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BioSide Lines

FOSTERING SAFE WORK & LABORATORY PRACTICES THROUGH TRAINING & EDUCATION

Biosecurity for “Ordinary” Labs

The importance of biosecurity measures is obvious for labs conducting research with biologic materials at Biosafety Level 3 (BL3) or for secure labs handling Select Agents. However, the need for a biosecurity plan may not be readily apparent for labs that use or store pathogens, biological toxins, or certain other materials at BL2 or BL1. Most of these labs have biosafety plans in place to prevent accidental exposures or releases. Labs should conduct a formal or informal risk assessment to determine if they need to take the next step and implement a biosecurity plan to prevent the theft, misuse, or intentional release of their microbes or toxins.

Many pathogens or toxins used in labs have the potential to be used for nefarious purposes (i.e. they have “dual-use” potential). Also, many microbes or biologic materials may have significant economic, legal, or historic value, and should be safeguarded. Consider what could happen with your research materials if they are stolen or misused. If the results of your risk assessment indicate that the security of some or all of your biologic laboratory materials should be heightened, then consider implementing a laboratory biosecurity plan.

Laboratory biosecurity plans vary widely depending on factors such as location, facilities, equipment,

type of research, and materials handled. They should be tailored to each unique lab situation. However, the main elements to consider are (1) physical protection, such as locks on doors and/or equipment; (2) personnel matters, such as providing biosecurity training or limiting access to visitors; (3) material accountability, including inventory and transfer requirements, proper labeling, and inactivation and disposal after use; and (4) biosecurity incident and emergency response. Finally, once your biosecurity plan is in place, be sure to provide training to all laboratory members affected by the plan.

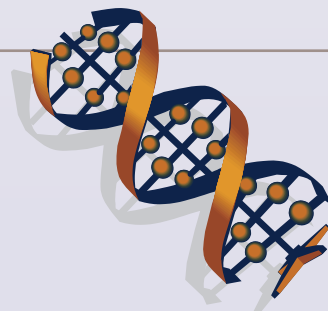
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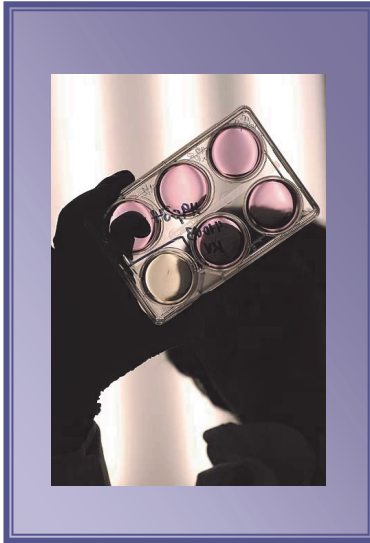
LABORATORY SAFETY:

Protocol Requirements and Human Cells

The NIH requires a submission and approval of a Biological Materials and Recombinant DNA Protocol (Biosafety Protocol) for all research using any recombinant DNA containing molecules and recombinant DNA molecules. So what if your lab is only working with experiments falling within the exempt III-F portion of the NIH guidelines? This guideline applies to experiments that are exempt from the NIH guidelines. An example would be research with DNA from a risk group 1 (RG1) microbe cloned into *E. coli* K12. When working with recombinant microbes (such as *E. coli* K12), there are not only important safety considerations to be evaluated in the risk assessment, but there are also important mandatory reporting requirements in the event of an exposure to recombinant materials. These requirements along with the UW-Madison Institutional Biosafety Committee condition that Biosafety Protocol be submitted to the IBC if the research is subject to the NIH guidelines. Even if research falls into an exempt category, this still necessitates an approved Biosafety Protocol.

Many research experiments involving exempt research still utilize primary or estab-

lished human cell lines. Some of these cell lines purchased from the American Tissue Culture Collection (ATCC) may be designated by the ATCC as BSL1.



However, at the UW-Madison, the use of human cell cultures in laboratories requires special consideration. Cell or tissue cultures in general present few biohazards, as evidenced by their extensive use and low incidence of infection transmitted to laboratory personnel. Clearly, when a cell culture is inoculated with or known to contain a pathogen, it should then be classified and handled at the same biosafety level as the agent. BSL2 containment conditions should be used for all cell lines of human origin, even those that are well established, such as HeLa and Hep-2, and for all human material (e.g. tissues and fluids obtained from surgery or autop-

sy). Cell lines exposed to or transformed by an oncogenic virus, primate cell cultures derived from lymphoid or tumor tissue and all nonhuman primate tissue should also be handled using BSL2 practices.

HeLa cells have been used for many years and are common in labs here at UW-Madison. It is important to remember that this cell line carries the full genome for the human papilloma virus-18 (HPV-18) known to be associated with cervical cancer and HeLa cells have been reported to shed low levels of HPV. Cells may have been treated with Epstein-Barr virus (EBV) to immortalize them and EBV transformed cells could shed low levels of this virus as well. These safety considerations along with the adventitious agent discovery in established cell lines, preclude the use of BSL2 precautions.

When determining the best practice for handling your specific microbes, recombinant materials and cell cultures, please feel free to consult the staff at the Office of Biological Safety.

For more information on the biosafety considerations for human and other cell lines, please see the Biohazard Recognition and Control document at <http://www.ehs.wisc.edu/documents/bio-BRCrev2011.pdf>

Biosafety Practices:

Let's Not Do the Hokey Pokey!!

Recently a custodian working at one of the UW buildings noticed that a broken glass container in one of the rooms was filled with trash to the top of the container. Custodians do not empty broken glass containers before they are transported to the landfill. Therefore, it is very important that people are made aware of this bad practice so that no one pushes down on the trash that may be on top of broken glass, potentially resulting in injury. Trash should never be discarded into containers designated for

broken glass. Let's keep labs safe and clean for everyone.

For more information on laboratory waste disposal, please see UW-Madison Environment, Health & Safety (EH&S) Biological Safety webpage www.ehs.wisc.edu/bio-wastedisposal; EH&S Sharps Poster www.ehs.wisc.edu/documents/bio-SharpsPoster2009 and also the UW-Madison EH&S Chemical Safety webpage www.ehs.wisc.edu/chemicaldisposalsurplus-recyclopedia.

BIO NEWS: *BSC Light Bulb and Ballast Changes*

A message from the Environmental Health Program at University Health Services (EHP-UHS)

New energy standards announced by the US Dept. of Energy will affect certain types of fluorescent light bulbs and ballasts used by many Biological Safety Cabinets (BSC) on campus. As a result, T12 fluorescent light bulbs and associated magnetic ballasts will no longer be manufactured after July 2012 and are now in short supply.

BSCs on campus are certified and maintained by the Environmental Health Program at University Health Services (EHP-UHS). Current stock of the T12 bulbs/ballasts at EHP-UHS is limited and available on a "first come, first served" basis. *After the stock is depleted, EHP-UHS will no longer be able to maintain BSCs that use the T12 bulbs/ballasts.*

If you have a BSC not manufactured by Baker, contact their customer service department to determine if the light bulbs and ballast are affected by the new standard.

In many cases, the affected BSC models are aging units. UHS-EHP and OBS urge you to consider looking into the purchase of a new BSC, or to consider stocking your own light bulbs and/or ballast parts.

Information regarding BSC replacement recommendations should be directed to the Office of Biological Safety (263-2037). The University has a purchasing contract with The Baker Company, as they are the only manufacturer which meets UW specifications. Current campus BSC sales representative is Jamie Steiner with DAI Scientific 1-800-816-8388 ext. 14.

If you have any questions regarding this matter, please visit the EHP-UHS website <http://www.uhs.wisc.edu/environmental-health/bsc/> or call the EHP-UHS office at 262-1809.

Affected BSC models on campus include the following manufactured by The Baker Company:

B40	B60	VBM-400
B40-112	B60-112	VBM-600
B40A-112	B60A-112	NCB-4
B40-ATS	B60-ATS	NCB-6
B40A-ATS	B60-ATS	NCB-B4
SC4TXSMB	SG-250	NCB-B6
SG-600	SG-400	NCB-C4
		NCB-C6



Training Q & A

Training for the Visiting Scientist

Q: Our laboratory will host a visiting scientist (or student or researcher) for a semester to collaborate on a research project in the lab. This scientist received lab safety training at his home university. Will new training be required here at UW-Madison?

A: Yes. In order to be compliant with federal guidelines, we require that all personnel performing work under a Biosafety Protocol at UW-Madison must complete 3 Biosafety training courses regardless of the individual's experience and expertise. Your visiting scientist will need to complete the required trainings on Learn@UW, *Biosafety 101, 104, 201* within 30 days of beginning work. The three courses can be easily completed in less than 3 hours total and are designed so the individual can begin and complete the courses in a time frame which is most convenient.

If your laboratory has a Bloodborne Pathogen plan (BBP), then the visiting scientist must additionally complete BBP training, the same as all other employees in your lab. BBP training is also available on Learn@UW as the course *Biosafety/ Occupational Health 102*.

Individuals must have a UW NetID or Guest ID in order to log in to Learn@UW and Self-Register for the courses.

More information on the training requirements and course descriptions can be found on the OBS website Training pages <http://www.ehs.wisc.edu/bio-biotraining.htm>

For BBP, go to the Occupational Health Office website <http://www.ehs.wisc.edu/occ-research-bloodbornepathogens.htm> or contact the Occ. Health Training Coordinator tcordes@fpm.wisc.edu

Q: The laboratory work is covered by a Biosafety Protocol and we will not be performing anything new. Is there anything we need to submit for the protocol in order for the visitor to work with us?

A: Yes, there is! Even though the work being done in the lab has not changed from what is in your Biosafety Protocol, the staff listed in your protocol will need to be changed to allow the visiting scientist to perform the work.

Making this change is very simple. Email the OBS biosafety@fpm.wisc.edu and include in the email the following information:

Principle Investigator (PI) name, Protocol number (SC#), and a list of personnel you wish to add (or remove) from your protocol. Upon receipt, an OBS staff member will make the necessary changes to the protocol in our database. You will receive confirmation of the changes once they are completed, or an OBS staff member will contact you with any questions or concerns.



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