PURDUE UNIVERSITY

PURDUE ANIMAL CARE AND USE COMMITTEE

December 2012

PACUC Newsletter

Visit the PACUC website at www.purdue.edu/animals for forms, instructions, policies and guidelines.

Inside this issue:

Animal User Qualifications – Are you Qualified?

Early in 2012, the PACUC office implemented an online database to keep track of animal user study personnel at Purdue, and their Animal Use Qualifications. That database (and the instructions) can be found at http://www.purdue.edu/research/vpr/rschadmin/rschoversight/animals/forms.php

Animal Use Qualifications can be viewed by *both* the animal user and their supervisor. We suggest to PIs that if you are in the process of adding personnel to your PACUC protocols you check this database FIRST to make sure your people have ALL the qualifications they need for the duties you are assigning them. Then, after you verify that their qualifications are up-to-date, you can then add them to your project via an amendment form. This also applies when you are sending through a new or triennial protocol for approval. Please check those Animal Use Qualification Forms prior to adding personnel to your protocol(s)! This will speed up the review process, and prevent some rejections because of people not being qualified or not having updated their information.

When amending protocols to add personnel, be sure to specify their duties *exactly* on the amendment form. This is needed to match up their duties and qualifications, so they can be added quickly.

We are always here to answer any questions you may have on this, or any other subject.

The steps to animal qualifications for new people are:

1. Complete the PACUC online orientation at http://www.purdue.edu/research/vpr/rschadmin/rschoversight/animals/onlineorientation.php. The password is "pass".
2. Complete your animal qualifications at the link above.
3. Your supervisor will receive an email asking them to certify that you are trained in the duties you have indicated.
4. After supervisory approval, you MAY be asked to complete additional online training, depending on the species you are working with, and specific duties you will be performing.
5. When all this is done – you are qualified! If you don't have a Q number yet, we will send it to you by email.

Upcoming Workshops!

I will be offering the following training workshops with a maximum of **5** participants in each session. (If you have any questions or special requests, please do not hesitate to contact me; 494-2521)

Workshops are offered to provide training to personnel whom intend on performing these techniques for an approved research or teaching protocol. In order to get the most out of your training session, you are required to know what techniques you may be performing and the species involved.

These hands-on workshops are designed to introduce the participant to the basic techniques in the laboratory rat and mouse. The Handling/Restraint workshop is a prerequisite for participation in injection, oral gavage, blood collection, and catheter placement workshops; unless participant has had previous training and/or experience in this area. A minimum of 3 days notice is requested for cancellation.

Workshop dates are filled on a first-come, first-serve basis.

Location for the following workshops – Meet in AHF 1155.

If you are interested in participating in a workshop, please complete the enrollment form indicating which date you would like to attend, or contact Carol Dowell at dowellc@purdue.edu or 494-2521. (If the following times do not fit your schedule or training needs, I would be happy to set up training for most any species on an individual basis.)

Registration form: Attached to the email that brought you the PACUC Newsletter

- **Basics of Rodent Handling, Restraint, and Normal Behavior.**
  - 1/17/13 - Thursday 8:30 – 10:30am
  - 1/23/13 - Wednesday 1:30 – 3:30pm
  - 1/29/13 – Tuesday 1:30 – 3:30pm
  - 2/1/13 – Friday 8:30 – 10:30am
  - 2/11/13 – Monday 1:30 – 3:30pm
  - 3/6/13 – Wednesday 9:00 – 11:00am
- **Injections in the rat and mouse; ID, IM, SC, IP**
  - 1/25/13 – Friday 9:00 – 11:00am
  - 2/5/13 – Tuesday 8:30 – 10:30am
  - 2/20/13 – Wednesday 1:30 – 3:30pm
  - 3/8/13 – Friday 9:00 – 11:00am
- **Blood Collection in the Rat and Mouse**
  - 1/30/13 – Wednesday 8:30 – 10:30am

- 2/7/13 – Thursday 1:30 – 3:30am
- 2/12/13 – Tuesday 8:30 – 10:30am
- 3/18/13 – Monday 1:30 – 3:30pm

- **Tail Vein Injection in the Lab Rat and Mouse**
  - 2/26/13 – Tuesday 9:00 – 11:00am
  - 3/6/13 – Wednesday 1:30 – 3:30pm
  - 3/21/13 – Thursday 8:30 – 10:30am

- **Rodent Oral Gavage.**
  - 2/13/13 – Wednesday 9:00 – 10:30am
  - 2/28/13 – Thursday 1:30 – 3:30pm

- **Isoflurane Gas Anesthesia**
  - 1/28/13 – Monday 1:30 – 3:00pm
  - 2/14/13 – Thursday 9:00 – 10:30am
  - 3/20/13 – Wednesday 8:30 – 10:00am

- **Wound closure and Suturing Basics**
  - 2/19/13 – Tuesday 8:30 – 10:30am
  - 3/4/13 – Monday 1:30 – 3:30pm

- **Aseptic Technique / Surgical Preparation**
  - 2/21/13 – Thursday 8:30 – 10:30am
  - 3/8/13 – Friday 1:30 – 3:30pm

- **Euthanasia / Basic Necropsy / Organ Identification**
  - 2/15/13 – Friday 9:00 – 10:45am
  - 2/26/13 – Tuesday 1:30 – 2:45pm
  - 3/14/13 – Thursday 8:30 – 9:45am

- **Combined Techniques * (Prior experience/training in ALL above courses is required)**
  - This workshop is designed to incorporate all that you have learned regarding rodent handling, injections, blood collection, anesthesia, surgical prep, wound closure and euthanasia.
  - 4/2/13 – Tuesday 8:30 – 11:30am
  - 4/3/13 – Wednesday 8:30 – 11:30am

Animal Ordering during the holidays

Some animal facilities may have special rules during the holiday weeks in animal ordering. But here are PACUC ' s guidelines:

In general, all animals should be ordered just as soon as you possibly can, if you are anticipating delivery during the weeks before & after Christmas.

- Jackson Lab will not deliver the week between Christmas & New Year, but will deliver on Wednesday Jan 2.
- Charles River will deliver on Thursday 12/27 and Wednesday Jan 2.
- Harlan will not deliver the week between Christmas and New Year, but will deliver Thursday, Jan 3.

This month, the PACUC newsletter is highlighting some information on Radiological and Environmental Management (REM).

Follow this link to the Fall Edition of the REM Safety Information Newsletter;
http://www.purdue.edu/rem/home/files/news/amysnews201209.pdf

On the next two pages, see a good article on PPE for cleanrooms & BSL labs.

And on page 7, see a poster from Oregon Health & Science University regarding waste gas scavenging. You will probably have to print it to be able to read it, as it's sideways in the newsletter. Sorry about that.

Happy Holidays!!

Gowning Around

By Vince McLead, CIH

Recommended Procedures for Donning and Doffing PPE for Cleanrooms and Containment Labs

Biosafety Level (BSL)-rated research labs are becoming more prevalent in a world focused on cancer research, pharmaceutical production, and disease treatment. These specialized containment spaces are found in a diverse array of clinical, diagnostic, production, and research facilities. And, they are becoming increasingly sophisticated as rapid changes in research equipment, handling protocols, and technology force facility designs to adapt. Working at a large public university that includes a medical school, dental school, veterinary school, animal research colonies, biomedical and cancer research facilities, and a nanotechnology research facility, among others, presents us with many opportunities to encounter every type of containment laboratory and cleanroom. One thing they all have in common is the need to properly gown up prior to entry and de-gown before exiting. The exact personal protective equipment required is strictly dependent on the type of containment area and the research work that is on-going. Rather than discussing specific protocols for the different types of containment areas, we want to provide a generic procedure that can be tailored to fit most any containment lab or cleanroom, both sterile and non-sterile.

General Setup of Containment Labs

Containment laboratories are constructed so that the room itself is a secondary containment barrier.[1] That is, the lab ventilation is kept at a slightly negative pressure relative to the adjacent areas. In other words, an inward directional airflow is established by exhausting more air than is supplied. This prevents any contaminates from spills or releases from migrating into surrounding rooms. The laboratory exhaust should be vented directly to the outside air with no recirculation. Depending on the research and materials in use, many times the exhaust air must also be filtered, usually with high efficiency, particulate air (HEPA) filters.[1]

Ideally separate areas are provided for entry and gowning versus de-gowning and exit, although many facilities use a single access for entry and exit. In any event the ingress/egress point(s) should be a two stage process: a pre-gowning area where the process is started, followed by the gowning or PPE donning room. In an ideal facility, exit is via a separate de-gowning room proceeding then to final clearance and exit. Air flow is strictly controlled in these areas to fully contain any contaminates.

A Few Pre-Gowning Precautions

The following actions and items should receive consideration prior to beginning the process of entering or using a cleanroom or containment lab.

Minimize the use of make-up, hair gel, body lotions, and personal skin care products as these can potentially introduce contaminates.

Users should not smoke within 45 minutes of entering, especially cleanrooms, as it is well documented that smokers shed particulates for much longer than thirty minutes after smoking a cigarette.

Remove extraneous street clothing such as sunglasses, hats, jackets, etc. before entering the antechamber to simplify the process and minimize needed actions.

Plan out the work in advance so all materials, tools, solutions, etc. are on hand and ready to minimize traffic and the number of entries/exits.

Recommended Gowning Procedure

The following procedure is meant to provide a generic order for donning PPE items for a basic level containment lab or cleanroom. The recommended sequence is designed to help control contamination when donning and removing standard containment/cleanroom PPE. Not every apparel item is needed in all cases. Check your facility's procedures. If you are dealing with highly infectious or toxic agents or working in a highly sterile lab (pharmaceutical preparations, FDA regulated lab, etc.) then additional steps and much stricter protocols will be necessary.[2]

Covering Up

- Don a bouffant cap and beard cover and make sure all hair is covered.
- Don shoe covers tucking in all laces, tassels, etc.

Continued on page 6

Continued from page 5...

- Select, inspect, and clean safety glasses and then don.
- Don gowning gloves (usually required for sterile environs).
- Don facemask (N95, N100, etc.) and bend nosepiece to fit snugly on bridge of nose.
- Don hood (if separate and required, usually a part of coverall gown) and secure face and neck seal.
- Don coverall gown. Make sure the gown does not touch the floor by gathering leg and arm cuffs first and releasing one at a time. See the Manual for Sterile Preparations for a good description of this process.[2] If a separate hood is used, tuck shoulder panels inside and under gown before zipping up.
- Don boot/shoe covers and pull over outside of gown legs.
- Don second pair of gloves and stretch over gown sleeve cuff.

You are now ready to enter the cleanroom or containment lab. Upon completion of your work, exiting the containment area is generally the reverse of the above steps. However, there are a few things to consider and remember so we will list the steps in full.

De-gowning and Exiting

- Remove boot/shoe covers and, if wearing two pairs of gloves, discard the outer pair of gloves. If only one pair of gloves is worn, they will be removed last. If boot covers will be reused store in a separate proper container.
- Remove coverall gown. If gown will be reused, hang in approved and controlled area. Otherwise discard.
- Remove eyewear and place in proper storage container.
- Remove hood and follow same steps as gown if reused.
- Exit gowning room and enter antechamber.
- Remove and discard facemask.
- Remove and discard bouffant cap.
- Remove and discard shoe covers.

Final Words

Work in containment labs and cleanrooms is very serious business. Failure to follow protocols could potentially put you, your coworkers, and others in danger or at risk. Contamination could cause loss of many hours of research and possibly ruin the product incurring huge financial losses. The PPE requirements are used for good reason. Be patient and properly gown in and out every time you enter a containment area. And remember—Safety First!

References:

1. Biosafety in Microbiological and Biomedical Laboratories, 5th Edition, Center for Disease Control, US Department of Health. Atlanta, GA. 2009.
http://www.cdc.gov/biosafety/publications/bmbl5.

2. Manual for Sterile Preparations. Pharmaceutical Services Division, Ministry of Health, Malaysia. August 2010.
www.pharmacy.gov.my/view_file.cfm?fileid=186.

Vince McLeod *is an American Board of Industrial Hygiene Certified Industrial Hygienist and the senior IH with the University of Florida's Environmental Health and Safety Division. He has 24 years of experience in all facets of occupational health and safety and specializes in conducting exposure assessments and health hazard evaluations.*

This article appeared in the April 2012 issue of ALN Magazine

Why It Matters Where You Pass Your Gas

P127

A survey of waste anesthetic gas management among researchers

T. Chatkupt,[1] B. Cox,[2] D. Brickey,[3] J. Thomason,[4] B. Smith,[3] V. Monterroso,[1] K. Saunders[1]

[1]Department of Comparative Medicine, [2]Office of Research Integrity, and [3]Environmental Health & Radiation Safety, Oregon Health & Science University, Portland; [3]City of Portland, Portland, Oregon

ABSTRACT Isoflurane inhalant anesthesia is commonly used with laboratory animals. While it has numerous advantages, the generation of waste anesthetic gas presents a potential occupational health and safety concern to human operators. Scavenging systems are recommended to help limit waste anesthetic gas exposure. These may be passive (such as activated charcoal canisters) or active (such as ducting to house vacuum). Unfortunately, scavenging systems may be installed by researchers who lack the knowledge and training required to do so safely and effectively. During a recent inspection, IACUC members visiting researchers' laboratories were asked to characterize any isoflurane delivery and scavenging systems they observed. Most of the systems were set up by researchers without the input of veterinary, facilities or environmental health personnel. Activated charcoal canisters were frequently set up incorrectly. Active scavenging systems included ducting to chemical fume hoods, room exhaust, or house vacuum. Based on these findings, more studies will need to be conducted to better characterize current WAG scavenging systems and to identify systems that are problematic from facilities and occupational health perspectives. Ultimately, a coordinated, inter-departmental training and support program will need to be developed to enable individuals utilizing inhalant anesthesia for research to manage waste anesthesia gas safely and effectively.

INTRODUCTION

IACUCs are tasked in part with ensuring occupational health and safety for personnel, including limiting exposure to waste anesthetic gas (WAG). While IACUCs may have policies on WAG scavenging, and investigators may describe inhalant anesthetic use in their protocols, actual waste anesthetic gas management strategies among researchers may be quite different than what is recommended. When considering revisions to the current IACUC policy on WAG management, we decided to first asses for possible discrepancies between current recommendations and what was implemented in research laboratories.

METHODOLOGY

IACUC members were provided a survey to gather basic information regarding the location and setup of any inhalant anesthetic delivery devices they encountered during a recent semi-annual inspection. Each anesthesia setup identified was then inspected by some of the authors (TC, BC) on a follow-up visit.

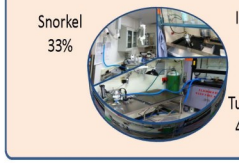
Building:	Room:	Pi:
Location	**Delivery System**	**Scavenging System**
Open bench top	Bell jar or other open drop method	None
Semi-enclosed work chamber	Vaporizer with induction chamber and nose cone	Activated charcoal (F/Ale) canister
Fume hood	Other: _____	Snorkel
Ducted biosafety cabinet	Unsure	Tubing to
Non-ducted biosafety cabinet		☐ fume hood
Down-draft table		☐ biosafety cabinet
Other: _____		☐ house vacuum
Unsure		☐ room exhaust
		☐ unsure

RESULTS

Fume Hood 43%

The most popular method of WAG scavenging was through utilization of a fume hood, which offers a dedicated exhaust separate from room ventilation. Chemical fume hoods offer excellent protection for the operator, but working directly inside the hood can be cumbersome. Many investigators instead ran tubing from the point of use to the fume hood. Snorkels offer the same dedicated exhaust as fume hoods, but on a movable arm. Nevertheless, investigators often chose to run tubing to them as well.

Fume Hood Utilization



SCAVENGING SYSTEMS

House Vacuum 13%

WAG scavenging to house vacuum systems is ideal from an occupational safety perspective, since it actively removes WAG from the operator site. Most laboratory vacuum systems, however are not designed to handle high concentrations of oxygen, the most commonly used carrier gas. Concentration of oxygen within the vacuum pump may create the potential for an explosion.

Activated Charcoal 40%

The activated charcoal canister was the second most commonly encountered WAG scavenging method in the survey. Activated charcoal allows for WAG scavenging without the confines of a fume hood or snorkel. Charcoal canisters, however, do require proper monitoring and regular replacement to be effective. Furthermore, efficacy depends upon proper positioning.

BUILDING /PRINCIPLE INVESTIGATOR

One hundred isoflurane delivery systems were identified in 10 different buildings. Of the 53 laboratories possessing isoflurane delivery systems, 32/53 (60%) had only one system, while 21/53 (40%) possessed multiple systems.

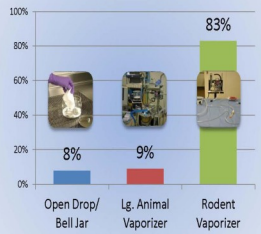
Multiple Scavenging Strategies 6%

A few WAG scavenging setups included a combination of two different strategies.

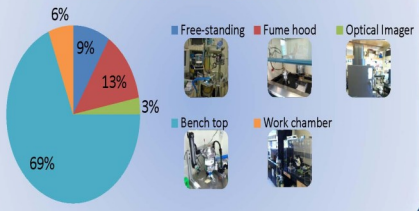
Room Exhaust 4%

Unlike dedicated exhaust systems like fume hoods, room exhaust is subject to failure if primary power to the building fails. Also, the relatively low flow may be inadequate to effectively scavenge waste anesthetic gas. Finally, tubing to room exhaust was often found to be lengthy, raising further questions about the efficacy of using room exhaust as a WAG scavenging strategy.

DELIVERY SYSTEM



LOCATION IN THE LABORATORY



Activated Charcoal Canister Properly Set Up

Over a third of the charcoal canisters in use were positioned improperly or did not have any associated record of use or monitoring.

Many isoflurane vaporizers utilized activated charcoal canisters, but the systems were not in use at the time of inspection.

DISCUSSION

Many potentially problematic waste anesthetic gas scavenging strategies among researchers at OHSU were encountered during a recent semi-annual IACUC inspection. These strategies were most likely implemented by researchers without clear guidance from veterinarians or environmental health officials. Likewise, IACUC inspectors most likely had not been trained adequately to recognize potential issues with specific WAG scavenging setups.

Departures from recommended WAG management methods may be occurring at other institutions. In an effort to scavenge waste anesthetic gas, some researchers may be improperly positioning or inadequately monitoring activated charcoal canisters. Others may implement strategies for which the efficacy has not been determined, such as running tubing of various lengths and diameters from the point of operation to a fume hood, snorkel, or room exhaust. Still others may accurately identify the occupational safety advantages of employing house vacuum for WAG scavenging without recognizing the potential risks to facilities.

The results of this survey illustrate the need for better training of researchers on safe and effective management of waste anesthetic gas. It also suggests that IACUC members conducting semi-annual inspections should also be adequately trained to distinguish effective WAG scavenging strategies from those that are potentially problematic. These trainings should be a coordinated effort between the IACUC administration, laboratory animal veterinarians, and environmental health officials.

The results also revealed several WAG scavenging strategies for which safety and efficacy have not been determined. Further studies are needed to evaluate 1) the effectiveness of WAG scavenging to room exhaust; 2) the relationship between scavenging efficacy and tubing length; 3) the relationship between scavenging efficacy and tubing diameter, and 4) the risk of explosion due to oxygen concentration in building vacuum pumps as a result of WAG scavenging to house vacuum systems. Based on the results of these studies, IACUC members can then be trained to adequately identify effective and ineffective methods of WAG scavenging.

REFERENCES

National Research Council. 2011. Guide for the Care and Use of Laboratory Animals. Washington (DC): National Academy Press.

Fish RE, Brown MJ, Danneman PJ, Karas AZ, editors. 2008. Anesthesia and Analgesia in Laboratory Animals. New York (NY): Elsevier.

Oregon Health & Science University, Institutional Animal Care and Use Committee. [OHSU Intranet]. 2008. Policy for general inhalational anesthesia machine/vaporizer/waste gas maintenance and calibration. [Cited 26 October 2012].

Houts J. 2011. Personal communication.

Environmental Monitoring Technology. [Internet]. National Fire Protection Association Summary. [Cited 26 October 2012]. Available at http://www.emt-online.com/ServicePages/NFPASummary.htm#56.

Occupational Safety & Health Administration. [Internet]. 2000. Anesthetic gases: guidelines for workplace exposures. [Cited 26 October 2012 2012]. Available at http://www.osha.gov/dts/osta/anestheticgases/.

National Institute of Occupational Safety & Health. 1977. Criteria for a recommended standard: occupational exposure to waste anesthetic gases and vapors, Public Health Service report no. 77-140. Washington (DC): US Government Printing Office.

ACKNOWLEDGEMENTS

The authors would like to thank Dee Horne and Nate Koewler for their editorial input, as well as the IACUC members of OHSU Central and Waterfront Campus for conducting the survey.

Phone: 765/494-9163
Fax: 765/496-2415

E-mail: Lisa Snider: ldsnider@purdue.edu
Email: Melissa Panici: mpanici@purdue.edu
Email; Lori Bugher: lbugher@purdue.edu

PACUC Meeting Dates— 2013

January 16	December 26, 2012
February 20	January 30, 2013
March 20	February 20, 2013
April 17	March 27, 2013
May 15	April 24, 2013
June 19	May 29, 2013
July 17	June 26, 2013
August 21	July 31, 2013
September 18	August 28, 2013
October 16	September 25, 2013
November 20	October 30, 2013
December 18	November 27, 2013