Illustration of one-handed recapping technique*.

- 9) Never remove or replace a protective cap with your mouth.
- 10) If you find used/exposed medical sharps inappropriately left on a counter, carefully place it in a sharps container. Wear gloves when handling potentially contaminated sharps. A mechanical device, such as forceps or clamp, can assist with disposal.
- 11) Needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal.
- 12) Dispose of the sharps container when the content reaches the $\frac{3}{4}$ mark. Medical sharps may not be discarded directly as trash; they must first be rendered safe. The campus contracts with MERI (Madison Energy Recovery Incorporated) for this service.

Summary: The practice of recapping needles puts personnel at risk for accidental needle stick and should be avoided. Plan the use of needles and syringes carefully. Advanced planning is very important and will help reduce hazards and risks. For more information on safe handling of sharps, contact the Office of Biological Safety or the Occupational Health Program.

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Several Viruses Added to List of Carcinogens

The 11th Report on Carcinogens (RoC) has been released. It was prepared by the National Toxicology Program (NTP) and the National Institute of Environmental Health Sciences (NIEHS). The RoC now lists 246 cancer-causing agents as either “known” to be human carcinogens or “reasonably anticipated” to be human carcinogens. The purpose of the list is to identify potential cancer hazards and to help people understand that many cancers are apparently induced by chemicals in the home, the workplace, the general environment and from the use of certain drugs. In some special situations, listed materials have potential beneficial effects that have to be balanced with the cancer risks associated with exposure.

Biological agents (viruses) are listed for the first time as human carcinogens, specifically, hepatitis B virus (HBV), hepatitis C virus (HCV), and some genital-mucosal types of human papilloma viruses. Hepatitis B and C viruses cause acute or chronic liver disease and liver cancer. HCV is the leading cause of liver disease in the U.S. Chronic HCV infection is also associated with an increased risk of B-cell lymphoma. A vaccine is available for HBV but not for HCV. The HBV vaccine is highly recommended for personnel who work with human blood and tissues. Some genital-mucosal types of human papilloma viruses cause cervical cancer. All of these viruses are risk group 2 pathogens which should be handled with biosafety level 2 precautions and containment.

Also added to the list of known human carcinogens are X-radiation, gamma-radiation, and neutrons. X-radiation and gamma-radiation cause many types of cancer including leukemia and cancers of the thyroid, breast, and lung. Low-dose medical diagnostic procedures and natural sources such as radon are sources of X-radiation and gamma-radiation. Scientific research, industry, military weapons testing and other sources account for a small percentage of exposures to X-radiation and gamma-radiation. Neutrons cause genetic damage similar to that of X-radiation and gamma-radiation and thus can cause the same types of cancers.

Eleven substances have been added to the list of agents reasonably anticipated to be human carcinogens:

- Naphthalene (used in synthesis of industrial chemicals and as ingredient in some moth repellants and toilet bowl deodorants).
- Heterocyclic amine compounds MeIQ, MeIQx, and PhIP (found in meats and eggs cooked at high temperatures and in cigarette smoke).
- Lead and lead compounds (used to make batteries and in some paint and fuel additives).
- Cobalt sulfate (used in electroplating and as a drying agent in inks and paints).
- Diazoaminobenzene (used in production of dyes). DAAB is a low level contaminant in some dyes.
- Nitrobenzene (used in production of industrial chemicals).
- 1-Amino-2, 4-dibromoanthraquinone (vat dye used in textile industry).
- 4,4'-Thiodianiline (intermediate in prep of several kinds of dyes).
- Nitromethane (uses include for synthesis of pharmaceuticals and agricultural chemicals).

See <http://ntp.niehs.nih.gov/ntp/roc/toc11.html> and the NIEHS Press Release for more information (<http://www.niehs.nih.gov/oc/news/canceragents.htm>).

Shipping Infectious Substance and Other Biological Materials

The Office of Biological Safety will provide training and certification for shipping Infectious Substance and other biological materials, with a focus on safety and regulatory compliance for research laboratories. The Department of Transportation requires that persons involved in shipping hazardous materials in commerce be trained and certified in proper handling of these materials.

Wednesday, April 13, 2005
Union South 1:30 – 3:30 p.m.
Refreshments will be served.

Registration is required. Contact OBS at 263-2037 or biosafety@fpm.wisc.edu.

All staff are welcome to attend this class for initial training or re-certification. Staff approaching their two-year expiration for certification will receive a notice in advance of that date. Computer-based training is available only for those who attended the class for their initial certification.

Basic Biosafety Class Offered

This class will give an overview of basic biological safety. Topics include: biosafety levels and biohazard containment, good microbiological techniques, waste disposal, risk assessment, and emergency preparedness. It is intended primarily for students and staff who are new to this institution and/or new to working with biological materials in a laboratory. Everyone is welcome to attend.

Tuesday, April 19, 2004
Union South 1:30 – 3:30 p.m.

Registration is required. Contact OBS at 263-2037 or biosafety@fpm.wisc.edu.

Contacts	General Contact	263-2037	biosafety@fpm.wisc.edu
Jan Klein	Biological Safety Officer	263-9026	jklein@fpm.wisc.edu
Margy Lambert	Assistant Biosafety Officer	263-9013	mlambert@fpm.wisc.edu
Darren Berger	Facilities Engineer	263-2187	dberger@fpm.wisc.edu
Nancy Schensky	Administrative Support	263-2037	nschensky@fpm.wisc.edu
Tom Kenney	Occupational Health Officer	263-2177	tkenney@fpm.wisc.edu