Handling Cages Dosed with Chemical Hazards

Training for Research Staff and DLAM Staff
Introduction

- ALL hazardous chemicals used to dose animals must be documented in an IACUC approved animal use protocol.
- The “Use of Chemical Hazards in Laboratory Animals” form is now integrated into the ACAP online protocol.
- Please see the Additional Resources Slides for more information on how to fill out this form.
- It is the PI’s responsibility to evaluate potential exposure risks to lab and animal husbandry staff.
Chemical Hazard Form

In general, the following chemical substances will require the completion of the “Use of Chemical Hazards in Laboratory Animals “form:

• Any substance that meets the definition of a toxic substance from the OSHA Hazard Communication Standard, meaning that it possesses any of these three characteristics:
  • oral LD50 <500 mg/kg in albino rats;
  • skin absorption LD50 <200 mg/kg in albino rabbits; or
  • inhalation LC50 <2000 parts per million or 20 mg/L in albino rats.

• All substances that are known or suspected human carcinogens.

• All substances that are known or suspected to be reproductive hazards.

• All substances classified as cytotoxic/antineoplastic agents.
Chemical Hazard Form

In addition, the following chemical substances will also require the completion of the “Use of Chemical Hazards in Laboratory Animals” form:

• All **investigational drugs** with limited safety or toxicological data.

• All **nanoparticles or nanoparticle formulations** with limited safety or toxicological data.

• All **inhalation anesthetic agents** (e.g. isoflurane, sevoflurane, methoxyflurane, halothane, nitrous oxide, ether).
Potential Exposure Risks

- Chemical Preparation
- Animal Dosing
- Husbandry Activities
  - Changing cages
  - Handling animals
  - Dumping soiled cages
  - Disposal of dirty bedding
Routes of Administration

- Oral – giving drug or chemical by mouth
  - Chemical mixed with the animal’s Food and/or Water
  - Gavage – introducing the chemical directly into the stomach or esophagus using a tube or dosing needle
- Parenteral – injection of a drug or chemical
- Topical – application of drug or chemical directly to the eyes, ears, skin or fur
Contaminated Bedding

- Animals may excrete hazardous chemicals or metabolites in their feces or urine, particularly during the first 3 days after dosing.
- Bedding that contains certain types of chemical hazards (carcinogens, antineoplastic/cytotoxic drugs and others flagged by EHS) will be dumped separately from other bedding and collected for incineration. It **CANNOT** be sent to the landfill.
- Autoclaving bedding does **not** destroy most hazardous chemicals and drugs.
- **ALL** bedding used within 3 days of dosing will be considered contaminated until incinerated.
Contaminated Food or Water

- Any food or water that contains a flagged Chemical Hazard will be considered contaminated until properly disposed of.
  - Water – left over contaminated water should be
    - Collected by research staff, taken back to 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 lab, and submitted for Chemical Waste pickup
    OR
    - Dumped into a waste bag and boxed for Incineration (with or without contaminated bedding included).
Contaminated Food or Water

- If you have any questions about the procedures for disposing Chemical Wastes, please contact Environment, Health and Safety at (919) 962-5507 or refer to the EHS website at:
  http://ehs.unc.edu/environmental/disposal.shtml
The research staff must contact the DLAM Facility Manager at least 3 days before dosing begins to discuss:

- Chemical to be used
- Dosing Schedule
- Route of Administration
- and to Review the DLAM “Handling Cages Dosed with Chemical Hazards” SOP.

Cages with animals dosed with chemical hazards must always be clearly identified.
Cage Identification

- After dosing animals, research staff will place a yellow “Chemical Hazard” card on each cage.
- Each time you dose animals, write the date on the yellow card.
- If the first dose is also the final dose, a lime green “Chemical Hazard Last Dose” card can be used instead of the yellow card.
- These cards are supplied by DLAM.
“Chemical Hazard” Card

1. Chemical Agent being used
2. PI Name
3. Bar-Coded Cage Card Number
4. Route of Administration (circle correct route on the card)
5. Date(s) dose given
Room Sign

- A “Chemical Hazard” sign (supplied by DLAM) must also be posted on the Cubicle and/or Room door.
- Research staff must make sure information on the cards and signs is correct.
“Chemical Hazard Last Dose” Card

- When the final dose is administered, the research staff will replace the yellow “Chemical Hazard” card with a lime green “Chemical Hazard Last Dose” card.

- Make sure the information on this card is correct.
“Chemical Hazard Last Dose” Card

- It is extremely important for the research staff to place this card on the cage after the final dose has been given.
- DLAM staff need to know this information to determine when bedding no longer needs to be incinerated.

**CHEMICAL HAZARD**

DATE OF LAST DOSE:

__________________

Chemical Agent:

__________________

P.I. __________________

Cage Card #: ______

Route of Administration (Please Circle):
- Parenteral
- Oral
  - Feed
  - Water
  - Gavage
- Topical
Personal Protective Equipment (PPE)

- **Minimum** PPE Requirements include;
  - Shoe Covers
  - Face Mask
  - Safety Glasses
  - Gloves
  - Bonnet
  - Disposable Lab Coat or Coveralls

- Dumping soiled cages will require additional respiratory protection.
Opening Cages

- Cages should be opened inside a ventilated cage changing station, chemical fume hood or biological safety cabinet.
Opening Cages

- If the fume hood, changing station or safety cabinet are not available, staff will wear an N-95 Respirator or Powered Air Purifying Respirator (PAPR), in addition to previously mentioned PPE.
- Respirator use requires enrollment in the University’s Respiratory Protection Program.
Changing Cages

- Usually, cages are changed by DLAM husbandry staff.
- If the research staff want to change the cages themselves, they should coordinate with the DLAM staff.
- The following instructions are for DLAM staff and may need to be modified slightly if the research staff are changing the cages.
Remember!

- Bedding that contains flagged chemical hazards will be dumped separately from other bedding and collected for incineration. It CANNOT be sent to the landfill.

- **ALL** bedding used within 3 days of dosing will be considered contaminated until incinerated.

CAUTION
Changing Cages

- If there is a yellow “Chemical Hazard” Card on the cage;
  - Place completed yellow card on the clean cage.
  - Place blank yellow card on the soiled cage to ensure the bedding from today’s cage change is dumped separately and bagged for incineration.
  - If the yellow “Chemical Hazard” card on the cage indicates the last dose was at least 3 days prior to your change out, notify your supervisor and follow instructions above until instructed otherwise.
Changing Cages

- Once confirmed that the final dose was given at least 3 days before the cage change, DLAM staff will remove the card on the clean cage and the bedding in that cage can be disposed of during the next cage change using normal procedures.
- Do not remove the “Chemical Hazard” card unless this has been confirmed with the research staff.
Changing Cages

- If there is a lime green “Chemical Hazard Last Dose” card on the cage and;
  - It is at least 3 days after the Final dose;
    - Place completed green card on the soiled cage.
    - The clean cage no longer needs a Chemical Hazard card.

  OR

- It is less than 3 days after the Final dose;
  - Place completed green card on the clean cage.
  - Place a blank Chemical Hazard card (yellow or green) on the soiled cage.
Sentinel Program

- Cages marked as Chemical Hazards will **not** be used to supply bedding for the sentinels.
- **Do not put contaminated bedding into the sentinel cage.**
- If a significant amount of cages on the rack are being dosed for a long period of time, please contact the veterinary staff for further instructions on obtaining samples for the sentinels.
- If any contaminated bedding is placed into the sentinel cage, notify the veterinary staff and treat the sentinel cage as a Chemical Hazard.
Dumping Soiled Cages

- When dumping cages in the cage wash area, soiled bedding will be dumped using a ventilated dump station, such as the BioBubble.
Remember!

- Bedding that contains flagged chemical hazards will be dumped separately from other bedding and collected for incineration. It CANNOT be sent to the landfill.

- **ALL** bedding used within 3 days of dosing will be considered contaminated until incinerated.
Dumping Soiled Cages

- When using the BioBubble to dump contaminated bedding,
  - Place waste bag inside the Incineration Box (same type of box that is used for carcasses)
  - Place box in close proximity to the BioBubble.
  - Staff must wear an N-95 Respirator or PAPR when dumping cages in front of the BioBubble.
- When finished, seal bag and box, then mark box “For Incineration”.

Dumping Soiled Cages

- 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 chemical fume hood.
- If a chemical fume hood or biological safety cabinet are not available, staff must wear an N-95 Respirator or PAPR while dumping the cages.
- The waste bag can then be placed into an incineration box and marked “For Incineration”.
- Please see DLAM staff for bags, boxes and labels.
Decontamination of Work Space

- Make sure you clean up your work space before leaving.
- Place any spilled bedding into a contaminated bedding bag. Seal the bag, place into box and mark box “For Incineration”.
- Wipe your work space thoroughly with approved disinfectant.
Exposure Procedures

- Any employee with possible exposure to hazardous chemicals, including exposure from an animal bite or scratch, is expected to notify their supervisor immediately.

- The employee should also go directly to the University Employee Occupational Health Clinic (UEOHC), 145 North Medical Drive.

- For after hours exposures, please call UEOHC at 966-9119.
Additional Resources

- For guidance on what chemicals are covered
  - EHS Lab Safety Manual-List of Carcinogens and highly toxic drugs:
  - Common drugs considered hazardous by OSHA:
    http://www.osha.gov/dts/osta/otm/otm_vi/otm_vi_2.html#app_VI:2_1
  - NIOSH List of hazardous drugs:
Additional Resources

- For guidance on preparing, handling and administering agents, please refer to:
  - Material Safety Data Sheets (MSDS): http://ehs.unc.edu/ih/chemical/chemical.shtml#database
  - National Toxicology Program: http://ehp.niehs.nih.gov/roc/toc10.html
Additional Resources

To see the DLAM “Handling Cages Dosed with Chemical Hazards” SOP:


For more information on the EHS Respiratory Protection Program:

- http://ehs.unc.edu/workplace_safety/rpp.shtml
Thank you