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### STANDARD OPERATING PROCEDURES

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POLICY: Facility Inspection by University Veterinarian

Principle

To ensure the proper care and use of research animals in the University facilities through the guidance of a Doctor of Veterinary Medicine.

Practice

A. The university veterinarian will inspect all facilities on a monthly basis or as needed for specific animal health situations.

B. All visits will be documented via initialization of the room maintenance records that are posted on the doors of each room in the facility or in located in the satellite facilities.

C. Written report of the veterinarians' findings will be provided to the animal facility manager, research compliance coordinator and the Associate Vice President for Research.

D. Any deficiencies will be noted and copied to the appropriate investigator.

E. If necessary, the investigator will provide, in writing, what corrective action will be taken and the primary investigator will provide a follow-up report.

F. Any deficiencies will be reported at the semi-annual IACUC meetings.

G. In the event the primary veterinarian cannot be located in an emergency, call the designated back-up veterinarian. Phone numbers are posted in the animal facility.
POLICY: Institutional Animal Care and Use Committee (IACUC)

1. Appointment of IACUC Members
   A. The Vice President for Research as Institutional Official for the University appoints the committee. Appointments are based upon the recommendations of the committee chair to the Vice President.

   B. The terms are for up to three years with no more than 1/3 of the committee member's terms expiring per year.

   C. Composition of the Committee
      1. Chairperson (must have previous IACUC experience)
      2. Consulting Veterinarian (must have approved independent contract with the University)
      3. Non-affiliated member(s) (must have no affiliation with the University other than IACUC membership)
      4. Non-Scientific member(s) (must have a background in a non-scientific area)
      5. Representatives from the animal research community within the University.
      6. Manager of Animal Facilities
      7. Coordinator of Research Compliance

   D. The IACUC function is to assess the animal program, policies, facilities and procedures utilized by Western Michigan University staff and students. These policies define the limits and standards for committee functions except where the Animal Welfare Act and/or PHS Guide for Care and Use of Laboratory Animals set specific precedent.

   E. At least once every six months the IACUC must review the University’s Program for Human Care and Use of Animals to determine if this program is in accord with the Animal Welfare Act and the PHS Guide for the Care and Use of Laboratory Animals. A written report of this review is submitted to the Vice President for Research and the animal care and use facility and each satellite facility maintain copies of this report.

   F. At least once every six months the IACUC must inspect the animal care and use facilities using the Animal Welfare Act and PHS Guide as a basis for the evaluation. The inspection is performed by a facility inspection team composed of at least two IACUC members with the stipulation that no member wishing to participate be excluded. A written report of this inspection will be prepared, ratified by a majority of the IACUC, and submitted to the Vice President for Research. The main animal facility and the compliance office will maintain a copy of these reports. If deficiencies are noted, the facility in violation will be informed and required to correct the deficiency within a reasonable amount of time. Deficiencies not corrected will result in inactivation of protocols associated with the deficient facility (refer to SOP WMUAF 03).

   G. The IACUC must review, and if warranted, investigate concerns or complaint involving the care and use of animals.
H. The IACUC must make recommendations to the Vice President for Research regarding any aspects of the facilities animal program, facility or personnel training.

I. The IACUC must review and approve, require modification of, or withhold approval from protocols involving the care and use of animals in accordance with the Animal Welfare Act and PHS Guide. The IACUC does not review protocols for scientific merit except as merit and/or performance of the actual research bears on humane treatment or safe use of animals. Procedures for review of protocols are as follows:

**EITHER by a full committee review:**

1. Newly submitted protocols will be reviewed within one month of receipt. Protocols must be submitted at least two weeks prior to the review meeting. Dates of submission deadlines and meetings will be published annually by the IACUC.

2. Each protocol receives an administrative review by the Coordinator of Research Compliance and the IACUC Chair.

3. Protocols are then sent to each member of the committee.

4. Review criteria have been developed based on regulatory requirements and committee concerns. For example, regulations require that:
   - Investigators consider alternative models or procedures
   - The proposed research is not unnecessarily duplicative.

5. Protocols are reviewed at a convened meeting of the IACUC. Investigators are invited to attend the discussion portion of the meetings for their protocol.

6. Conditional approval may be granted with final approval given when the IACUC chair receives the needed information. Deferred proposals require full committee approval of revisions.

7. Outside experts may be utilized to review proposals outside the committee's area of expertise.

8. IACUC shall notify investigators in writing of their decision to approve or disapprove of a new, revised or ongoing protocol. If approval is withheld, the IACUC will clearly outline the reasons for the disapproval and give the investigator an opportunity to respond in person or in writing.

9. Approval is granted for a one-year period and yearly renewal/ progress reports are required and these will be reviewed by the IACUC. Every third year the protocol must be entirely resubmitted for review by the IACUC.

**OR by a designated member review:**

1. A designated member review does not require a fully convened meeting of the IACUC.

2. Each protocol receives an administrative review by the Coordinator of Research Compliance and the IACUC Chair.

3. Protocols are then sent to each member of the committee.

4. Review criteria are based on regulatory requirements. For example, regulations require that:
   - Investigators consider alternative models or procedures
   - The proposed research is not unnecessarily duplicative.
5. A subcommittee, composed of one or two members designated by the Chair, is authorized to review and approve the protocol. No one with a conflicting interest (e.g., personally involved in the project) may conduct the review.

6. A copy of the protocol is forwarded to all members of the IACUC via postal mail, campus mail, fax, or electronic mail.

7. Each IACUC member reviews the protocol to determine whether clarification or changes are needed. Each IACUC member has the opportunity to call for a full committee review.

8. If no member calls for full committee review, the protocol can be reviewed and approved by the designated reviewers.

9. Documentation, including voting sheets will be maintained as evidence of each member’s decision with regards to these protocols. The designated review lists and voting sheets will be kept in the research compliance office.

10. Conditional approval may be granted with final approval given when the IACUC chair receives the needed information. Deferred proposals require full committee approval of revisions. Outside experts may be utilized to review proposals outside the committee’s area of expertise.

11. The IACUC shall notify investigators in writing of their decision to approve or disapprove a new, revised or ongoing protocol. If approval is withheld, the IACUC will clearly outline the reasons for the disapproval and give the investigator an opportunity to respond in person or in writing.

12. Approval is granted for one-year period, and yearly renewal/progress reports are required and these will be reviewed by the IACUC. Every third year the protocol must be entirely resubmitted for review by the IACUC.
POLICY: Animal Care and Use Complaints

Principle

To provide a mechanism by which complaints about the humane care and use of animals can be dealt with rapidly and efficiently and without liable to the complaining party

Practice

A. All complaints should be directed to the chairperson of the IACUC.

B. The chairperson of the IACUC will review the complaint and perform a preliminary investigation and if just cause is found will:
   1. Convene a meeting of the IACUC as soon as possible to discuss the complaint and if warranted inspect the appropriate facility or laboratory and initiate a formal investigation.
   2. Inform the Institutional Official of the complaint.
   3. Inform the accused party of the complaint.
   4. Revoke approval for, and suspend the animal use activity if deemed appropriate.

C. If a violation of the Humane Care and Use Policies and Procedures is discovered by the committee, the IACUC will then:
   1. Inform the accused party of the violation and recommend appropriate steps for compliance with the Policies and Procedures in a rapid but reasonable time frame.
   2. Monitor animal use or care by the accused party to insure compliance with the Policies and Procedures.
   3. Inform the Institutional Official of the violation

D. If a violation is not corrected in an appropriate fashion and time frame, or if a violation is deemed too severe for corrective action as judged by a quorum of the IACUC (majority vote), then the IACUC will:
   1. Suspend animal care and use by the accused party.
   2. Inform the Institutional Official of the suspension. The Institutional Official must then report this action to APHIS and any Federal agency funding that activity.
STANDARD OPERATING PROCEDURE: Rodent Housing (Gerbil, Hamster, Rat, Mouse)

Principle
To provide a dry, sanitary, healthy, controlled environment for rodents used in research.

Practice
A. Rodents are housed in polycarbonate filter top cages, filled with one full scoop of bedding. Cage density will be determined by the chart in the 8th Edition of The Guide, Table 3.2., as appropriate for species.

B. Animal cages are located in Haenicke Hall animal facility in a code locked animal room. Rooms are controlled by a light timer on a 12/12 light dark cycle, unless specified by the investigator or the facility manager.

C. A high and low thermometer and a hygrometer are used to monitor environmental conditions on a daily basis.

D. Rodent cages and water bottles are sanitized weekly or as often as deemed necessary, by the investigator or facility manager.

E. Waste is dumped into a dump station located in room 1027 Haenicke.

F. Cages, lids, bottles and stoppers are all run through a washer with temperature indicators to insure proper temperatures are reached.

G. Pest control is provided by the University through a contract with an outside firm.
STANDARD OPERATING PROCEDURE: Rodent Food Storage

Principle

To provide food that is wholesome, palatable and free of contamination for consumption by rodents used in research.

Practice

A. Rodent food will be stored in containers with tight fitting lids located in animal rooms. It is also stored on pallets in room 1093 in the animal facility. Open bags of food in room 1093 must be stored in a container with a tight fitting lid.

B. Individual food bins are disinfected a minimum of 14 days. Techs performing this duty will initial and date cards located on the feed bin. Feed bins are labeled with milling date provided on the feed bag. Food not used by manufacturers recommended date will be discarded unless placed in the freezer.

C. All USDA species must use food prior to the 9 month expiration date. USDA species include, hamster, guinea pig, and rabbits (list is not inclusive). Custom Diets may require or may have shorter shelf life. Follow manufacturers’ directions.

D. Purina Mills, Inc. has supplied us with a letter stating that the shelf life of Purina products are 9 months from the date of manufacture. The exception to this rule is chow that contains vitamin C, which should be used within 90 days.
STANDARD OPERATING PROCEDURE: Training of Animal care and Use personnel.

Principle

To properly train all personnel involved in the care and use of animals and the humane treatment of laboratory animals.

Practice

A. Animal caretakers and investigators must be familiar with the Animal Welfare Act and the PHS policies on the humane care and use of animals in research. This involves reading the above-mentioned documents and then discussing these documents with the animal facilities manager or the consulting veterinarian.

B. Study of the care and use of the animals present in the facility. This involves readings of current literature and the use of other training aids (videos, tapes, slide presentations etc.) on the animals used in the facility followed by discussion with the facility manager or consulting veterinarian.

C. Hands on instruction in the care and use of the animals present in the facility. This includes training and instruction in feeding and watering the animals, proper handling methods, anesthesia, and aseptic surgical techniques (if appropriate), euthanasia, and disposal. Emergency procedures for reporting animal care problems are also discussed.

D. Information is provided regarding sources of information about the care and use of animals and alternatives to the use of animals in research and teaching (electronic data bases, library resources, IACUC reference holdings, Animal Welfare Information Center, etc.).

E. Animal Care and Use Training form is filled out and signed by the trainer and trainee and dated. The research facility manager will maintain copies. All facility occupants who will have contact with animals must have completed the CITI on-line training course successfully prior to being granted access to the facility by the manager.
STANDARD OPERATING PROCEDURE: Procurement of Research Animals

Principle

The use of animals in research requires healthy animals with known backgrounds.

Practice

A. Research animals are purchased only from USDA licensed and reputable animal dealers.

B. Prior to purchase, investigators must have an approved IACUC Protocol number. Investigators shall contact the animal facility manager with the number and species of animals to be purchased, the projected date of arrival of the animals. This allows the animal facilities to provide the appropriate housing for the animals upon their arrival and facilities record keeping.

C. Instructions should be given to carriers that all animal shipments are delivered directly to the animal facility, in Haenicke Hall. Facility employees will be notified upon arrival.

D. Upon receipt of animals, the facility manager or animal caretaker will inform the investigator of the receipt of the animals and their condition. Any abnormal animal behavior or condition will be immediately reported to the investigator and facility manager.
STANDARD OPERATING PROCEDURE: Acclimation of Animals.

Principle

Newly received animals will be housed and monitored for 5 to 7 days upon arrival and prior to any procedural use.

Practice

A. Animals should be separated to the extent possible by source, species, study, and investigator.

B. If the environmental history of the animals is not known, an acclimation period (7-10 days) is imposed.

C. All animals should be observed daily by a trained technician for clinical signs of illness or abnormal behavior.

D. All deviations from normal and all deaths should be reported promptly to the investigator and or attending veterinarian.

E. Most vendors recommend a minimum of 48 hours, prior acclimation, before using animals. Five to seven days is mandated in the animal facility.
STANDARD OPERATING PROCEDURE: Animal Health Check

Principle

All laboratory animals shall be observed daily for clinical signs of illness, injury, or abnormal behavior by a person trained to recognize such signs. Weekends and holidays: animals shall be observed in the same manner as during the week, by facility technicians, or facility manager.

Practice

A. Observe all animals in each cage for signs of illness, injury, abnormal behavior or death. Each cage should have adequate feed and water. In rooms where the animals require feeding of live feed, the live feed must also be checked, i.e. food, water, housing cleanliness.

B. If an animal is found dead, it should be placed in a plastic bag and placed in the freezer designated for dead or euthanized animals. Some animals may require the bag to be labeled with the study number or animal number; the investigator should be notified and the veterinarian for possible necropsy.

C. If an animal is sick, injured, or exhibits abnormal behavior, notify the investigator, the facility manager and the veterinarian if necessary will make a determination.

D. Proceed with each cage until all animals have been observed.

E. Record the room temperature high and low readings, humidity and initial the room maintenance record in all the appropriate spaces.

F. Clear the Hygrometer/Thermometer after recording.

G. Record the number of animals per protocol or investigator.

H. Record any miscellaneous comments on the back or bottom of the room log sheet, noting with an asterisk on the front.

I. Animals that are given live feed, it should be noted whether they have eaten or not.
STANDARD OPERATING PROCEDURES: Animal Feeding

Principle

Animals receiving test materials in diet, requiring food consumption measurements, and/or receiving special diets, are fed by authorized technicians. Investigator should provide in writing any special instructions, to the animal facility manager. All other animals are fed on a daily basis by animal care personnel. Food storage containers are cleaned a minimum of 14 days.

Equipment

A. Animal Food

B. Mobile food storage container

C. Food scoops

Practice

A. Proceed to first cage.

B. Check food in feeder for moisture or contaminants.
   1. If food is moist or contaminated, discard food and change feeder.
   2. If animals appear not to be eating, notify investigator and facility manager.

C. Check feeder to assure that it is functioning properly.

D. Add sufficient food to feeder that can be consumed within 7 days. Do not overfill.

E. Deposit sufficient amount of supplemental diet if prescribed (i.e., cabbage, lettuce, carrots, etc.).

F. Proceed to next cage.

G. Follow steps B through F until all animals have been fed.

H. Initial room maintenance record in appropriate space.

I. Any food that drops to the floor must be swept up and discarded.
STANDARD OPERATING PROCEDURE: Bottle Watering of Animals

Principle

Watering via water bottle is used for many species of small animals. Water bottles are checked daily to assure that the animal has sufficient water. The bottle changes are done weekly.

Equipment

A. Water bottle
B. Sipper tube with stoppers or one-piece sipper tops.
C. Clean carboy filled with deionized/filtered water.

Practice

A. Proceed to first cage and check level of water.
   1. If water level is less than half full, refill with deionized/filtered water to full level. During winter months, extra care should be taken to monitor water levels so that in the event of school closure, due to weather, sufficient amount of water will sustain them for an additional day.
   2. If water level is greater than half full, tap bottle to remove any air locks and leave on cage. Bottles must also be checked for leaks. Leaking bottles should be either fixed or replaced immediately. Make sure to return each bottle to its original cage.
B. Proceed to next cage.
C. Follow steps B and C until all water bottles have been checked and replaced if necessary.
D. Initial room maintenance record in appropriate space.
E. Clean bottles are kept to the right of the work sink in 1046 if replacements are needed.
F. Transfer used bottles to bottle washing area. Remove cap and empty old water. Place bottles and caps in bottle cases designed for the cage washer, and place in washer. When bottles have run through a wash cycle, remove them and refill with filtered water. Place sterilized cap on bottles and return them to the animal room and onto the cages. Make sure the sipper tube is in the cage lid hole so animal has access to the water.
G. Initial room maintenance record in appropriate space.
STANDARD OPERATING PROCEDURE: Rodent Cage Preparation

Principle

To prepare prior to arrival of new animals or in cage changing schedule.

Equipment and Supplies

A. Clean cages, wire top, plastic filter top (if applicable).
B. New filters (if applicable)
C. Clean bedding material
D. Clean, filled water bottles
E. Animal food
F. Cage cards
G. Tape

Note: Clean cages in storage must be used within 30 days or re-sterilized.

Practice

A. Place 1 level scoop of clean bedding material in the bottom of the cages.
B. Fill feeder with appropriate amount of food.
C. Place filled water bottle on wire top. Make sure sipper tube extends into cage.
D. Mount filter in filter cover (if applicable) and place on top of clean cage.
E. Fill out cage cards and attach to cages with tape. Cage card should include approved IACUC protocol number, investigators name, investigators phone number, species, breed or strain, date of birth (if given), date received, source, number of animals per cage and sex. All special instructions should be noted on the card i.e., water or food deprivation by color coded stickers.
F. Initial log sheet and change animal population count for the room.
STANDARD OPERATING PROCEDURE: Sterilizing Water Bottles and Caps

Principle
To properly sterilize bottles and caps used for rodents.

Practice
A. First work day of each week, all animal bottles are removed from cages, placed on work tables and brought to cage wash room (1023).

B. Remove caps from dirty bottles and place in stainless steel wash basket. Empty old water from bottles and place bottles upside down in bottle washing basket.

C. Cages and bottles are placed in the cage washer and run through the sterilization cycle using an alkaline detergent. The first load an object should be marked with a temperature sensitive tape to insure appropriate temperatures are reached in the washer.

D. After cycle is complete, remove temperature sticker and verify 180OF was obtained and place sticker on daily log sheet with date and initials. Bottles are then removed from the washer and refilled with filtered water and a sterilized cap is secured for next use.
STANDARD OPERATING PROCEDURE: Transferring Rodents to Clean Cages with Direct Bedding

Principle
Rodent cages on contact bedding require changing every 7 to 9 days. In this case, racks, dirty cage lids and bottles are replaced with clean ones, unless otherwise determined by the principle investigator or the facility manager.

Equipment
A. Exam gloves
B. Clean cages
C. Contact bedding
D. Scoop
E. Clean lids
F. Clean racks
G. Disinfectant

Practice
A. Put on a pair of exam gloves
B. Proceed to first cage
C. Remove water bottle (if applicable)
D. Remove dirty cage from rack, place on work table beside clean set up. Remove cage card and place on clean cage along with water bottle. Note: any authorized enrichment may be added at this time.
E. Place animal in clean box with clean lid.
F. Put remaining food on clean lid.
G. Put new cage on clean rack in the corresponding place from where it came from on the dirty rack.
H. Put dirty cage and lid on dirty rack.
I. Repeat steps B through H until entire rack is clean.
J. Initial room maintenance record in appropriate space.
K. Transfer dirty racks and lids to dirty cage area room 1027.
L. Follow SOP WMUAF-15-06/2014 for waste removal
STANDARD OPERATING PROCEDURE: Disposal of Direct Bedding in Preparation of Cage Washing

Principle

To dispose of soiled direct bedding used in housing rodents.

Equipment

A. Plastic garbage bag for waste disposal
B. Rubber exam gloves
C. Non-particle mask (optional)
D. Scraper
E. Animal bedding disposal cabinet
F. Spray bottle with 10% bleach solution

Practice

A. Bring rack with soiled boxes back to the disposal cabinet located in 1027.
B. Turn on the light and fan blower located on the top of the disposal cabinet.
C. Put on rubber exam gloves and mask (optional)
D. Empty soiled bedding into plastic bag located under the opening in the dump station. Remove any stubborn spots with a scraper and 10% bleach solution from spray bottle. Tap the box on the frame of the dump station to remove any remaining dust. Approximately 12-15 boxes may be dumped before the bag should be removed and replaced with another.
E. Continue until all the boxes have been dumped and scraped and are prepared for the cage washer.
F. Move all the prepared boxes to the cage washer and stack them neatly.
G. Load boxes into cage washer, open side facing jets and place a temperature sticker on one box. Turn on machine and allow to run through cycle.
H. When cycle is complete, removed temperature tape and place on log sheet along with date and initials. Remove cages from machine to room 1019 and allow to dry.
STANDARD OPERATING PROCEDURE: Cleaning and Sanitizing Animal rooms.

Principle

Animal rooms are cleaned and sanitized on a schedule set by the animal facility manager, generally every month for room disinfections.

Equipment

A. Sponge mop
B. Bucket
C. String mop, bucket and wringer
D. Detergent/disinfectant solution
E. Rubber gloves
F. Goggles or safety glasses

Practice

A. Animal rooms are cleaned and sanitized monthly. Floors are done twice a week
B. Prepare disinfectant water according to manufacturer’s instructions.
C. Animals are removed or, if not possible, move to the other side of the room while cleaning is done.
D. Empty room of any portable items.
E. Remove stubborn spots on walls using scrubber sponge.
F. Damp mop exposed walls and ceiling with disinfectant solution, allowing to stand for time prescribed by manufacturer.
G. Wet mop floors with appropriate disinfectant twice a week.
H. Allow room to air dry.
I. Return cages or equipment to room if necessary.
J. Initial room maintenance sheet in appropriate space.
STANDARD OPERATING PROCEDURE: Animal Waste Disposal

Principle

Animal waste is separated into three basic categories: 1) "waste," i.e., feces, bedding, solid papers, etc. 2) "Dead Animals" i.e., tissue and carcasses: 3) "solid waste," i.e., glass, needles, non-burnable, etc. All animal waste shall be collected, removed, and disposed of in a safe and sanitary manner.

Practice

A. "Waste" is collected and placed in plastic garbage bags and placed in dumpster located outside the loading dock at Haenicke Hall.

B. "Dead animals" are placed in a plastic bag and then stored in a designated freezer located in the animal facility in room 1093 Haenicke Hall. When this freezer becomes full, personnel in the Health and Safety Division is called. The Health and Safety Division pick up the frozen carcasses and tissues and transport them to the county incinerator for disposal. Any carcasses or tissues that are ‘fixed’ need to be placed in the small refrigerator freezer for removal by Environmental Health.

C. "Solid waste" is collected and placed in a plastic autoclave bags labeled "biohazard". The full bags are then autoclaved and place in the dumpster the same as the "waste" is. All "sharps" such as needles or glass must be placed in a puncture proof "sharps" container. The "sharps" containers are located in procedural rooms, 1077 or 1079. These will be removed by the Environmental Health Dept. also.
STANDARD OPERATING PROCEDURE: First-aid and Treatment of Animal Inflicted bites and wounds of animal technicians.

Principle

Prompt treatment of any bite, cut, or laceration.

Equipment

A. Antiseptic Ointment
B. Clean water
C. Band-Aids
D. First Aid kit located in room 1046 Haenicke

Practice

A. Any small mechanical cut or laceration: clean thoroughly with soap and water and apply antiseptic ointment.
B. Place a Band-Aid over affected area.
C. Any cut, laceration, or bite: clean same as A.
D. Report to Sindecuse Health Center immediately if warranted.
E. During off hours in the event of bites, cuts, or lacerations go to Bronson Hospital Emergency room immediately.
F. Report animal tech accidents to facility manager (students should contact their PI for an accident report to be issued). All emergency numbers are listed next to the campus phone which is available for emergency calls and located by the facility managers’ office in the facility. Fill out University accident report located in Westerns HR Forms web site, form #311.
STANDARD OPERATING PROCEDURE: Power Outage

Principle

To provide a procedure consistent with University Policy to deal with planned and unplanned power outages so that animal care is not significantly affected.

Procedures

A. Planned electrical power shutdown

1. Prior to planned electrical power shutdown, the appropriate building coordinator is notified in writing of the proposed shutdown.

2. The building coordinator then contacts the animal facility manager and.arranges for auxiliary power to be supplied to the animal holding facilities for the duration of the outage.

B. Unplanned electrical power outage

1. The building coordinator will contact the animal facility manager of the power outage and provide an estimate time required to restore power.

2. In the event that power cannot be restored within a few hours, the facility manager through the building coordinator will then arrange for auxiliary power for the facility until normal power can be restored.
STANDARD OPERATING PROCEDURE: Disasters

Principle

To assure the safety of animal caretakers and users and maintain adequate animal care in the event of a disaster such as fire or tornado consistent with University policy for Haenicke Hall.

Procedure

A. Buildings will be evacuated or human occupants will seek shelter as appropriate for the emergency according to University Policy.

B. As soon as possible, Public Safety will notify the appropriate building supervisor who will then notify the animal facility manager of the disaster following the Research Emergency Call List. These individuals will then be responsible for contacting the appropriate animal users.

C. As soon as possible, after the disaster is over, and/or with approval from the appropriate Institutional or Public Official, animal care personnel and the consulting veterinarian should enter and inspect the animal facility and act to:

1. Treat or euthanize suffering animals as dictated by the animal use protocol or veterinarian.

2. Attend to any food or water needs of unharmed animals.

3. Remove and dispose properly of any dead animals. (Refer to SOP #17)

4. Restore the animal facility to operating conditions as soon as possible or animals should be moved to a temporary facility until appropriate repairs etc. can be made.
STANDARD OPERATING PROCEDURE: CO2 Euthanasia

Principle

To provide a means for culling or painless euthanization of animals to prevent or eliminate animal suffering. The recommended methods for the species currently housed (rodents) are carbon dioxide narcosis or non-flammable anesthetic overdose followed by some method to assure death (cervical dislocation, bilateral pneumothorax, or transection of the aorta). For additional acceptable methods of euthanasia refer to the AVMA procedure guide.

Carbon Dioxide Narcosis (Rodents)

A. Equipment

1. Carbon dioxide chamber located in procedural room 1077 Haenicke.
2. CO2 tank provided in procedural room 1077 Haenicke.
3. Gas regulator
4. Euthanasia chamber
5. Clean paper liner for chamber

B. Procedure

1. Place liner paper in the bottom of euthanasia chamber.
2. Place animals in chamber and place lid on securely. Do not prefill chamber.
3. Gas regulator must be in place on the CO2 tank. To operate open the tank valve. The regulator adjusting knob should be pre-adjusted to allow no more than 20 psi of CO2 into the chamber. Supply valve may now be opened to dispense CO2 to euthanasia chamber (small knob furthest to the left of the regulator).
4. After several minutes, check for vital signs. If persistent, reseal lid and repeat.
5. Assure death by opening thoracic cavity and performing cardiac puncture.
6. Dispose of animal remains in bags, and place in the facility discard freezer located in room 1093 Haenicke, per SOP 17
7. Repeat steps 2 through 7 until all animals have been euthanized.

Note: Place no more animals in the chamber than is comfortable to the animal. Replace paper liner in chamber after use. (Papers located in room 1077 in drawer)
STANDARD OPERATING PROCEDURE: Barbiturate Euthanasia

Principle

To euthanize animals by barbiturate or other drug overdose.

A. Equipment
   1. Syringe and needle appropriate for species.
   2. Sodium Pentobarbital solution (injected I.P. or I.V. appropriate amount for species)

B. Procedure
   1. Obtain animal and hold using recommended holding procedure for species.
   2. Inject sodium pentobarbital I.V. or I.P.
   3. When respiration stops check for other vital signs. If still present, wait 10 min. more and then inject additional anaesthetic.
   4. Assure death by opening thoracic cavity and performing cardiac puncture or cervical dislocation.
   5. Dispose of animal properly. See SOP 17
STANDARD OPERATING PROCEDURE: Animal Facilities Security Measures

Principle

To provide a secure environment for authorized animal research personnel and research animals.

Practice

A. All main entrances to animal facilities, including satellite laboratories, will be kept closed and locked whenever research animals are present in the facility.

B. Only authorized personnel will be allowed access to the animal facility. The facility manager must be notified of any new personnel requesting access or being denied access. Any investigator or student must complete CITI training prior to requesting access from the facility manager. Manager will then grant access through WMU’s DNA system.

C. Research animals in transport to and from central facilities must be in proper caging and be monitored at all times.

D. Animals being transported in and out of the facility must be signed noted on the clipboard located by the small elevator. Animals to be euthanized should be noted as such.

E. Animals must be returned to the facility within 12 hours.

F. Facility equipment must not be removed from the first floor at any time. (Exception is the rolling racks animals are housed on)

G. All animal rooms will be secured with a three-digit code, given to the investigators. Changes to the codes may be made at the facility manager’s discretion.

H. Both procedural rooms will remain open for general access. Unless specific studies require a code change. The facility manager will make all code changes.

I. Access to the facility should be limited to the person with the activated card. Sharing ID cards is prohibited and could be ground for loss of access.

J. Access will be restricted to personnel involved with a current approved

K. IACUC protocol, or working with an investigator occupying space in the animal facility. All personnel accessed will adhere to all facility policies, SOP's and successfully completed CITI training within a 3 year period.
WMUAF-24-2017


Principle

To provide a mechanism for the prompt reporting of any form of security breach in the animal facilities.

Practice

A. Contact the Department of Public Safety immediately upon a discovery of any violation of facility security. The phone number is 387-5555. Notification can be made at this number 24 hours a day 365 days a year. The facility phone number is 387-4536 or facility manager's phone number is 387-5954. All personal phone numbers are listed on the emergency phone list, including the veterinarian.

WMUAF-25-2017


Principle

To provide a mechanism for the prompt notification of University officials that a security breach has occurred in the animal facility.

Practice

A. Upon receipt of information regarding the possibility of a security breach in the university animal facilities the Department of Public Safety shall immediately notify the IACUC chairperson and the animal facility manager. Personal phone numbers are recorded at Department of Public Safety.

   Dr. Lisa Baker (IACUC chair)    Phone: University…. 387-4484
   Lynn Plew (Facility Manager)   Phone: University…. 387-5954
   Research Compliance Coordinator Phone: University…. 387-8293

B. Following an investigation of the reported incident by the Department of Public Safety the Facilities Manager will forward a written report to the following offices:

   1) IACUC Chairperson
   2) Research Compliance Coordinator
   3) Vice President for Research
   4) University President
STANDARD OPERATING PROCEDURES: Radioactive Isotope Use with Research Animals

Principle

To ensure compliance with our Nuclear Regulatory Commission license for use of radioactive materials. Specific animal controls will be determined and described in the use application by the applicant, Radiation Safety Officer (RSO), and Animal Care Specialist for every use.

Practice

General requirements must be met before using radioactive material on or in animals.

1. All investigators using radioactive material must have successfully completed the required Radiation Safety Training (Radiation Safety Training Program).
2. All investigators using radioactive material must be approved by the RSO.
3. Specific waste containers and procedures must be developed, approved and ready to implement.

General Radiation Controls for Use of Radioactive Material in Animals

1. Animals that have been administered radioactive material SHALL NOT be used for human consumption.
2. Animals must be housed in the designated radiation safety room(s).
3. Perform procedures on the animals in rooms designated for working on or with the animals.
4. Label cages containing animals that have been administered radioactive material in accordance with the Material Marking and Posting guidelines.
5. Specified in the Radiological Controls Program.
   Additional information to include on the marking/posting of the cage:
   a. Radionuclide administered
   b. Date radionuclide was administered
   c. Quantity administered in millicurie (mCi).
6. Survey frequency and type will be determined by the RSO prior to approving the use application.
7. Keep contaminated or radioactive animals, animal parts, carcasses, waste and bedding material apart from non-radioactive or non-contaminated materials.
8. Place sacrificed animals and other wastes in properly marked and inventoried containers used specifically for animal waste.
   a. Requirements for marking and inventorying radioactive wastes are in the Radioactive Waste Program.
   b. A means of preserving these wastes until disposal will be provided.
9. Contact the RSO (387-5933) to remove waste.
STANDARD OPERATING PROCEDURE: Clean Up Procedures in the Event of the Infection of Animals with Agents that Affect the Health and Safety of Animals, Personnel and the Ability to Conduct Research in a Manner Consistent with Good Scientific Practice.

Principle

In the case of certain outbreaks that are highly contagious, animals that are infected will be immediately euthanized and room(s) will be disinfected by this method to try and eliminate or isolate problem.

Practice

A. Clinical signs of health problems have been noted, and the investigator, animal facilities manager and/or veterinarian have determined that infection will affect the health and/or safety of animals or personnel or the performance of research.

B. Health symptoms will be reported to the veterinarian who will conclude if animals are infected.

C. A determination will be made as to whether the health problem is species specific or not, and all investigators involved will be notified by e-mail and/or phone by the facility manager.

D. If an investigator determines the infection will have strong barring on their study or the facilities manager and veterinarian determine that the infection is contagious enough to endanger the health and safety of animals and personnel within the facility the following steps will be taken.

1. Animals will be euthanized and disposed of (refer to SOP # 21 or #22).

2. Animal waste will be collected in autoclavable bags and sterilized by autoclaving.

3. All cages, lids, bottles, sipper tubes and equipment will be sterilized by autoclaving.

4. Racks will be disinfected thoroughly by washing with an appropriate disinfectant. If necessary racks will be disassembled and washed in a mechanical cage washer before being autoclaved.

5. The room will be cleaned with a detergent and a disinfectant. This will include walls, ceiling, doors and floors.

6. The air vent cover will be cleaned with a disinfectant and the used filter will be autoclaved and discarded. Vent filters will be replaced with a new filter.

E. Tissues may be collected and sent to a veterinarian lab for characterization of the pathogen. Immunocomb antibody test kits can be purchased for detection of mouse and rat antibodies to several viruses for future references.

Note: At the present time there have not been any problems with large-scale infections that seriously compromise the health and safety of animals or researchers at Western Michigan University. This SOP should be used in the event of a catastrophic outbreak of an infectious agent that has been determined to be seriously detrimental to the colonies health or safety, the health or safety of personnel or seriously compromise studies.
STANDARD OPERATING PROCEDURES: Pathogen Contaminated Animal Waste Disposal

Principle

Pathogen contaminated animal waste constitutes all materials associated with experimental animals used in protocols in which pathogens were utilized. Pathogen contaminated waste is separated into two basic categories: 1) "Solid Waste", i.e., feces, bedding paper, glass, needles, etc.; 2) "Dead Animals", i.e., tissues and carcasses. All pathogen-contaminated waste shall be collected and disposed of under the guidelines set forth by the Federal Government.

Equipment

A. Biohazard Bags
B. Autoclave
C. Autoclave tape

Practice

A. "Solid Waste" is collected and placed in a clear or appropriate biohazard bag and autoclaved.
B. "Dead Animals" are collected in biohazard bags and securely fastened to prevent spillage. "Solid Waste" must be kept separate from "Dead Animals", due to different storage requirements.
C. All sealed biohazard bags must be taken directly to room 1019.
   1. To autoclave "Solid Waste", place a 2-3 inch strip of autoclave tape on the bag and run all disposed articles through a 250-degree cycle.
   2. After cycle has completed, check to see if autoclave tape has changed color. The color change indicates the cycle has reached the appropriate maximum temperature.
D. All autoclaved "Solid Wastes" may now be discarded in appropriate refuse containers. All "Dead Animals" must be stored in the facility discard freezer, located in room 1093 Haenicke Hall.
STANDARD OPERATING PROCEDURES: Hazardous Materials Use with Research Animals

Principle

To insure compliance with federal regulations and guidelines in respect to the use of hazardous materials with research animals.

Practice

A. Investigators utilizing hazardous materials must have attended the "Right to Know" seminar conducted by the Environmental Health and Safety (EHA) Office.

B. All hazardous materials purchases must be monitored by the Environmental Health and Safety office. Safety Data Sheets are kept electronically by EHS.

C. Under no circumstances will hazardous materials be utilized in the Central animal facilities. Hazardous material use must be confined to designated satellite facilities arranged by the principal investigator. These satellite facilities must be approved by the IACUC committee prior to housing animals and conducting the investigation.

D. All hazardous material waste must be disposed of properly (See SOP: 28).
STANDARD OPERATING PROCEDURE: Cleaning of Ancillary Facilities Equipment

Principle

To properly sanitize the ancillary equipment in the animal facilities such as:

1) Food bins
2) Bedding bins
3) Food scoops
4) Bird transfer containers
5) Room carts

Equipment/Supplies

1) Detergent/Disinfectant solution
2) Sink or bucket
3) Sponge
4) Brush

Practice

Items listed above shall be run through the following procedures weekly or monthly.

a.) Fill bucket or sink with detergent solution following manufacturer instructions.
b.) Immerse items in detergent solution (if applicable).
c.) Wipe surfaces with sponge and/or brush to remove debris.
d.) Rinse all items with clear hot tap water until clean.
e.) All items should be dried thoroughly before use.
f.) Properly store all items.
g.) Feed and bedding containers should be cleaned per SOP #05. Initial and date cards on bins after cleaning.
STANDARD OPERATING PROCEDURE: Visitors to Animal Research Facilities

Practice

If a member of the press, a representative of an organization concerned with animal research or with animal care and use, or other interested person wishes to visit the animal research facility or any satellite facility at Western Michigan University, an appointment must first be made through the OVPR. Through that office, the Institutional Animal Care and Use Committee and Facility Manager will be notified, and a visit arranged so that appropriate supervisory personnel can conduct it. Such a visit must be conducted in a way as to not interfere with the research or instruction.
STANDARD OPERATING PROCEDURE: Care of Rana or Bull Frogs

Principle

To provide a clean and sanitary environment for Rana frogs.

Equipment

A. Aquatic tank
B. Platform or rocks
C. Moss (optional)
D. 5 gallon pail
E. Tap water
F. Crickets

Practice

A. When frogs arrive from vendor they should be removed from the shipping container and examine frogs for injury. Note any injuries or ill health on log sheet. Place frogs in tub of rested, room temperature water with a dilution of salt 6 to 20 teaspoons of salt to 4-5 gallons. Let frogs sit in dilution for 10 minutes.

B. Wash the frogs free of any of the packing materials that have kept them moist during shipping.

C. Rana Frogs: No more than 10, 3inch frogs per 40-gallon tank; Bull Frogs: 5-8 frogs per 40 gallon tank.

D. Fill 40 gallon tanks with rested (24 hours) tap water to de-chlorinate. Tip the tank so that the rocks or platform are at the high end of the tank, and put about 4 to 5 inches deep of tap water in the tank. At this time, fill 5 gallon pails and allow to set for 24 hours to allow de-chlorination and use for next water change.

E. Rocks or a platform should be placed at one end of the tank to act as a dry resting-place for the frogs. Water in the tank is deeper at one end, approximately 4-5 inches at deepest point.

F. When frogs first arrive, water should be changed daily. After a week of acclimation water should be changed every other day, or more often if need be.

G. At least once a week, frogs should be fed in a dry area to allow the frog to capture the food easily and to prevent the food organisms from drowning and fouling the water.

H. Frogs will eat almost any insect that moves above the water level and are not too large: sowbugs, flies, mealworms, crickets, caterpillars, moths, and earthworms.

I. Rocks and platforms should be clean at the time of feeding.

1. To feed, remove resting stones. Syphon water from tank and sponge out any remaining water.
2. Add enough feed/crickets (approximately 12 per frog). Allow 1 hour or more for frogs to consume live feed.

3. Remove any leftover crickets, clean tank with clear water and sponge.

4. Replace cleaned resting stones. Make sure the resting spot remain above the water level at high end of tank.

5. Replace the water in the tank at this time with the 5 gallon pails of rest water. About 4 to 5 inches deep. Refill 5 gallon pails for next water change.
STANDARD OPERATING PROCEDURE: Care of Xenopus, Laevis and Tropicalis frogs

Principle

To provide a clean and sanitary environment for Xenopus, Laevis and Tropicalis frogs (African claw frogs)

Equipment

A. Aquatic tank or plastic Nalgene cage
B. Cage top
C. Paper towel
D. Filtered tap water
E. Designated sponges
F. Carboy
G. Fish net and cup

Practice

A. Upon receiving frogs, allow shipping container to acclimate to room temperature. Tropicalis rooms are kept at a higher temperature than Laevis. When shipping container has reached room temperature, frogs can then be placed in holding tanks that are equal to room temperature. Check the condition of frogs as you place them in their holding tanks.

B. Water for the frogs should be filtered building water, with a carbon filter obtained in room 1017. Carboys need to set for 24 hours prior to use, so water temperature matches the room temps.

C. Fill the tank or cages with 2 to 4 inches of water (or enough for the frogs to be completely submerged in water while resting).

D. When cages or tanks are prepared, transfer the frogs to the clean cages gently picking the frogs up. Laevis may be transferred via net and Tropicalis via a small cup. Xenopus have a mucous film covering their skin and are extremely slippery. Have a section of paper towel handy in the event of a frog escapes your grip. Capture the frog with paper towel in hand and replace secure lid.

E. Repeat until all the frogs are individually housed.

F. Adult frogs should have the water changed twice a week or as often as the investigator or facility manager deems necessary. Frogs should be fed on a schedule that is appropriate for the species or strain. Do not over feed. Water changes should be done within 4-24 hours of feedings.

G. After transferring the frogs from the dirty to the clean cage, rinse the dirty cage with clear tap water and scrub with designated sponge. Nets may also need to be designated for different strains.

Tadpole or Young Frog care:

A. Tadpoles or young frogs should be place in filtered water that has been allowed to set for 24 hours.
B. Cleaning and feeding schedule should be the same as the adult frogs or as often as the manager or investigator requires.

C. To transfer the tadpoles a wide mouth jar or a net may be used, (take care not to injure the tadpoles with the net, as they are very sensitive to physical abuse). Young frogs may be transferred with a net.

D. Feed tadpole a pea sized drop of powdered Nasco frog brittle moistened with water to form a ball. Tadpole bites may also be used.

E. Young frogs should be fed Nasco frog brittle pellets after they have reached the stage where they have very little evidence of a tale.

F. Rinse all cages with clear tap water.

G. Do not over crowd the tadpoles or young frogs or they will not develop.

H. The water level for the small frogs should enable them to easily reach top of the water level for air (approx. 3 cm).

Note:

The adult, tadpoles and young frogs should all be maintained in a room temperature range of 18-23 degrees C. or warmer if strain of frog requires it. As in the case of Tropicalis frogs’ room temperature of 25-28 degrees C. is best.

Breeding frogs must be kept in a dark room or black out cage, until breeding has been completed.
STANDARD OPERATING PROCEDURE: Care for Snakes

Principle
To provide a clean and sanitary environment for snakes.

Equipment
A. Glass aquaria
B. Substrate
C. Hide box or moss
D. Water dish
E. Heat lamp or heat pad
F. 1% bleach and water solution
G. Lid clamps
H. Screened lids
I. Thermometer/hygrometer
J. Filtered tap water
K. Food

Practice
A. Snakes should be kept in a 10-30 gallon tank, depending on the size of the snake. Most snakes will do fine in a 10-gallon tank.
B. Snake tanks should have a screen top that can be secured with clips to prevent escape.
C. Place some form of substrate in the bottom of the tank. The best substrate that is recommended is Astroturf (which can be cleaned easily)
D. Place some type of hide box for the snake to hide in or under. Moss is also excellent for the snakes to hide in.
E. Place a water dish in the cage, filled with filtered water.
F. A thermostat should be place in the lower portion of the cage, close to the heat pad or lamp if applicable. The hot temperature in the tank should be at 75-80 degrees or for tropical snakes 81 to 90 degrees. A humidity reader should also be placed on the glass to monitor the amount of moisture in the tank. Tropical snakes require more humidity to insure good health and sheds.
G. A light timer may be used to allow the snake 12 hours of light and 12 hours of dark. Snake do not require natural sunlight to grow. In most tanks a 75-100 watt light bulb will provide adequate heat.
H. Heat pads can be used and place underneath the tank. This is where you should place your thermometer to read the high heat readings, usually on the side of the tank towards the bottom (they should be place inside the tank).

I. Usually a water dish will provide enough humidity for the average snake. If humidity is low you may want to add moss to the tank to mist in order to bring readings up.

Feeding

A. Live food should be avoided unless the snake eats fish or bugs. Small frozen mice or day old rats can be fed to most snakes i.e. Corn, Fox, Garter or Pythons. If feeding mice or rats, dust the food with a commercial vitamin before placing in the cage. Evenings are the best time to place food in the tank. If feeding live fish, place them in the water dish and allow the snake to catch them. The water dish should be cleaned frequently, usually between each feeding (if feeding fish). The best fish to use are small Gold fish, Guppies or Rosies. Frequency of feedings depends on the size and type of snake. With the exception of fish, food should be removed if not eaten within 24 hours.

Cleaning

A. Place the snake in an escape proof container while you cleaning its tank.

B. Pull out all contents, and wash with 1% bleach and water solution. Moss may be rinsed off with clear warm water and excess water squeezed out. Wash the substrate and remove any waste. Rinse everything with clear water. Try and remove as much water from substrate as possible. Use a clean sponge (no soap residue) and wipe out the inside of the tank.

C. Replace all the contents and place the snake back in its cage.

D. Replace the tank lid and secure with clips.

Note:

Snakes tanks may only need to be cleaned once a month or if there is waste in the cage.

If feeding snakes frozen mice or rats, allow the food to thaw completely before giving to the snake. It may be recommended to warm the thawed mouse in a baggy by placing in warm water. This will help to avoid intestinal problems. Pythons need to be placed in a separate container when feeding, then brought back to home tank when done. Try to avoid handling snakes after feeding to avoid them regurgitating food.
STANDARD OPERATING PROCEDURE: Care for Pigeons

Principle
To provide a clean and sanitary environment for pigeons used in research.

Equipment
A. Rolling Pigeon racks and cages
B. Clear plastic cups
C. Tall plastic pitchers
D. Rack liner papers
E. Sponge
F. Bucket
G. Antibacterial soap
H. Detergent/disinfectant soap
I. Pigeon grit and grain
J. Broom and dust pan

Practice
A. A daily check must be made on the birds. Sweep the floor when entering. Note high/low temperatures and the humidity on record sheet. Clear the Hygrometer/Thermometer when done (place thermometer face down in room to avoid bird dander). Check health appearance of each bird and note on sheet. Note the number of birds in the room.

Watering
A. All pigeons must have clean water each day. Remove the cup and pour the dirty water into a bucket, (empty the bucket down the flushing floor drain in the cage washroom, 1046 Haenicke). Clean off the metal cup holders and return the cup to its original cage. Fill the cups with deionized water. Repeat until all the pigeons have been given clean water.
B. Water cups must be removed and washed with antibacterial soap every 72 hours using designated sponge in washroom 1046. Be sure to rinse the cups thoroughly before re-filling.
Feeding

A. Unless the pigeon cage is noted with a yellow sticker, (denoting feed deprivation) pigeons with a red tag (denoting free feed) should have 3/4 of the food cup filled with stone grit, and the other 1/4 should be filled with grain. Check the grit and grain each day and replenish if applicable. Discard food if animal food or water has been fouled with waste.

B. Feed cups should be replaced every 6 to 8 weeks.

Cleaning Pigeon Cages

A. Cages should have the bottom grids scraped weekly to free any waste that has accumulated.

B. Rack liner papers should be changed (at least) every other day. Some studies may require the papers to be changed daily.
   1. When changing papers, remove the soiled papers by rolling them from one end of the rack and place in the waste container.
   2. Place rack liner papers on each shelf. Fold up the end of the paper to fit inside the end bars. Papers should extend out the front side of the shelf to help catch the falling feed and grit.
   3. Repeat until all shelves have been cleared of debris.

To Switch Racking

1. To switch the pigeons from a dirty rack to a clean one, remove the pigeons carefully by placing a tall pitcher (open end in first) into the cage and coax the pigeon in, headfirst. Open the clean cage (the corresponding cage from where it left) and place the pitcher in (open end first) and allow the pigeon to back out.

2. Transfer the tag from the dirty cage to the clean cage. Repeat this until all the pigeons have been placed in clean cages. This is the time to replace all feed and water cups.

3. Remove the dirty rack and cages to the cage wash area, room 1046 Haenick Hall. Power wash the rack and cages to remove gross waste. Individual cages will be placed in the cage washer and run on a custom (acid) cycle. Racks must be cleaned and organic materials removed with a detergent. Rinse with clear water and allow to air dry before storing in the animal facility.
STANDARD OPERATING PROCEDURE: Care for Rabbits

Principle
To provide a clean and sanitary environment for rabbits used in research.

Equipment
A. Rolling rabbit cages and racks
B. Water bottles with sipper tubes
C. Litter papers or appropriate bedding material
D. Detergent
E. Disinfectant/de-scaler
F. Sponge
G. Bucket
H. Green scratch pad
I. Vinegar and/or acid
J. Rabbit food

Practice
Feeding Rabbits
A. Feed rabbits daily unless specified by the investigator. Place food in feeders that are attached to the cages. Special diets must be noted on the cards.

B. Rabbit food must be stored in covered containers in the room, which are cleaned out a minimum of every 14 days and noted on tag located on the side of the container.

C. Unused rabbit food should be stored in the feed storage room on a pallet located in room 1093 Haenicke. Any open bags must be stored in a container with a lid. Check milling date, after 6 months food must be discarded.

Cleaning Rabbit Cages
A. Papers or bedding material under the cages must be changed daily or as needed to keep urine and feces at a minimum. Pans should be wiped with a sponge to remove excess urine, and then sprayed with vinegar or some sort of de-scaler to help remove scale. A green scratch pad should be used to remove any set on scale that may form on the pans. Wipe the pans off with a sponge and clear water. Replace
papers on each pan, either folded in half or cut so you will have four layers of papers, 2 absorbent with 2 laminate on the bottom, or enough bedding material to cover the pan.

B. Replace the pan under the cage making sure the pan is in position correctly so any urine or feces will drop onto the pan and not the cage below.

C. Repeat steps above until all the pans have been cleaned and replaced.

Switching Rabbit Cages

A. If rabbits are in the cage, move them to a clean cage or temporary holding cage. Grasp the rabbit by the scruff of the neck, (be careful not to get kicked by the rabbits hind legs) and support the hindquarters and back. Transfer to a clean cage that has been prepared. Rabbits should be put in cleaned cages a minimum of every two weeks.

B. Cages should be power washed with a detergent to remove any organic material, and then placed in the cage washer. Run the cage washer on a custom cycle with acid to remove any scale build up. Cage washer should reach a temperature of 180 degrees Fahrenheit.

C. Store clean, dry cages in the clean cage storage. Cage must be re-sanitized if not used within 30 days.

D. Water bottles should be sterilized once a week.

Make note on the daily record sheet for the rabbit room that each job has been completed on the appropriate date and initial report. Rabbit rooms should be swept each day and mopped every other day.

Rabbits should also be maintained in a temperature of 16-22 degrees Celsius.

TOC
STANDARD OPERATING PROCEDURE: Room Exhaust, Air Filter Changes

Principle
To ensure that each room has a minimum of fifteen air exchanges per hour and room vents are maintained with clean filters.

Equipment
A. 12”x12”x1” Fiberglass filter
B. Screw driver

Practice
A. Depending on the animal load in the room, filters should be changed once a quarter.
B. With a flat screwdriver turn the screw on the outside of the room vent, one half turn.
C. Open the vent cover and remove the old filter.
D. Write the full date on the new filter and initial. Place filter in the duct making sure that the printed arrow on the filter is facing towards the inside of the ductwork.
E. Secure the vent cover and turn the screw one half turn until it holds.

Note: Pigeons, rabbits and more populated rodent rooms may require the filters to be changed more often.
STANDARD OPERATING PROCEDURE: Mechanical Cage Washer Operation

Principle
To run the animal facility cage washer in a safe and efficient manner. To insure that animal equipment is cleaned in a cycle that reaches at least 180 degrees for sanitation.

Equipment
A. Cabinet cage washer
B. Processing racks
C. Temperature strips

Safety Measures
A. Caution sign for hot metal
B. Emergency stop/abort button
C. Pause button
D. Door ajar switches

Practice
A. Turn power switch "on" (green light will illuminate the switch). Pull steam lever so that it is parallel with steam pipe to allow machine to get to temperature. Steam lever is located in the mechanical room to the left of the machine.

B. Position processing racks (if used) in the cabinet.

C. Place cages, and lids on the processing rack so that jets will be able to wash all parts of the inside of the cages. All cages should have open side facing the jets.

D. Make sure both doors are pulled down all the way.
   1. Depress the start button and machine will start the cycle.
   2. Machine is programmed to run with both alkaline and acid wash. Custom selection is not necessary.

E. Cycle runs for about 20-30 minutes.

F. Allow the machine to exhaust completely and remove the cage equipment and place on the drying racks, in room 1019 Haenicke.

G. When equipment is dry, place in storage rooms.

H. At the end of the week when all washing is complete, turn steam lever to off position.

Note: A Temp-a-sure strip must be placed in first load run each day. Place the strip in a logbook after completion of the load, initial and record the date. Log sheet should be located by the machine in room 1023. If temperature strip does not turn black, then run the load again. If this still does not give you a black temp strip, then increase the temperature of the final rinse cycle.
STANDARD OPERATING PROCEDURE: Proper Use of the Facility Autoclave

Principle
To operate the autoclave in a safe and efficient manner in order to sterilize or decontaminate articles and/or equipment.

Equipment
A. Autoclave
B. Autoclave cart and rack
C. Biological indicators, temperature tape, and log book

Practice
A. Check the drain (located in the front bottom of the autoclave) for any debris. On or in one article place a strip of temperature indicator tape.
B. Place articles on the racks in the autoclave.
C. Close and secure door. (door is double hinged and needs to be pushed in on the right side first). To secure door pull the lever to the right and tighten the wheel clockwise.
D. Press "Jacket"
E. Press "Run"
F. Press "Enter"
G. If cycle needs to be changed follow the steps below:
   To change cycle to 250 degree:
   1. Main menu (will read "cycle select") press "1"
   2. Press "1"
   3. Press "9" three times
   4. Press "Run" cycle will run @ 250 degrees on a fast cycle.

   To change cycle to 270 degree:
   1. Main menu select "1"
   2. Display will read "cycle select" press "2"
   3. Press "9" four times.
   4. Press "Run" (cycle will run at 270 degree on a dry cycle).

Note: Machine will generally run on a 250-degree cycle. If the machine registers 250 degrees, skip the steps to change cycle. The facility manager or the investigator will determine cycles.

A. After cycle has completed turn the jacket off and save printed tape.

Note: Once a quarter, 2-5 biological indicator tubes should be placed in the autoclave to verify proper temperature and pressure was reached, indicating sterilization. Autoclave tapes should be placed in a logbook for reference.
STANDARD OPERATING PROCEDURE: Operation of Electric Power Washer

Principle

To operate the electric power washer in a safe and efficient manner, and to remove any gross organic material from cages, racks or facility equipment.

Equipment

1. Electric Power Washer
2. Properly ground receptacle
3. Detergent or disinfectant in spray bottle
4. Safety glasses or goggles
5. Section of garden hose (minimum 3 GPM flow)

Practice

A. Connect to properly grounded receptacle (do not use grounding adapter)
B. Attach high-pressure hose to high pressure discharge.
C. Attach trigger gun, wand assembly to hose.
D. Turn on water (never run pump dry)
E. Push reset button on the ground fault circuit interrupter (GFCI)
F. Start machine; turn on toggle switch on motor.
G. Adjust pressure from 100 PSI to 1000 PSI, 1500 PSI, and 2000 PSI by turning pressure adjustment nut (clockwise to increase, counter clockwise to decrease).
H. Prior to power washing items, spray with detergent. Follow manufacturers’ directions for chemical use.

Note: To change the variable nozzle operation to low pressure, grasp black case of variable nozzle and pull out. For high pressure operation, grasp the black case of variable nozzle, and pull in.

TOC
STANDARD OPERATING PROCEDURE: Removal of animals and or equipment from animal facility.

Principle
To properly document animal removal and sanitize transfer equipment.

Equipment
A. Approved transfer equipment i.e. rolling racks or carts.
B. Disinfectant solution
C. Facility check out sheet

Practice
A. All animals that are removed from the facility will be noted on the facility check out sheet. Note as being returned or euthanized.
B. Select "R" for rack or "A" for animals, and the number of animals removed. Provide facility room number, initials or name of person removing animals.
C. When returning animal racks or carts back to the facility, spray wheels with disinfectant located by the small elevator inside the animal facility.
D. Return rack or equipment to appropriate room.
E. Animals must not be out of the animal facility for more than 12 hours.

TOC
STANDARD OPERATING PROCEDURE: Facility employee coverage.

Principle

To ensure that daily care and observations are done and recorded, in the event of unexpected absence of facility staff.

Practice

A. The facility staff member will notify the Office of the Vice President for Research. The contact person is the Research Compliance Coordinator or the Executive Assistant.

B. The Research Compliance Coordinator will start a calling chain by contacting the Institutional Animal Care and Use Committee (IACUC) Chairperson.

C. A list of all current investigators will be given to the IACUC Chair, and updated when necessary.
STANDARD OPERATING PROCEDURE: Photography of Animals Within Facilities

Principle

To outline procedures for Vivarium Photography and appropriate acquisition and use of photographic images of animals.

Practice

A. All WMU researchers, veterinarians and facility staff are required to follow these guidelines.

B. Any use of tape recorders, video recorders, cameras, smart phones, or other forms of photography to photograph any animal or personnel within secured facilities, or of the interior of facilities maintained by WMU may only occur if approved by the Institutional Animal Care and Use Committee (IACUC) on the protocol application. If a Principal Investigator chooses to take photographs or a video recording where prior approval was not granted via the protocol, authorization may be obtained by sending a request in writing to the IACUC chairman stating the justification and safeguarding of photographs and/or video. Failure to obtain authorization prior to photographing or video recording any animal or personnel within secured facilities, or of the interior of facilities maintained by WMU, will subject the individual(s) involved to possible protocol suspension. IACUC would re-evaluate the situation prior to resuming research.

C. Photographs of animals, personnel, or facilities are to be used only for educational, diagnostic, research, or scientific publication purposes.

D. Copying or reproducing any photographs, recordings, etc. of animal, personnel within secured facilities, or of the interior of facilities maintained by WMU is prohibited without prior approval of the IACUC Chair.

E. Photographic documentation of animal model research data must adhere to the following principles:
   1. No picture should be taken without a clear understanding of what it is intended to portray.
   2. Unless specific permission is given, no student/staff/investigator should be photographed or filmed.
   3. Photo processing will be performed by on-campus resources rather than an outside service.
   4. Consideration should be made for the secure sharing, transport, and storage of negatives, tapes, disks, media cards, etc.
   5. An attempt should be made to put as much context into the shot as possible regarding humane considerations (e.g., if the animals are anesthetized or sedated, include the vaporizer or tray holding a bottle of anesthesia).
   6. If an animal is being held or restrained, the methods must be appropriate.
   7. All standard operating procedures must be followed, such as sterile technique, the wearing of masks, gloves, lab coats, etc.
   8. If there are significant issues that merit the inclusion of a higher institutional authority, the Institutional Official, the Vice President, or the legal counsel should be consulted depending on the issue under consideration.
   9. All procedures shown must be described in the approved Animal Protocol for the particular animal.
   10. Photography within the Animal Housing Areas:
       i. Attempts should be made to have clean surroundings and cages. Water bottles and feeders should be full if visible.
       ii. Facility Manager or designee must be present for all photographs in the Facility
       iii. Photography must be reviewed prior to presenting for public view.
ZOOLOGY-2017

Zoonosis = an infection or infestation which is shared in nature by man and lower vertebrate animals.

For the purposes of this presentation, "zoonotic disease" will be defined as a disease that is caused by the transmission of an organism from animal to man.

Some organisms are transmitted both ways
There are organisms, which are transmitted from animals to man and man to animals. The following are some examples of organisms, which can be transmitted both ways. Persons infected with these organisms should not come in contact with the species listed during their illness.
• Measles virus (man - nonhuman primates)
• Influenza (man - ferrets)
• Shigella (man - nonhuman primates)
• Mycobacterium (man - nonhuman primates)

SPECIAL SITUATIONS
There are times when animals are inoculated with organisms for research purposes; this species would normally not be considered a source of that organism.

Some zoonotic transmissions may occur in field research. Special PPE may apply.

Check with the primary investigator to find out what organisms are being used and which PPE and other procedures may be necessary while working with these animals.

Medical conditions that may result in immunosuppression
• Acquired immunodeficiency syndrome (AIDS)
• Cancer patients on Chemotherapy treatment
• Organ transplant patients (on immunosuppressive therapy)
• Splenectomy (spleen has been removed)
• "Pregnancy"

Follow Proper Safety Procedures
• Use Proper Personal Protective Equipment (PPE)
• Wash Your Hands
• Get Proper First Aid
• Report Injuries

Routes of organism transmission discussed in this handout
• Penetration through skin (injury) = bite, scratch, needle stick, scalpel cut, contamination of previous wound
• Direct contact to skin, mucous membranes
• Ingestion (direct ingestion of contaminated food/water is a common route; in the research environment, contaminated hands contacting the mouth, with subsequent ingestion of the organism would be the more likely route)
• Inhalation
All animals housed and maintained in Western Michigan University's Animal Facility have been purchased from reputable, Viral Antibody Free (V.A.F.), Dealers. Risks of infection are very minimal given these factors. A copy of animal health reports can be obtained from the animal facility manager.

In general, transmission of zoonotic disease from naturally infected laboratory animals is uncommon because of ongoing vendor efforts to improve the health status of animals, as well as routine periodic infection surveillance programs by facility staff.

Experimentally infected animals are a potential source of zoonotic transmission to humans, and contact with wild mice in field research may also expose humans to zoonotic agents. Animal infection surveillance programs, routine sanitation, training and personal protective equipment all have important roles in preventing zoonosis.

When all personal protection instructions are followed, the chance of infection is negligible.

**DISEASE: TETANUS**

*NAME OF ORGANISM: Clostridium tetani*

*TYPE OF ORGANISM: Bacteria*

*MAIN SOURCE: Soil and animal feces*

*MAIN ROUTE OF INFECTION: Injury (bite, scratch, cut, poke)*

*SIGNS SEEN IN INFECTED ANIMALS: Asymptomatic, muscle spasms*

*SIGNS/SYMPTOMS IN INFECTED PERSON: Muscle spasms, terminal asphyxia (suffocation)*

*HOW TO PREVENT INFECTION:*

- proper handling/restraint to prevent injury
- proper first aid
- report injury and receive medical evaluation
- vaccination
DISEASE: SALMONELLOSIS, CAMPYLOBACTERIOSIS, SHIGELLOSIS

NAME OF ORGANISM: Salmonella enteritidis
Campylobacter jejuni
Shigella flexneri

TYPE OF ORGANISM: Bacteria

MAIN SOURCE:

Salmonella
Contaminated food, water
Farm animals
Reptiles - soft shelled turtles

Campylobacter
Contaminated food and water (especially poultry)
Dog, cat
Sheep, goat

Shigella
Nonhuman primate
Dog
Cat

MAIN ROUTE OF INFECTION: ingestion of contaminated food and/or water, and contaminated hands (from contact with animals) to mouth

SIGNS SEEN IN INFECTED ANIMALS:

Salmonella
Asymptomatic
Diarrhea +/- blood, anorexia, lethargy

Campylobacter
Asymptomatic
Diarrhea +/- blood

Shigella
Asymptomatic
Diarrhea +/- blood
Anorexia

SIGNS/ SYMPTOMS IN INFECTED PERSON:
Asymptomatic, diarrhea +/- blood, abdominal pain, fever and septicemia (salmonella)

HOW TO PREVENT INFECTION:
Personal Protective Equipment (PPE)
Wash your hands
Prepare food properly

TOC
DISEASE: **LEPTOSPIRA SPP.**

**NAME OF ORGANISM:** Leptospira spp.

**TYPE OF ORGANISM:** Bacteria

**MAIN SOURCE:** Mouse

**MAIN ROUTE OF INFECTION:** Direct contact with urine, tissues, inhalation or ingestion of aerosol droplets

**SIGNS SEEN IN INFECTED ANIMALS:** Asymptomatic

**SIGNS/SYMPTOMS IN INFECTED PERSON:**
Flu-like symptoms, orchitis, rash, skin and mucosal hemorrhage, hemolytic anemia, hepatorenal failure, jaundice, encephalitis, and pneumonia

**HOW TO PREVENT INFECTION:**
- PPE
- Wash Your Hands

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DISEASE: **RAT BITE FEVER**

**NAME OF ORGANISM:** Streptobacillus moniliformis

**TYPE OF ORGANISM:** Bacteria

**MAIN SOURCE:** Rat, mouse, and other rodents

**MAIN ROUTE OF INFECTION:** Bite

**SIGNS SEEN IN INFECTED ANIMALS:** Asymptomatic

**SIGNS/SYMPTOMS IN INFECTED PERSON:**
Fever, headache, chills, rash, pneumonia, liver infection (hepatitis) heart infection (endocarditis)

**HOW TO PREVENT INFECTION:**
- Proper handling/restraint to prevent injury
- Proper first aid
- Report injury and receive medical evaluation
**DISEASE: HANTAVIRUS**

**NAME OF ORGANISM:** Bunyavirus

**TYPE OF ORGANISM:** Virus

**MAIN SOURCE:** Wild mouse

**MAIN ROUTE OF INFECTION:** Contact with infectious urine, feces and contaminated dust (field studies)

**SIGNS SEEN IN INFECTED ANIMALS:** Renal symptoms

**SIGNS/SYMPTOMS IN INFECTED PERSON:** Severe pulmonary syndrome

**HOW TO PREVENT INFECTION:**

PPE
Wash your hands

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**DISEASE: LYMPHOCYTIC CHORIOMENINGITIS VIRUS (LCM)**

**NAME OF ORGANISM:** RNA arenavirus

**TYPE OF ORGANISM:** Virus

**MAIN SOURCE:** Laboratory animals

**MAIN ROUTE OF INFECTION:** Direct contact with infectious urine, and inhalation of dust from contaminated bedding

**SIGNS SEEN IN INFECTED ANIMALS:** Asymptomatic, rough hair coat, facial edema and seizures

**SIGNS/SYMPTOMS IN INFECTED PERSON:** “Flu-like illness”, very stiff, sore neck (meningitis), nervous system signs (encephalitis)

**HOW TO PREVENT INFECTION:**

PPE
Wash your hands
**DISEASE: RINGWORM**

*NAME OF ORGANISM:* Microsporum spp, Trichophyton spp.

*TYPE OF ORGANISM:* Fungi

*MAIN SOURCE:* Human contact, laboratory animals

*MAIN ROUTE OF INFECTION:* Indirect contact with object or host

*SIGNS SEEN IN INFECTED ANIMALS:* Ring-shaped rash, itching, scaling and discomfort

*SIGNS/SYMPTOMS IN INFECTED PERSON:* Same as animal symptoms

*HOW TO PREVENT INFECTION:*

PPE
Wash your hands

**DISEASE: DWARF TAPEWORM**

*NAME OF ORGANISM:* Hymenolepsis nana

*TYPE OF ORGANISM:* Parasite

*MAIN SOURCE:* Mouse

*MAIN ROUTE OF INFECTION:* Feces

*SIGNS SEEN IN INFECTED ANIMALS:* Asymptomatic or wasting

*SIGNS/SYMPTOMS IN INFECTED PERSON:* No apparent clinical signs or nausea, anorexia, vomiting, diarrhea and agitation

*HOW TO PREVENT INFECTION:*

PPE
Wash your hands
**DISEASE: COLI BACILLOSIS**

**NAME OF ORGANISM:** Escherichia coli  
**TYPE OF ORGANISM:** Bacteria  
**MAIN SOURCE:** Vertebrates  
**MAIN ROUTE OF INFECTION:** Feces  
**SIGNS SEEN IN INFECTED ANIMALS:** Asymptomactic  
**SIGNS/SYMPTOMS IN INFECTED PERSON:** Pneumonia, urinary tract disease, watery diarrhea, abdominal pain, +/- short period of fever  
**HOW TO PREVENT INFECTION:**  
- **PPE**  
  - Wash your hands

**TOC**

**DISEASE: PNEUMOCYSTIS PNEUMONIA**

**NAME OF ORGANISM:** Pneumocystis carinii  
**TYPE OF ORGANISM:** Fungus  
**MAIN SOURCE:** Rodents, guinea pigs, rabbits, dogs, cats, cattle, sheep, swine, monkeys  
**MAIN ROUTE OF INFECTION:** Inhalation  
**SIGNS SEEN IN INFECTED ANIMALS:** Weight loss, ruffled fur, dry skin and a hunched posture  
**SIGNS/SYMPTOMS IN INFECTED PERSON:** Generally seen only in those with serious underlying disease, or suppressed immune system; pneumonia, dyspnea, nonproductive cough, moderate fever, tachypnea  
**HOW TO PREVENT INFECTION:**  
- **PPE**  
  - Wash your hands
DISEASE: **TUBERCULOSIS**

**NAME OF ORGANISM:** Mycobacterium spp.

**TYPE OF ORGANISM:** Bacterial

**MAIN SOURCE:** NHPs, cattle, birds

**MAIN ROUTE OF INFECTION:** Inhalation, ingestion, bites

**SIGNS SEEN IN INFECTED ANIMALS:** Coughing, wheezing, weight loss

**SIGNS/SYMPTOMS IN INFECTED PERSON:** Pulmonary-productive cough, fever, weight loss, fatigue, night sweats, chest pain, hemoptysis; Extrapulmonary-cervical lymphadenitis, meningitis, osteomyelitis, pericarditis, infections of most other organs

**HOW TO PREVENT INFECTION:**

PPE
Wash your hands

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DISEASE: **PASTEURELLOSIS**

**NAME OF ORGANISM:** Pasteurella spp.

**TYPE OF ORGANISM:** Bacteria

**MAIN SOURCE:** Dogs, rabbits, ruminants, cats, birds

**MAIN ROUTE OF INFECTION:** Inhalation, bite

**SIGNS SEEN IN INFECTED ANIMALS:** Most are asymptomatic but they may have a nasal discharge or “snuffles” and ruffled fur

**SIGNS/SYMPTOMS IN INFECTED PERSON:** Manifest in one or more of the following syndromes: wound infections, upper/lower respiratory tract infection, abdominal/pelvic infections, fatal sepsis

**HOW TO PREVENT INFECTION:**

PPE
Wash your hands
DISEASE: RABIES

NAME OF ORGANISM: Rabies virus

TYPE OF ORGANISM: Viral

MAIN SOURCE: Mammal

MAIN ROUTE OF INFECTION: Bite from infected animal; any salivary contamination to open skin on a human

SIGNS SEEN IN INFECTED ANIMALS: Modified behavior, stop eating and drinking, aggressive temperament

SIGNS/SYMPTOMS IN INFECTED PERSON: Incubation in humans varies, 10 days to months. May produce: nausea, vomiting, headache or mild fever. Paresthesia and pain at site of bite wound or inoculation site. Neurological changes cause furious/aggressive behavior or general paralysis. Nearly always fatal.

HOW TO PREVENT INFECTION:

PPE
Wash your hands