
 <p>University of Michigan Medical School Department of Radiology</p>	<p>Michigan Small Animal Imaging Resource <i>In Vivo Cellular and Molecular Imaging Center</i> Department of Radiology University of Michigan</p>	<p>Standard Operating Procedure</p>
<p>Title: Procedure for Imaging Rodents Harboring Biological or Chemical Hazards at NCRC CMI</p>		
	<p>Author: Amanda Fair</p>	
<p>Date: January 14, 2013</p>	<p>Version: 2</p>	<p>Page: 1 of 5</p>

A. PURPOSE: Many animal use protocols entail the administration or exposure of the research animals to potentially hazardous chemical agents or pathogens. The Center for Disease Control (<http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm>) categorizes the hazardous pathogen exposure into 4 separate levels with level 4 being the most hazardous, to level 1 being of minimal potential hazard to laboratory personnel. Level 1 animals can be housed in standard specific pathogen free (SPF) ULAM housing with no additional precautions or signage. The University of Michigan animal facility currently houses Animal Biosafety Level-1 (ABSL-1) and Animal Biosafety Level-2 (ABSL-2) and will soon house Animal Biosafety Level-3 (ABSL-3). Animal Biosafety Level - 4 (ABSL-4) pathogens are not permitted at the University. Please refer to the ULAM document on containment procedures (<http://www.ulam.umich.edu/sops/ULAM%20Containment%20SOP%20010606%20with%20appendix.pdf>) if you have any questions on pathogen levels.


B. PROCEDURES: Since many of the animals used in the imaging core are immunodeficient nude or SCID mice, it is very important that all users with biologically hazardous animals adhere to the strict hygienic guidelines provided in this Standard Operating Procedure (SOP) to prevent cross contamination of animals. The following guidelines have been devised to ensure the likelihood of a zoonotic pathogen being transferred between animals has been minimized. This SOP also details the required procedures for users imaging animals harboring chemically hazardous agents that require containment housing. This housing requirement should be detailed in the beginning pages of your approved animal protocol. Please contact Amanda Fair at awelton@umich.edu for further information.

	Michigan Small Animal Imaging Resource <i>In Vivo Cellular and Molecular Imaging Center</i> Department of Radiology University of Michigan	Standard Operating Procedure
Title: Procedure for Imaging Rodents Harboring Biological or Chemical Hazards at NCRC CMI		
	Author: Amanda Fair	
Date: January 14, 2013	Version: 2	Page: 2 of 5

1. ABSL–2 animals or chemically hazardous animals requiring containment housing that will be imaged at the Center for Molecular Imaging (CMI) must be housed in a designated containment room within the ULAM facility. Specific housing locations will be determined by ULAM husbandry management and should be determined prior to the start of any hazardous imaging experiment.
2. Specific PPE must be worn when entering or working within this containment room. This includes disposable gown, gloves, surgical mask, shoe covers, hair cover, and gloves. It is also recommended that safety glasses (prescription eyeglasses can not be used to replace safety glasses) be used when hazardous substances are being injected into the animals.
3. All procedures involving injection of the hazardous materials must be performed in the containment room under the biological safety cabinet. Manipulation and/or injection of hazardous materials is not allowed within any CMI rooms.
4. Before bringing animals into the imaging room, transfer the animals into a clean cage under the biological safety cabinet using micro-isolation techniques. Please contact ULAM or visit www.ulam.umich.edu if you need a refresher course or are unsure of the proper micro-isolation techniques.
5. When leaving the containment housing room, please dispose of all PPE prior to entering the hallway. Carts are permitted with the CMI hallway but they are not allowed within the imaging room.

 <p>University of Michigan Medical School Department of Radiology</p>	<p>Michigan Small Animal Imaging Resource <i>In Vivo Cellular and Molecular Imaging Center</i> Department of Radiology University of Michigan</p>	<p>Standard Operating Procedure</p>
<p>Title: Procedure for Imaging Rodents Harboring Biological or Chemical Hazards at NCRC CMI</p>		
	<p>Author: Amanda Fair</p>	
<p>Date: January 14, 2013</p>	<p>Version: 2</p>	<p>Page: 3 of 5</p>

6. Please put on new PPE after you have entered the CMI hallway. There is a ULAM-maintained cabinet with the required PPE outside of the imaging room. Users with hazardous animals are required to put on a new disposable gown, bonnet, booties, mask and gloves. Upon entering the imaging room users imaging the hazardous animals must post the hazard warning sign on the door as notification. **Any personnel in the imaging room with hazardous animals but not working directly with them must wear shoe covers and dispose of them before leaving the imaging room.**
7. Prior to imaging, users are responsible for cleaning all imaging equipment and counters that will be used. Dry the surfaces with a clean paper towel and dispose of the dirty towel in a garbage container.
8. A black, disposable paper is to be used to line the imaging chamber of the bioluminescent machine.
9. Gloves are to be removed when working with computer keyboards as this equipment is very hard to sanitize.
10. When imaging is concluded, liberally spray induction chamber, work benches and other surfaces with disinfectant solution where it may have come into contact with animals. Leave on for ~10 minutes and wipe clean with a paper towel. Dispose of the dirty towel(s) in the appropriate hazard container.

 <p>University of Michigan Medical School Department of Radiology</p>	<p>Michigan Small Animal Imaging Resource <i>In Vivo</i> Cellular and Molecular Imaging Center Department of Radiology University of Michigan</p>	<p>Standard Operating Procedure</p>
<p>Title: Procedure for Imaging Rodents Harboring Biological or Chemical Hazards at NCRC CMI</p>		
	<p>Author: Amanda Fair</p>	
<p>Date: January 14, 2013</p>	<p>Version: 2</p>	<p>Page: 4 of 5</p>


11. There are two hazard containers within the imaging room. One is for biological hazards and one is for chemical hazards. Please use the correct container for your hazard and when disposing of chemically-contaminated PPE or paper products be sure to record the hazard on the provided waste log. **NEVER put carcasses, liquids or sharps in these containers.**

12. Remove black paper from bioluminescent chamber and dispose of it in the hazard container. **Do not spray directly into the imaging chambers but rather spray a paper towel and wipe down the imaging platform.** Before leaving the imaging room discard of all PPE.

13. All needles used during imaging must be disposed of in the approved "sharps bins". **USED NEEDLES MUST NOT BE RECAPPED AFTER USE.** Please refer to the OSEH website and the "Guidance on the Use of Sharps" http://www.oseh.umich.edu/sharps_guide.html for further information.

14. Return animals to their designated ULAM containment housing location. Dispose of all PPE before exiting the housing room. Repeat these steps if additional cages of animals are to be taken into the imaging area.

15. When euthanizing hazardous animals users must use the equipment provided by ULAM that is designated for hazardous animal euthanasia. Please refer to husbandry staff for questions related to euthanasia. Animal euthanasia is not permitted within any CMI rooms.

 <p>University of Michigan Medical School Department of Radiology</p>	<p>Michigan Small Animal Imaging Resource <i>In Vivo</i> Cellular and Molecular Imaging Center Department of Radiology University of Michigan</p>	<p>Standard Operating Procedure</p>
<p>Title: Procedure for Imaging Rodents Harboring Biological or Chemical Hazards at NCRC CMI</p>		
	<p>Author: Amanda Fair</p>	
<p>Date: January 14, 2013</p>	<p>Version: 2</p>	<p>Page: 5 of 5</p>

I have reviewed these procedures and will comply with them.

Print name: _____

Signature: _____

Date: _____

Fax this completed page to Amanda Fair at 734-615-1599.