

# BioSide Lines

**April 2004**

The Newsletter of the Office of Biological Safety, UW-Madison Safety Department  
[www.fpm.wisc.edu/biosafety](http://www.fpm.wisc.edu/biosafety)

## Biosafety Protocol Notes

The biosafety protocol serves several purposes. The function that seems to be a common priority for investigators is that its completion is required for the release of funds. The protocol also can convey information to personnel about the hazardous materials used in a research project and the corresponding precautions. The protocol, furthermore, should be perceived as a contract; the materials and procedures described should reflect actual activities.

Biosafety protocols that are new or updates (3-year renewal) should always be prepared using the current form, available at the OBS website. The form is upgraded when we learn of a better way to get information to conduct a risk assessment. Here are some pointers:

- Keep an electronic copy of the protocol so that it will be easy to add information for grant additions and other amendments.
- When submitting a protocol for 3-year renewal, list all current and pending awards.
- Material transfer agreements (MTAs) may be treated procedurally like a grant addition.
- Submit pending awards at the time of submission to avoid delays in release of funds.
- Biosafety and animal care protocols need to match in their descriptions of recombinant and hazardous biological and chemical materials administered to vertebrate animals.
- While consolidated protocols are easier to manage, multiple protocols are accepted if that is preferred. Since work under biosafety level 3 containment requires enhanced procedures and facilities, it generally is best to segregate this work from other projects.
- List all locations on the form where materials that pose risks will be handled, including service centers (microscopy, flow cytometry, etc.). Amend the protocol when changes in locations occur.

An active protocol must be kept up-to-date. Minor amendments can be inserted into the appropriate sections of the form using a distinct font, such as bold. Changes that qualify as minor changes include the addition of awards and changes in locations and materials that do not significantly affect the risk assessment. An amendment that significantly alters the risk assessment will be treated as an update, subject to review by the Institutional Biosafety Committee.

Amending a protocol is easy once it is registered; expedited processing may be requested.

## Precautions for Flow Cytometry

Samples for flow cytometric analysis should be fixed whenever possible, but there are situations when analysis of viable cells is desirable. Jet-in-air cytometry equipment may expose the operator to aerosolized pathogens. Some enclosed fluid system flow cytometers use a fluid-switching mechanism which does not generate aerosols, but jet-in-air equipment uses pressure to generate a stream of droplets. Newer flow cytometers incorporate biosafety features that reduce but do not eliminate the risk of operator exposure to sample hazards. While most equipment is designed to manage aerosols, failures may happen.

Inform the operator that a sample could harbor human pathogens to prevent unwarranted exposures. The following characteristics of the cells are important to note when determining the appropriate precautions:

- The origin is human or non-human primate Old World;
- The source is an immuno-deficient animal that has been grafted with human cells;
- Adventitious microbes such as mycoplasma could be present;

- Infected with a transforming virus, such as Epstein Barr Virus;
- Genetically modified by infection with a viral vector;
- Obtained from an infected animal.

If the material to be sorted meets any of the above criteria, biosafety level 2 containment is the *minimal* standard to be used. Human cells must be handled with the precautions prescribed by the OSHA bloodborne pathogens standard; vaccination against Hepatitis B virus is highly recommended. The operator must be trained and experienced in handling potentially infectious materials and should wear a laboratory coat, gloves, and safety glasses. A HEPA-filtered respirator (N-95) also is recommended.

The cell sorting equipment typically is too big to fit in a biological safety cabinet. It must be placed in an area that is under negative pressure and segregated from other laboratory activities. Access should be limited. Other personnel present in the room during sorting activities should also wear personal protection equipment.

For more information see: Schmid et al. 1997. Biosafety guidelines for sorting unfixed cells. Cytometry 29:99-117.

## Laboratory Acquired Infections

It is the middle of flu-season and the doctor's waiting room is filled with people whose symptoms are just like yours. You think you may have a laboratory acquired infection, but the attending physician tells you to take analgesics and come back in a week if symptoms persist. *[[insert example]]*

How can you get the attending physician to understand that you may not have the typical flu and that atypical medical intervention may be in your best interest? The best approach is to have a well-prepared exposure response plan.

The basic elements of the plan include:

- A description of the microbe(s) with the signs and symptoms of infections
- Distinct characteristics of the laboratory strain such as known antibiotic resistance, transmissibility, atypical tissue tropism, foreign genes that are expressed that alter pathogenicity, etc.
- Recommendations for treatment regarding effective drugs, quarantine, etc.
- A test for exposure at the start of employment and periodically thereafter may be appropriate for work with a few pathogens such as *Mycobacterium tuberculosis*.

Personnel should be trained to know how to respond to an exposure. After taking the immediate steps to mitigate the impact of the accident, such as washing the wound with soap and water or flushing the eyes for 15 minutes, the individual should seek *immediate* professional medical attention. Don't wait for symptoms to show up because it may be advantageous to conduct a baseline assessment and to start prophylactic treatment. During normal business hours, employees should report to Employee Health Service at the University Hospital and Clinics; after normal business hours, report to the emergency room at University Hospital.

Contact Tom Kenney, the Occupational Health Officer, for assistance in writing your medical surveillance plan.

## 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.

Tuesday, April 13, 2004  
Union South 1:00 – 3:00 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.

Thursday, April 22, 2004  
Union South 1:00 – 3:00 p.m.

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

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