Standard Operating Procedure

Animal Research High Hazards

**This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.**

Print a copy and insert into your *Lab-Specific Safety Plan*.

# **Section 1 – Lab-Specific Information**

| **Department:** | Click here to enter text. |
| --- | --- |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:**  | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Section 2 – Type of SOP:**

[x]  Process [ ] Hazardous Chemical [ ]  Hazardous Class

**Section 3 – Potential Hazards**

Animal research often involves chemical and/or biological hazards such as chemotherapy drugs, carcinogenic chemicals, cytotoxins, reproductive toxins, and risk group 2 or higher biohazards. Examples of hazardous agents that are used on campus include: Tamoxifen, Carboplatin, Azoxymethane, Zebularine, Bromodeoxyuridine (BrDU), 5-FluoroUracil, Acrolein, Nitrosomethylurea, Paclitaxel, Camptothecin, Vinblastine, E. coli 0157, Staphylococcus aureus (MRSA), Dengue virus, Influenza virus, and Human cell lines. Many of these agents are highly toxic by inhalation. Highly toxic by ingestion. Highly toxic by skin absorption. Many acutely toxic chemicals are also carcinogenic, and may have other hazards such as target organ effect, pose an environmental hazard, and/or corrosivity, etc. Make sure that all of the potential hazards are understood before handling any chemical.

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**Section 4 – Agent Awareness**

* Train research staff and animal care staff to recognize and understand the risks of working with hazardous agents and the risks of working in an environment where these materials have been prepared and/or administered.
* Review Safety Data Sheets or agent risk assessment with all staff that will be exposed either through direct handling or proximity. Signs and symptoms, exposure and transmission routes, personal protective equipment, decontamination, and accident/exposure information must be covered.
* All laboratory personnel and particularly women of childbearing age, those who are pregnant, or breastfeeding should be provided with information regarding immune competence and conditions that may predispose them to chemical hazards or infection. Individuals having these conditions should be encouraged to self-identify to the University occupational health provider for appropriate counseling and guidance.
* All persons entering the laboratory must be advised of the potential hazards and meet specific personal protection requirements.

**Section 5 – Personal Protective Equipment (PPE)**

* At a minimum, gloves, outerwear (single use when directly handling high hazards), eye protection, and respiratory protection (a fit tested N-95 mask, higher level respiratory protective devices may be recommended depending of the protocol risk assessment).
* Personnel must receive annual updates or additional training for any new hazards added or other lab changes that occur.
* Protective laboratory coats, gowns, smocks, or uniforms designated for laboratory use must be worn while working with hazardous materials. Remove protective clothing before leaving for non-laboratory areas. Do not take laboratory clothing home for washing.
* Eye and face protection (goggles, face shield or other splatter guard) is used for anticipated splashes or sprays of infectious or chemical hazards. Persons who wear contact lenses in laboratories must also wear eye protection.
* Latex exam gloves, synthetic rubber, nitrile, vinyl, or neoprene also provide acceptable barrier protection against biological hazards. Nitrile glove are preferred as they protect against bio-agents, chemical exposure, and reduce the potential for allergic reaction. Change gloves when contaminated or if glove integrity is compromised. Remove gloves and wash hands when work with hazardous materials has been completed and before leaving the laboratory. Do not wash or reuse disposable gloves. Dispose used gloves with other contaminated laboratory waste. Gloves must not be worn outside the laboratory.

**Section 6 – Engineering Controls**

Utilize the minimum PPE listed above and containment devices such as chemical fume hood, biosafety cabinet, cage transfer station, and/or cage dump station must be used when handling high hazard materials. This includes mixing/administering high hazard agents to research animals, handling exposed animals, and animal bedding exposed to these agents.

HEPA filtered ventilated cage racks should be used for animal studies involving infectious or high hazard materials.

**Section 7 – General Safe Lab Practices**

* All personnel participating in this project must be knowledgeable and have been trained in the required laboratory techniques, personal protective equipment, decontamination, security, and are familiar with hazard containment policies and procedures. Document and retain evidence that workers have been trained in and understand these procedures.
* Research lab staff must communicate with animal care staff prior to initiating any high hazard applications. Post signage to warn employees that they are working in an environment where hazardous agents are handled.
* Access to the laboratory is restricted when work is being conducted and all procedures in which infectious aerosols or splashes may be created are conducted in a biosafety cabinet, cage transfer station, or other physical containment equipment.
* Lab staff must wash their hands after working with potentially hazardous materials and before leaving the laboratory.
* Eating, drinking, chewing gum, handling contact lenses, applying cosmetics, and storing food for human consumption is not permitted in laboratory areas. Food must be stored outside the laboratory area in cabinets or refrigerators designated and used for this purpose.
* The use of cell phones or other electronic listening devices must not be used when handling high hazard materials or agents.
* Perform all procedures to minimize the creation of splashes and/or aerosols.
* An eyewash station must be readily available.

**Section 8 – Animal Handling**

* It is the Investigator’s responsibility to notify animal care staff prior to hazardous material administration. A cage labeling card should identify the drug/toxin, date of initial injection, and date of final injection. The entrance to the animal holding area should also be hazard labeled.
* Transport hazardous materials between labs in a properly labeled sealed container inside a second closed container to minimize the risk of breakage. The secondary container should be secured to the vehicle to ensure movement does not occur during transportation. Carry decontamination materials encase of a spill.
* Low dust cage bedding should be used in filter top micro-isolators.
* The bedding in these cages is considered hazardous for 72 hours (3 days) after the final injection. Animal bedding is not to be changed for at least 72 hours (3 days) after the final date of administration of hazardous drugs.
* After 72 hours (3 days) the cage will be changed by animal care staff. The bedding from these cages is considered hazardous and requires special handling. Use a cage dump station and the recommended PPE. Bedding from theses cages will dumped into an opaque plastic bag, labeled “Contaminated – Hazardous drugs” or “Contaminated Trace Chemical” and will subsequently be disposed of as hazardous waste by REM.
* Empty cages should be bagged and labeled so that the cage wash staff can utilize the appropriate PPE when loading into the cage washer.
* Once mice have been transferred to the clean cage, no further special handling or cage identification is required as long as the animals have not received any additional hazardous drugs/chemicals. Note: animals injected or infected with a biological agent must be handled with full PPE for the duration.

**Section 9 – Sharps**

* Sharps are items that are capable of puncturing, cutting, or abrading the skin: glass and plastic pipettes, broken glass, test tubes, petri dishes, razor blades, needles, syringe with needle. Careful management of needles and other sharps are of primary importance. Needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal. Lab staff that routinely works with sharps and handle sharps waste should use appropriate personal protective equipment, tools, barrier protection, or engineering controls to protect themselves.
* Specifically designed biohazard labeled sharps containers must be used for biohazard or human fluid/tissue/cell line contaminated items (needles, syringe with needle, razors, scalpel tips). Note: These containers can be used for chemical contaminated sharps if the biohazard label is replaced with an orange hazardous waste disposal tag:



* Refer to the Sharps and Infectious Waste Handling Guidelines for more details: [Sharps procedure](http://www.purdue.edu/rem/home/booklets/sharps.pdf)s

**Section 10 – Decontamination Procedures**

* Laboratory wastes will be decontaminated by autoclave, chemical disinfection, incineration, or other validated decontamination method.
* Decontaminate all cultures, stocks, and other potentially infectious materials before disposal.
* Materials to be decontaminated outside of the immediate laboratory must be placed in an autoclavable biohazard bag and kept secured until decontaminated.
* Equipment must be decontaminated before repair, maintenance, or removal from the laboratory.
* Decontaminate all spills, equipment, counters, and work surfaces. A 10% bleach solution or 70% ethanol can be used to disinfect and a strong detergent and water rinse may remove most drug residues. Repeating the cleaning steps will provide addition drug removal.
* Decontamination materials need to be available in case of a spill during transportation.

**Section 11 – Waste Disposal Procedures**

* It is important to understand that biological waste must be managed separately from chemical waste. Detailed biological waste procedures: <http://www.purdue.edu/rem/eh/biowaste.htm>; detailed chemical waste procedures: <http://www.purdue.edu/rem/hmm/chemwast.htm>
* Drug or chemical contaminated sharps containers are disposed as chemical waste via REM.
* High hazard related animal bedding must be bagged and disposed as trace hazardous drug contaminated via REM.
* Animals that have been administered high hazards can be disposed the same as other euthanized research animals (freezer burn box then incinerated).

**Section 12 – Medical Emergency**

**Life Threatening Emergency, After Hours, Weekends And Holidays:**

**Dial** **911**

**Non-Life Threatening Emergency**:

All employees, whether undergrad, grad, part-time or full-time must go to IU Health Arnett Occupational Health Center, Unity Healthcare’s Regional Occupational Care Center (ROCC), or one of the emergency rooms (if emergency room is required). Purdue University Student Health (PUSH) and the Center for Healthy Living should not to be used for ANY employee injury. Report the incident to the Biosafety Officer as soon as possible. Immediately report injury to supervisor and complete the First Report of Injury. (<http://www.purdue.edu/rem/injury/froi.htm>)

**Section 13 – Documentation of Training (signature of all users is required)**

* Prior to conducting any work with high hazard materials, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and a copy of the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.

**I have read and understand the content of this SOP:**

| **Name** | **Signature** | **Date** |
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