Chemicals that are toxic, known or suspect carcinogens, reproductive hazards, teratogens, mutagens and antineoplastic agents may be used in animal protocols. All chemicals being used must be documented in an Institutional Animal Care and Use Committee approved protocol. It is the responsibility of the Principal Investigator to evaluate potential exposure risks of hazardous chemicals and drugs to lab and animal husbandry staff during:

- chemical preparation
- animal dosing
- husbandry activities, including cage changing and disposal of bedding

**For guidance on what chemicals are covered by this SOP:**

EHS Lab Safety Manual - List of carcinogens and highly toxic drugs (Chapter 7):

Common drugs considered hazardous by OSHA:
[http://www.osha.gov/dts/osta/otm/otm_vi/otm_vi_2.html#app_VI:2_1](http://www.osha.gov/dts/osta/otm/otm_vi/otm_vi_2.html#app_VI:2_1)

NIOSH List of Hazardous Drugs:

**For guidance on preparing, handling and administering the agents, please refer to:**

UNC Environmental Health and Safety Office Hazardous Drug webpage:

Material Safety Data Sheet (MSDS)
DOSING OF CHEMICAL HAZARDS IN FOOD and/or WATER

Any food or water that contains a chemical hazard will be considered contaminated until properly disposed of.

- Water – left over contaminated water should be collected by research staff, taken back to their lab, and submitted for Chemical Waste pickup. It cannot be poured down the sink.
- Food – left over contaminated food should be collected by research staff, taken back to their lab, and submitted for Chemical Waste pickup.
  - It can also be dumped into a waste bag and boxed for Incineration (with or without contaminated bedding included).
- Any questions about Chemical Waste Disposal, please call EHS at 919-962-5507 or refer to their website at: http://ehs.unc.edu/environmental/disposal.shtml

CONTAMINATED BEDDING

The animals may excrete toxic chemicals or toxic metabolites of these chemicals, particularly during the first 3 days after dosing. Most of the time, the toxic material or its metabolites would present a hazard in particulate form in feces and urine. The precautions outlined below will protect employees in these situations. For volatile toxic materials, or materials that are toxic at extremely low doses, additional precautions would be necessary.

The following procedures must be followed for the first 3 days after dosing or until 3 days after the last dose AND until the contaminated bedding is changed. All bedding used within 3 days of dosing will be considered contaminated. The procedures may need to be modified for animals other than rodents. Contact DLAM for information regarding other species.

NOTIFICATION and SIGNAGE:

When animals are going to be dosed with a chemical hazard, laboratory workers must provide advance notification to those who will take care of their animals and must label each cage appropriately (see below).

- Within the laboratory, cage labels can take any form that is recognizable to all laboratory workers.
- For animals housed in DLAM-managed areas:
  - At least three business days prior to dosing the animals, the laboratory will notify the DLAM Facility Manager of the dosing schedule and route of
administration. The work cannot begin until the laboratory has obtained confirmation that their scheduling notification has been received.

- When dosed animals are returned to their cages, yellow “Chemical Hazard” cage cards (supplied by DLAM) must be placed on each cage. Information on these cards should contain the PI name, agent being used, route of administration, dosing date(s) and the bar coded cage card number. Note that cages occupied for at least 3 days after dosing must be marked until the contents have been dumped.
- A “Chemical Hazard” sign (also supplied by DLAM) must also be posted on the door (with dosing and contact information filled in).
- When the last dose is administered, the research staff will replace the “Chemical Hazard” Card with a lime green “Chemical Hazard Last Dose” Card, making sure all the information is completed. The “Chemical Hazard Last Dose” cards will be removed by the husbandry technician at the first cage change that takes place more than 3 days after animals receive their final dose (see cage changing in “Work Practices” Below).

ENGINEERING CONTROLS:
- Cages will be covered with micro-isolator lids and/or will be maintained on a ventilated rack.
- Cages will be opened (including for cage-changing, animal care or experiment-related reasons) in a ventilated cage changing station, a biological safety cabinet, or a chemical fume hood. If not available, employees will wear N-95 respirator or Powered Air Purifying Respirator (PAPR) when working with open cages.
- If possible, bedding will be dumped in a ventilated dumping station, such as the “Bio Bubble” machines used in several DLAM facilities (Caution- Respiratory protection is required when using the Bio-bubble, see PPE Section below).
- If it is necessary to dump cages in the animal room, bedding will be dumped into a plastic waste bag within a biological safety cabinet or a chemical fume hood and disposed of according to the “Work Practices” listed below.
- If an appropriate chemical fume hood or biological safety cabinet are not available for dumping bedding, an N95 respirator or Powered Air Purifying Respirators (PAPR) must be worn as indicated below in the PPE section.

NOTE: autoclaving bedding does not destroy most toxic chemicals and hazardous drugs and, if the material is volatile, use of the autoclave may increase the potential for employee exposure by creating harmful airborne vapors. Autoclaving bedding before dumping does NOT change the above requirements for ventilation controls while dumping bedding.
- Bedding that contains chemical hazards will be segregated and collected for incineration.

PERSONAL PROTECTIVE EQUIPMENT:
Employees must wear appropriate personal protective equipment for handling animals, cages and bedding:
- For handling animals and cages the following are required:
  - Shoe Covers and Safety Shoes
• Safety Glasses
• Face Mask
• Gloves
• Bonnet
• Disposable Lab Coat or Coveralls

- **In addition to the above mentioned PPE,** an N-95 respirator OR a PAPR must be worn whenever opening cages unless a ventilated cage changing station, chemical fume hood or Biological Safety Cabinet is used.
- Safety glasses are to be worn at all times when opening cages, moving cages from eye level or above and handling bedding (filling cages, emptying cages) unless inside a ventilated cage changing station, biological safety cabinet or a chemical fume hood.
- An N-95 respirator OR a PAPR must also be worn when bedding or other animal waste is “dumped” unless a chemical fume hood or Biological Safety Cabinet is used. **Respiratory protection is required when using the Bio-bubble.**
- **NOTE:** Respirator use requires enrollment in the University’s Respiratory Protection Program.

**WORK PRACTICES:**
- Gloves must be changed when they become torn or obviously contaminated with excreta AND before handling animals in other experimental groups.
- Employees will wash hands after removing gloves.
- Safety glasses, after use, can be cleaned with water and detergent, stored in a clean place, and reused.

**CHANGING CAGES**
- The husbandry technician will change cages following the procedures outlined in the “Working With Animals Under A Biosafety Cabinet or Change Station” SOP, except for the sentinel program (see Sentinel Section below).
- All bedding present in a rodent cage within 3 days of dosing will be considered contaminated until it is appropriately disposed.
- If a cage is changed **before** 3 days post dosing, the “Chemical Hazard” or the “Chemical Hazard Last Dose” card with the dosing information should be placed on the clean cage. This will ensure that bedding from the next cage change (which could still contain contaminated bedding in it) is also bagged for incineration and NOT sent to the landfill. A blank “Chemical Hazard” or “Chemical Hazard Last Dose” card should be placed on the soiled cage to ensure that bedding from this cage is also dumped separately and bagged for incineration.
- If there is a lime green “Chemical Hazard Last Dose” card on the cage you are changing and it has been at least 3 days after the last dose, the lime green card should be placed on the soiled cage after the technician puts animals in a clean cage. This will identify cages that need to be dumped separately into a bag labeled for incineration, rather than being dumped into bags being sent to the landfill.
- If there is the yellow “Chemical Hazard” card on the cage you are changing and it has been at least 3 days after the last dose, transfer the yellow card to the clean cage and put a blank “Chemical Hazard” card on the soiled cage. The soiled cage should still be dumped separately and collected for incineration. Notify your supervisor so they
can contact the research staff to determine if the last dose has already been administered. If it is confirmed the last dose was administered at least 3 days earlier, the card on the clean cage can be removed. **Do not remove the “Chemical Hazard” card unless this has been confirmed with the research staff.**

**SENTINEL CAGES**
- **Do not take bedding from cages marked as “Chemical Hazards” to sample for the sentinel.**
  - If there is a significant number of cages marked as chemical hazards on the rack and there are very few cages without contaminated bedding to sample, contact the veterinary staff for instructions.
  - If any contaminated bedding is placed into the cage with the sentinel, notify the veterinary staff and treat the cage as a Chemical Hazard (place completed yellow “Chemical Hazard” card on the cage and dump bedding separately and mark for incineration).

**DUMPING SOILED CAGES**
- Contaminated bedding should be dumped separately from other bedding and collected for incineration.
- When using the BioBubble to dump contaminated bedding, the waste bag should be placed inside the incineration box and placed in close proximity to the BioBubble. Cages with contaminated bedding will be dumped into these waste bags. The boxes are the same boxes that are used for carcasses and should be marked for incineration. When finished dumping contaminated cages at a BioBubble station, seal the bag and box and mark as Chemical Hazard.
- Decontamination of cage changing areas after each use will consist of cleaning up spilled bedding, placing it into the contaminated bedding bag, and spraying the surface with Virkon S, following the procedures outlined in the “Working With Animals Under A Biosafety Cabinet or Change Station” SOP.
- When finished dumping cages with contaminated bedding, the cage dumping area should be swept, (again adding any contaminated bedding to the contaminated bedding bag) and mopped or foamed with Vimoba 128. Use the Vimoba mixing station if available to get the correct dilution. You can also mix 1 ounce of Vimoba 128 per 1 gallon of water into a mop bucket.

**POTENTIAL EXPOSURES**
- As with any animal bite or scratch, employees bitten or scratched by animals exposed to hazardous chemicals are expected to notify their supervisor immediately. The employee should also go directly to the University Employee Occupational Health Clinic. For after hours exposures, please call UEOHC at 966-9119.
CHEMICAL HAZARD CARDS

CHEMICAL HAZARD

Chemical Agent: ____________________
P.I. ____________________
Cage Card #: _________
Route of Administration (Please Circle):
  Parenteral
  Oral
  • Feed
  • Water
  • Gavage
Topical
Date: _______________

DATE OF LAST DOSE: _______________

CHEMICAL HAZARD

Chemical Agent: ____________________
P.I. ____________________
Cage Card #: _________
Route of Administration (Please Circle):
  Parenteral
  Oral
  • Feed
  • Water
  • Gavage
Topical
Dates of chemical hazard administration/exposure must be documented on the Chemical Hazard Cage Cards!!!

For 3 days after administration/exposure AND until bedding is changed:

- Open all contaminated cages in a ventilated cage changing station, biological safety cabinet or chemical fume hood. **If those are not available, employees must wear an N-95 respirator or PAPR when working with open cages.** This includes DLAM cage changing.

- Don gloves, (closed-front) gown, shoe covers, and N-95 respirator (plus face shield, safety glasses, or goggles) OR PAPR before dumping bedding. (Note: if bedding is dumped inside chemical fume hood or biological safety cabinet, the respiratory and eye protection is not required).

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