THE BIOZONE

Welcome from the BSO

We want to thank everyone for their cooperation with this year’s protocol questionnaires. The simple forms help to keep us up-to-date with the status of your protocols. The questionnaires triggered many researchers to modify or close their protocols, so it was an important exercise. Remember the questionnaire is sent out annually so expect to hear from us again next summer.

As the semester winds down and you begin thinking about seminar and class schedules for next year, keep us in mind. Both Jennifer and I are available upon request to make presentations on biosafety topics. We have given lectures to entire departments as part of their seminar series and we have also presented in career classes for graduate students. We can give presentations pertaining to basic biosafety or we can discuss more specific topics depending upon your needs. These presentations may even count towards your quarterly safety training requirements.

Feel free to contact us with any questions, concerns, or suggestions you may have. Please use us as a resource, we are here to help!

Safety with Needles

The use of needles in research and teaching laboratories poses a risk to personnel. Needlestick injuries (accidental punctures of the skin by a needle) can occur when needles are not used properly and when the proper precautions are not taken. A needle itself can cause a laceration and depending upon the size of the needle and the force behind the needlestick, the injury can be severe. Most of the risk of a needlestick injury, however, is a result of the contents of the syringe and needle. Needles can be used to deliver drugs, vaccines, anesthetics, and euthanasia solutions, all of which can be harmful if the skin is broken by a needle. When working with blood, bloodborne pathogens such as Hepatitis B...
virus, Hepatitis C virus, and human immunodeficiency virus (HIV) can be transmitted via needlestick injury. Biological agents such as Staphylococcus spp. are often found on an animal’s skin and these agents are also transmissible by needles.

Approximately 600,000 to 800,000 needlestick injuries occur each year according to the National Institute for Occupational Safety and Health (NIOSH). Half of these injuries go unreported. In 2000, the Needlestick Safety and Prevention Act was passed in the United States out of concerns expressed about needlestick injuries. The Act requires that employers consider engineering controls as a means of reducing exposures to bloodborne pathogens.

There are many ways to mitigate the risk posed by needles in the laboratory. You can change research protocol to methodology that does not involve needles. If this is not possible, here are some basic steps you can take to reduce needlestick injuries (Weese and Jack, 2008):

- Educate all employees about safe sharps handling and needlestick avoidance.
- Do not recap needles.
- Ensure convenient access to sharps containers in all areas where needles might be used.
- Promptly dispose of needles into approved sharps containers.
- Never use temporary or unapproved containers for sharps.
- Never try to remove anything from a sharps container.
- Do not fill sharps containers beyond the designated fill limit.
- Consider the use of protective devices such as retractable needles or hinged syringe caps.
- Do not walk around with an uncapped needle.

When working with needles and animals, sedation and restraining devices should be used so that unexpected movements of the animal do not result in a needlestick injury. In addition, vaccinations should be considered for individuals who are at risk for contracting a disease if a needlestick injury occurs. The Hepatitis B vaccine is required to be offered to anyone who works with human blood (contact Environmental Health and Safety [http://ehs.okstate.edu/]). This vaccine is free of charge and University Health Services can administer the vaccine. Other vaccinations may be recommended if the work involves certain infectious agents.

Despite taking the precautions discussed above, needlestick injuries can still occur. In the event of a needlestick in a BSL-2 or BSL-3 laboratory, the following steps should be taken:
• Vigorously wash the exposed area with soap and water or disinfectant
• Report the incident to the principal investigator or lab manager
• Seek medical attention at University Health Services or Stillwater Medical Center
• Bring the appropriate MSDS to the provider if working with infectious agents
• Report the incident to the BSO within 48 hours

The Institutional Biosafety Committee (IBC) inspects biosafety level 2 and 3 (BSL-2 and BSL-3) laboratories here at OSU. A number of items on the inspection checklist concern the use of needles. The following is verified during an inspection:

• Sharps containers are decontaminated (e.g., autoclaved or appropriate chemical treatment) prior to disposal or reprocessing
• Needles/syringe use is kept to an absolute minimum
• Only needle-locking syringes or syringes with permanently affixed needles are used for injection/aspiration of infectious materials
• Disposable needles are not bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated prior to disposal
• The lab maintains a needlestick injury log that contains the type of device involved, and where and how the incident happened
• Sharps containers are labeled, conveniently located, and puncture resistant
• Nondisposable sharps containers are hard-walled and leak proof

Sharps containers can be purchased by anyone at OSU from Central Supply in OSU’s Boren Veterinary Medicine Teaching Hospital. When the sharps containers are approximately 2/3 full, decontaminate the container and contact EHS (http://ehs.okstate.edu/) for a disposal form. It is very important to dispose of needles and other sharps properly so that we do not put people at risk. If you have any questions regarding the use of needles, please contact us.

References:
• The National Institute for Occupational Safety and Health (NIOSH) http://www.cdc.gov/niosh/
• Needlestick safety and prevention act: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=106_cong_public_laws&docid=f:publ430.106
• Occupational Safety & Health Administration (OSHA)-Bloodborne pathogen: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051
NIH GUIDELINES: NEW 2009 REVISION

In September of this year, the NIH Guidelines for Research Involving Recombinant DNA Molecules were updated. Although the document had not been updated since 2002, few changes were made. The modifications concern viruses with the capability of causing a pandemic - including human H2N2 (1957-1968), 1918 H1N1, and HPAI H5N1. Previously, all influenza strains were classified as Risk Group (RG) 2 agents. Viruses that are considered capable of causing a pandemic are now classified as risk group 3 (RG3) agents, and BSL-3 enhanced containment is recommended for recombinant experiments. These changes reflect the recommendations found in the CDC/NIH publication Biosafety in Microbiological and Biomedical Laboratories (5th edition). Note that the 1918 H1N1 virus is not the same strain as the 2009 H1N1 virus. The National Institutes of Health (NIH) is also working on changes to the Guidelines for work in the field of synthetic biology, so stay tuned....

NOTE: Since OSU receives NIH funding, all activities involving recombinant DNA must be conducted in compliance with the NIH Guidelines, regardless of the source of funding.

Thank you for taking the time to read our newsletter. We appreciate your interest in the biosafety program and we look forward to working with you in the future! We hope that you have a very happy and very safe holiday season!