FITCHBURG STATE UNIVERSITY POLICY FOR THE CARE AND USE OF VERTEBRATE ANIMALS IN TEACHING AND RESEARCH

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A. INTRODUCTION

1. Purpose

Ensuring the humane care and treatment of animals used for teaching and research is an institutional responsibility that is shared by a number of distinct stakeholders at Fitchburg State University (Fitchburg State), involving both administrators and individual researchers, including students. Key to this effort is the Institutional Animal Care and Use Committee (IACUC), with members from both within and outside the University community appointed by the President as described in the *Guide for the Care and Use of Laboratory Animals (*hereafter *Guide)*. Others with critical roles are the Institutional Official, the Attending Veterinarian, and both animal care and research staff. This Policy articulates the roles and responsibilities of these stakeholders, and provides specific guidelines for meeting those obligations.

2. Applicability

This Policy applies to **all activities involving vertebrate animals** by Fitchburg State faculty, staff or students, whether the activities are performed at Fitchburg State, at collaborating institution(s), or in the field, or whether the activities are externally funded by federal, state or private grants or only locally supported by institutional funds. Investigators conducting activities involving animals shall comply with this Policy, which sets forth standards for the humane care and use of vertebrate animals.

Through pursuit and enforcement of this Policy, the University will ensure that the use of vertebrate animals in teaching and research by University staff complies with all relevant Federal, state and local laws and regulations and, in principle, conforms to the highest standards of ethical practice as applied to the use of animal subjects in specific instructional activities and research projects. In particular, this Policy conforms to the requirements of the Animal Welfare Act, administered by the U.S. Department of Agriculture (USDA), and the Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals, administered by the Office of Laboratory Animal Welfare, National Institutes of Health.

3. Responsibilities and Procedures

a. The University IACUC shall maintain records of committee activities. These records shall be available for inspection by authorized representatives of governmental agencies.
b. Faculty members having jurisdiction over animal care and use facilities are responsible for the implementation of professionally acceptable standards for the care and use of all animals within their jurisdiction and assuring that those standards are met.
c. All investigators, including students, must follow the procedures and guidelines set forth by the IACUC and additionally accept responsibility to assure actions dealing with animals will be in accordance with humane standards and the laws and regulations cited in Sections A.4 Definitions and F. References. Investigators are responsible for authorized care and use of animals by students under their supervision.
d. Standards for the construction and use of housing, service, and surgical facilities for animals shall meet those described in the *Guide* or otherwise required by the Animal Welfare Act (P.L. 89-544).
e. Transportation of animals must be in accord with state and applicable standards and promptly delivered, uncrated, and placed in the Animal Care facility.
f. Acquisition of animals shall be in accordance with state and federal laws and regulations.
g. Disposal of dead animals shall be in accordance with governmental regulations.

h. All activities involving animals for which the University bears any responsibility must be considered by the University IACUC in accordance with protocol review procedures.

4. Definitions

a. *Animal* - Any live, vertebrate animal used or intended for use in research, research training, teaching, or related purposes.

b. *Animal Facility* - Any and all buildings, rooms, areas, enclosures, or vehicles, including satellite facilities, used for animal confinement, transport, maintenance, breeding, or experiments inclusive of surgical manipulation. A satellite facility is any containment outside of a core facility or centrally designated or managed area in which animals are housed for more than 24 hours.

c. *Animal Welfare Act* – The Animal Welfare Act, or AWA, is formally known as Public Law 89-544, 1966, as amended, (P.L. 91-579, P.L. 94-279 and P.L. 99-198) 7 U.S.C. 2131 et. seq. Implementing regulations are published in the Code of Federal Regulations (CFR), Title 9, Chapter 1, Subchapter A, Parts 1, 2, and 3, and are administered by the U.S. Department of Agriculture.

d. *Animal Welfare Assurance or Assurance* - The documentation from this Institution assuring institutional compliance with this Policy, when requested by the Office of Laboratory Animal Welfare (OLAW), National Institutes of Health, prior to funding an approved grant proposal.

e. *Attending Veterinarian* - A Doctor of Veterinary Medicine with training and experience in laboratory animal science and medicine, who will serve on a consulting basis with statutory oversight responsibilities for veterinary care in the Fitchburg State Animal Care Program, including permanent membership on the Fitchburg State IACUC.

f. *Guide* - Guide for the Care and Use of Laboratory Animals, National Academy Press, 2011, Washington, D.C., or succeeding revised editions.

g. *Institution* – Fitchburg State University.

h. *Institutional Official* - An individual who signs, and has the authority to sign the Institution's Assurance, making a commitment on behalf of the Institution that the requirements of this Policy will be met. The Institutional Official bears ultimate responsibility for the Program, including allocation of resources, in coordination with both the Attending Veterinarian and the IACUC. This person will be either the President or his/her designee.

i. *Public Health Service* - The Public Health Service, or PHS, currently includes the Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, the Food and Drug Administration, the Health Resources and Services Administration, the Indian Health Service, the National Institutes of Health, and the Substance Abuse and Mental Health Services Administration.

j. *Quorum* - A majority of the members of the Institutional Animal Care and Use Committee (IACUC) in attendance, needed to conduct official business. A majority is defined as one member more than half the total members on the committee. Any official decision of the IACUC requires majority approval of those present in a quorum.

B. INSTITUTIONAL POLICIES

1. Monitoring the Care and Use of Animals – the IACUC

a. The University IACUC will provide: 1) oversight and review of all animal care and use facilities and procedures; and 2) timely certifications and reports of the humane care and use of animals as required by governmental agencies.

b. The University IACUC will consist of at least eight persons plus the Dean of the School of Health and Natural Sciences, who will serve *ex officio*, except when needed to break a tie or establish a quorum.. The voting membership will include the following:

(1) a Doctor of Veterinary Medicine with training and experience in laboratory animal science and medicine, to serve also as Attending Veterinarian;

(2) at least two faculty members, appointed by the MSCA Executive committee, who are practicing scientists, one of which is experienced in research involving animals;

(3) at least two faculty or librarian members, appointed by the MSCA Executive committee, who come from nonscientific backgrounds, ;

(4) the Environmental Health and Safety (EH&S) Officer or their designee

(5) one public member not affiliated with the University to represent general community, interests in the proper care and use of animals.

(6) one student representative appointed by Student Government Association.

The Chair will be one of the faculty members who are practicing scientists. All appointed members will serve two-year terms , except for the Attending Veterinarian, EH&S Officer, and Dean of the School of Health and Natural Sciences, who will serve as permanent members. The Chair will be responsible for keeping records of committee deliberations and issuing reports and applications for certification, as needed.

c. The IACUC shall meet at least twice per year. These meetings will usually be held once during the Fall Semester and once during the Spring Semester. Additional meetings may be held as needed, e.g., to review animal use protocol proposals. The minutes of the meetings will serve as documentation of compliance.

d. The IACUC will review at least once every six months the institution's program, using the Guide as a basis for evaluation.

e. The IACUC will inspect the animal facilities and summarize the findings using the Guide as a basis for evaluation.

f. Campus personnel (faculty, staff, or students) wishing to use animals in research or teaching shall complete the appropriate documents and submit them to the Chair of the IACUC. Guidelines (including Standard Operating Procedures (SOPs)) and forms are available in the Grant Center or on the Grant Center website (https://www.fitchburgstate.edu/resources/faculty-and-staff/grants-and-community-partnerships/institutional-animal-care-and-use-committee-iacuc).

g. Project proposals shall be submitted for approval to the IACUC and shall include complete descriptions for use of animal subjects.

h. Project proposals shall provide the following information, using the most current version of the Animal Use Protocol Application:

1) The nature and objectives of the investigation to be performed on the animal subjects
2) The scientific rationale for use of the animals
3) Justification for species and number of animals to be used
4) Assurance that unnecessary duplication will be avoided, and that suitable alternatives
5) Proposed methods to avoid or minimize pain and discomfort to the animals
6) Location of facilities for care and use of animal subjects
7) Requirements for care and use of the animal

i. The University IACUC will evaluate the application for the following:

1) Adherence to provisions and standards of applicable laws and regulations and campus policies
2) Provisions for humane care, handling, and use of animal subjects
3) Appropriate use of anesthetic, analgesic, tranquilizing and euthanizing agents
4) Proper arrangement for animal care and use facilities
5) Agreement with the following principles:

i. Procedures should be designed to yield useful results and should be based on knowledge of the disease, problem, or biology of the animal under study.
ii. Procedures should avoid all unnecessary pain and discomfort to the animals. It is therefore essential that personnel caring for and using animals be very familiar with species-specific and individual behavioral, physiologic, and biochemical indicators of pain.
iii. Persons in charge of the procedures will be prepared to terminate the procedures whenever their continuation may result in unnecessary injury or suffering to the animals.
iv. Brief physical restraint of animals for examination, collection of samples, and a variety of other clinical and experimental manipulations can be accomplished manually or by mechanical means. Such devices must be suitable in size and design for the animal being held and must be operated properly to minimize discomfort and to avoid injury to the animal. Prolonged restraint of any animal should be avoided unless essential to research objectives. Less restrictive systems, such as the tether system**,** should be used when compatible with research objectives**.**
v. Post experimental care of animals must be such as to minimize discomfort in accordance with acceptable practices in veterinary medicine.
vi. Animals that are euthanized must be treated humanely and in such a way as to ensure rapid and painless death. No animal shall be discarded until after it is dead. Attempts to donate surplus animals to other institutions or individuals for humane purposes should be made as an alternative to destruction and must be approved by the IACUC**.** Those who receive animals must first sign a statement assuming responsibility for the animals received.

2. Animal Care Personnel

a. The Attending Veterinarian has statutory oversight responsibility for veterinary care of animals used in research and teaching by Fitchburg State personnel, exercised through his/her

membership on the IACUC, regular visits to and inspections of the animal facilities, and consultation as needed with Animal Caretaking and Scientific Staffs.

b. The Animal Caretaking Staff comprises the Facility Manager, student caretakers, and active researchers, both faculty and students. The Facility Manager is a University employee who will oversee and organize the day-to-day care of animals housed in the Department of Biology and Chemistry vivarium, including supervision of animal care and use by student caretakers and investigators, in coordination with faculty investigators. The Facility Manager will have completed the institutionally required animal care and use training course, and will work closely with the Attending Veterinarian and faculty investigators to assure that all institutional policies for animal care and use are followed.
c. Student caretakers may be hired to assist the Facility Manager in providing day-to-day care of the animals. They will have completed the institutionally required animal care and use training course.
d. The Scientific Staff comprises well-qualified, experienced faculty members, and their students, who are engaged in approved use of animals in laboratory, field, or classroom settings. When students are involved as researchers, they are supervised by these faculty members, as well as by the Facility Manager when engaged in routine animal care in the absence of the faculty supervisor. Both faculty and student investigators will have completed the institutionally required animal care and use training course.
e. All Animal Care personnel will complete the institutionally required animal care and use training course, presented via the Collaborative Institutional Training Initiative (CITI) program or a similar program (any alternative programs must first be approved by the IACUC).

3. Veterinary Care

a. The Attending Veterinarian has statutory oversight responsibility for veterinary care of animals used in research and teaching by Fitchburg State personnel. Although members of the Caretaking and Scientific staffs will have routine responsibility for observing resident animals, a mechanism of direct and frequent communication should be adopted so that timely and accurate information on problems in animal health, behavior, and well being is conveyed to the Attending Veterinarian.
b. Adequate veterinary care consists of observing all animals daily, to access their health and welfare; using appropriate methods to prevent, control, diagnose, and treat diseases and injuries; providing guidance to users regarding handling, and immobilization, anesthesia, analgesia, and euthanasia; and monitoring surgery programs and post-surgical care.
c. The Attending Veterinarian will also contribute to the establishment of appropriate policies and procedures for ancillary aspects of veterinary care, such as advising on experimental models; reviewing protocols and proposals with respect to veterinary care, animal husbandry, and animal welfare; monitoring occupational health, hazard containment, and zoonosis control programs; and supervising animal nutrition, husbandry and sanitation.
d. The Attending Veterinarian will visit and inspect the animals and facilities twice per year, or once every six months where animals are held for 24 hours or more.

4. Occupational Health Program

a. **Content of Program**
Participation in the Occupational Health Program is mandatory for all faculty, staff, students and volunteers who work in University laboratory animal facilities or conduct research with

animals or animal tissues. Periodic physical examinations are advised following occupational hazards such as animal bites or exposure to hazardous biologic, chemical, and physical agents.

b. **Program Oversight**
The IACUC will oversee the implementation of the Occupational Health & Safety Program in relation to the Animal Welfare Program.

c. **Training on Zoonosis**
Zoonosis surveillance is part of an occupational health program and includes keeping records of individual work assignments, bite wounds, and unusual illnesses. Personnel are instructed to notify their supervisors of illnesses and of suspected health hazards.

d. **Personal Hygiene**
A high standard of personal cleanliness is essential. Personnel are not permitted to eat, drink, use tobacco products, or apply cosmetics in animal rooms.

5. Experimentation Involving Hazardous Agents/Chemicals.

The Chemical Hygiene Plan is designed to identify the safety practices that should be implemented when working with common hazardous chemicals found in the laboratory. These safeguards will protect laboratory workers from unsafe conditions in most situations. There are instances, however, when the physical and chemical properties, the proposed use, the quantity used or the toxicity of a substance will be such that these controls may need to be modified. This document identifies the ways in which Fitchburg State is complying with each portion of the Occupational Safety and Health Administration (OSHA) Lab Standard. An official copy of the Fitchburg State Chemical Hygiene Plan is located in the EH&S office.

a. **Policies and Procedures**
Protective devices and other safety measures consistent with current practices are used to guard against exposure to potentially hazardous biological, chemical and physical agents (CFR, 1984a, b).

b. **Monitoring**
The Environmental Health and Safety Officer is knowledgeable about hazardous agents and is appointed to evaluate safety issues. The procedures and facilities used in such studies are reviewed by both this officer and the IACUC. Formal safety programs are established to assess the hazards, determine the safeguards needed for their control, and ensure that the staff is competent and the facilities are adequate for the safe conduct of the research. Technical support is provided to monitor compliance with federal, state and local regulations and institutional biosafety policies.

6. Multiple Major Surgical Procedures

Multiple major survival surgical procedures on a single animal are discouraged. However, under special circumstances they might be permitted with the approval of the IACUC. Multiple survival surgical procedures might be justified when they are related components of a research project. Cost savings alone is not an adequate reason for performing multiple survival surgical procedures.

7. Record Keeping

At a minimum, the IACUC will maintain the following records:

a. minutes of IACUC meetings, including records of attendance, activities of the committee, and committee deliberations;

b. records of applications, proposals, and proposed significant changes in the care and use of animals and whether IACUC approval was given or withheld;

c. records of semiannual IACUC reports and recommendations;
d. Occupational Health Program surveys and documentation.

All records shall be maintained for at least three years; records that relate directly to applications, proposals, and proposed significant changes in ongoing activities reviewed and approved by the IACUC shall be maintained for the duration of the activity and for an additional three years after completion of the activity.

C. LABORATORY ANIMAL HUSBANDRY

1. Standard Care

The Attending Veterinarian and Facility Manager will design a program of Standard Care for each vertebrate species to be housed in the vivarium, in consultation with PI's, which will be implemented by Animal Caretaking Staff. This will constitute routine provision of appropriate food, water, housing, bedding and sanitation, to be employed unless otherwise instructed by the PI on an approved protocol.

2. Food

Animals should be fed palatable, non-contaminated, and nutritionally adequate food daily or according to their particular requirements unless the protocol in which they are being used requires otherwise (*Guide for the Care and Use of Laboratory Animals, 2011).* The principal investigator (PI) will define in his/her proposal to the IACUC the feeding requirements of the project, choosing either standard care or a specifically detailed alternative.

3. Water

Animals should have access to potable, uncontaminated drinking water according to their particular requirements. The PI will define in his/her proposal to the IACUC the hydration requirements of the project, choosing either standard care or a specifically detailed alternative.

4. Housing

Animal housing will be appropriate to the animal and comply with relevant regulatory guidelines. The PI will define in his/her proposal to the IACUC the housing needs of the project, choosing either standard care or a specifically detailed alternative.

The caging or housing system should be designed carefully to facilitate animal well being, meet research requirements, and minimize non-experimental variables.

The housing system provides adequate space that:

- permits freedom of movement and normal postural adjustment;
- has a resting place appropriate to the species;
- provides a comfortable environment;
- provides an escape-proof enclosure that confines animals safely;
- provides easy access to food and water;
- provides adequate ventilation;
- meets the biological needs of the animals, e.g., maintenance of body temperature, urination, defecation, and, if appropriate, reproduction;

- keeps the animals dry and clean, consistent with species requirements;
- avoids unnecessary physical restraint; and
- protects the animals from known hazards.

Caging systems are constructed of sturdy, durable materials and designed to minimize cross-infection between adjoining units. Cages have smooth, impervious surfaces that neither attract nor retain dirt and a minimum number of ledges, angles and corners in which dirt or water can accumulate. The design allows inspection of cage occupants without disturbing them. Feeding and watering devices are easily accessible for filling, changing, cleaning and servicing.

Cages and tanks are kept in good repair to prevent injury to animals, promote physical comfort, and facilitate sanitation and servicing. Particular attention is given to eliminating sharp edges and broken wires, keeping cage floors in good condition, and refurbishing or replacing rusted or other deteriorating equipment.

The social environment considers whether the animals are naturally territorial or communal and whether they will be housed singly or in groups. When appropriate, group housing is considered for communal animals. In grouping animals, population density and ability to disperse, initial familiarity among animals, and age, sex and social rank are considered. Recommendations about space, temperature and humidity, ventilation, illumination, and noise, which can be found in *Guide for the Care and Use of Laboratory Animals*, are followed.

5. Bedding and Related Ancillary Housing Materials

Rodents should be provided with bedding and nesting materials that support species-typical behavior, facilitate absorption of urine and feces and water spills, and promote thermoregulation. Non-mammalian vertebrates may also benefit from ancillary materials that provide places for hiding and sleeping, such as rocks and plants. The PI will define in his/her proposal to the IACUC the bedding and related ancillary housing needs of the project, choosing either standard care or a specifically detailed alternative.

6. Sanitation

Sanitation is the maintenance of conditions conducive to health and involves bedding change, cleaning, and disinfection. The frequency and intensity of cleaning and disinfection should depend on what is needed to provide a healthy environment for an animal. The PI will define in his/her proposal to the IACUC the sanitation needs of the project, choosing either standard care or a specifically detailed alternative.

7. Behavioral Needs

According to the Animal Welfare Act, captive animals should have the freedom to express normal species typical behavior. The various types of environmental enrichment used with the captive lab animals will depend upon the individual species under study. The PI will define in his/her proposal the behavioral needs of animals used in the project, choosing either standard care or a specifically detailed alternative.

8. Animal Identification and Records

Animal records allowing identification of animals, sources of acquisition, and methods of disposal will be maintained by the PI and made available to the IACUC upon request.

9. Provisions for Emergency, Weekend and Holiday Care

The Facility Manager will work with the animal caretakers and scientific staff to set up a schedule for daily care of animals housed in the vivarium. The PI has ultimate responsibility for care of animals governed by his/her particular animal use protocol (research or classroom), in the event that other caretakers are unavailable to fill gaps in the caretaking schedule and/or in emergencies.

D. VETERINARY CARE

1. Animal Procurement & Transportation

All animals must be acquired lawfully and, if not obtained from the wild, purchased from reliable vendors. Vendors will be evaluated and approved based upon prescribed vendor selection criteria. Generally, vendors of purpose-bred animals regularly provide information that describes the genetic and pathogen status of their animals. This information is useful for deciding on acceptance or rejection of animals, and similar data should be obtained on animals received by inter-institutional or intra-institutional transfer.

All transportation of animals, including intra-institutional transportation, should be planned to minimize transit time and the risk of zoonoses, protect against environmental extremes and physical trauma, avoid overcrowding and provide food and water when necessary. Efforts must be made to minimize as much as possible transportation-related stress to the animal(s).

Each shipment of animals will be inspected for compliance with procurement specifications, and the animals will be quarantined and stabilized according to procedures appropriate for the species and circumstances.

2. Preventative Medicine

Standard operating procedures to evaluate the health status of newly received, quarantined, animals will be determined by the Attending Veterinarian in accordance with acceptable veterinary medical practice and federal, state and local regulations.

The quarantine protocol will include reviewing documentation of quality control and animal history provided by the vendor. This information is necessary for initial screening of newly received animals and may limit the quarantine period for rodents to the time necessary for inspection on arrival. However, all newly received animals should be provided an appropriate stabilization period prior to their use to ensure that animals adapt to their surroundings and achieve physiological and behavioral stability. If the history of newly received animals is incomplete, the quarantine procedure must be more comprehensive and of sufficient duration to allow expression of diseases, including zoonoses. Physiological and nutritional stabilization and grooming, including bathing, dipping and clipping, may also be required.

Physical separation of animals by species is generally recommended to prevent interspecies disease transmission, reduce stress/anxiety due to interspecies conflict, and meet experimental requirements. Intraspecies separation is advisable when animals obtained from multiple sources differ in microbiological status. (Additional guidelines are detailed in the *Guide for the Care and Use of Laboratory Animals*).

3. Surveillance, Diagnosis, Treatment and Control of Animal Diseases

All newly received animals are screened upon arrival and quarantined as described in section D2 (above). All laboratory animals will be observed daily for signs of illness, injury or abnormal behavior by a person trained to recognize such signs. Unexpected deaths and deviations from normal must be reported promptly to the person responsible for animal disease control. Sick or injured animals must receive prompt veterinary medical care or be euthanized appropriately. Animals that are suspected of having contagious disease will be isolated from healthy animals in the colony. When an entire group or room of animals is known or believed to be exposed to an infectious agent, the group must be kept intact during the process of diagnosis, treatment and control.

Methods of prophylaxis, diagnosis, therapy and disease control will follow currently accepted practices. When necessary, diagnostic laboratory services will be used to supplement physical examination to facilitate the diagnosis of diseases. These services may include gross microscopic pathology, clinical pathology, hematology, microbiology, clinical chemistry and other appropriate laboratory procedures.

Inapparent viral infections of rodents, which can occur with mouse hepatitis virus, minute virus of mice and lactic dehydrogenase virus, can have an effect on some types of research. Researchers using rodents must be sensitive to signs and symptoms associated with such infections. If an infection is suspected, the group must be kept intact but appropriately isolated from other susceptible animals.

4. Anesthesia and Analgesia

The proper use of anesthetics, analgesics, and tranquilizers in laboratory animals is necessary for both humane and scientific reasons. The choice and use of the most appropriate drugs are matters for the Attending Veterinarian's professional judgment. The Attending Veterinarian will provide research personnel with guidelines and advice concerning choice and use of these drugs. Muscle relaxants or paralytic drugs (e.g., succinylcholine or other curariform drugs) are not anesthetics. They must not be used alone for surgical restraint, although they can be used in conjunction with drugs known to produce adequate analgesia.

If a painful procedure must be conducted without the use of an anesthetic, analgesic, or tranquilizer -- because such use would defeat the purpose of an experiment -- the procedure must be approved by the IACUC and supervised directly by the responsible investigator.

5. Survival Surgery and Post-Surgical Care

The following procedures apply to both non-rodent mammalian and rodent species:

a. Aseptic surgery will occur only in facilities intended for that purpose. These facilities will be maintained and operated to ensure cleanliness by trained personnel. Surgery will be performed or directly supervised by trained, experienced personnel. Training in aseptic surgical technique will be provided for those who require it.
b. Aseptic technique will be used on most animals including rodents that undergo major survival surgery. This technique includes wearing of sterile surgical gloves and facemasks and clean gowns or lab coats; use of sterile instruments; and preparation of an aseptic surgical field. Major survival surgery is defined as any surgical intervention that penetrates a body cavity or has the potential for producing a permanent handicap in an animal that is expected to recover. Survival surgery on rodents does not require a special facility but should be performed using sterile instruments, surgical gloves, and aseptic procedures to prevent post-surgical infections.
c. Appropriate facilities and equipment must be used for post-surgical care. Post-surgical care includes observing the animal to ensure uneventful recovery from anesthesia and surgery; administering supportive fluids, analgesics, and other drugs as required; providing adequate care for surgical incisions; and maintaining appropriate medical records. Equipment and supply items that can be helpful for intensive care include heating pads, vaporizers, vacuum equipment, respirators, cardiac monitors, and oxygen. Surgical recovery must be monitored by trained personnel.
d. Minor surgical procedures, such as wound suturing and peripheral vessel cannulation, may be performed under less stringent conditions when they are performed in accordance with standard veterinary practices.

6. Euthanasia

Euthanasia, the procedure of killing animals rapidly and painlessly, will be performed by trained personnel using acceptable techniques in accordance with institutional policies and applicable laws. The method used should not interfere with postmortem evaluation.

Techniques for euthanasia generally follow current guidelines established by the American Veterinary Medical Association Panel on Euthanasia (AVMA, 1978). Other methods must be reviewed and approved by the Attending Veterinarian. Acceptable methods of euthanasia are those that initially depress the central nervous system to ensure insensitivity to pain (Canadian Council on Animal Care, 1980). Thus, anesthetic agents are generally acceptable and animals of most species can be killed quickly and humanely by intravenous or intraperitoneal injection of an overdose of barbiturates. Other methods may be used for euthanasia of anesthetized animals because the major criterion for humane treatment has been fulfilled (Lucke, 1979).

Every attempt will be made to euthanize animals in a manner that minimizes reactions among other living animals. Proper euthanasia technique must include a follow-up examination to confirm the absence of a heartbeat, which is a reliable indicator of death. Monitoring respiration is not sufficient because some animals (particularly under deep carbon dioxide anesthesia) can maintain a heartbeat after visible respiration has ceased, making eventual recovery possible.

E. PHYSICAL PLANT

1. Arrangement and Condition of Facility

Animal facilities will be designed and constructed in accord with all applicable state and local building codes. Good animal management and human comfort and health protection require separation of animal facilities from personnel areas, such as offices, and conference rooms. Careful planning would make it possible to place animal housing areas next to or near research laboratories but separated from them by barriers, such as entry locks, corridors, or floors. Animals should be housed in facilities dedicated to or assigned for that purpose and not be housed in laboratories merely for convenience. The Department of Biology and Chemistry vivarium has been designed and built with these considerations in mind, following the specifications and recommendations found in the Guide.

F. REFERENCES

1. General Policies

a. Animal Welfare Act as Amended (7 USC, 2131-2156)
b. Guide for the Care and Use of Laboratory Animals, National Academy Press, 8th edition, 2011, Washington, D.C., or succeeding revised editions.
c. Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals, Revised August, 2002.
d. DHEW and PHS Grants Administration Manuals, Chapter 1-43 Animal Welfare, and any succeeding revisions.
e. Applicable provisions and regulations of the Massachusetts Department of Public Health.
f. Applicable provisions and regulations of the Marine Mammal Protection Act of 1972,
g. P.L. 92-522, and any succeeding amendments.
h. Applicable provisions and regulations of the Endangered Species Act of 1973, P.L. 93-205, and any succeeding amendments.

2. Occupational Health Program

The mission of EH&S Office is to provide assistance, oversight and technical consultation to the University community on all occupational and general health, environmental and safety issues with the goal of ensuring a safe and healthful environment for employees, students and the visiting public.

There are dozens of environmental health and safety regulations and codes at the federal, state, and local levels. It is essential that Fitchburg State understands not only which regulations and codes apply to Fitchburg State activities but also what these regulations specifically require. The EH&S Office will maintain a comprehensive listing of applicable regulations and codes that includes a summary of the regulations, and relevant regulatory citation. Changing activities and operations at Fitchburg State over time will change how regulations and codes apply. Likewise, as new EH&S laws and local ordinances are adopted and new regulations are promulgated, regulatory applicability and impact on the University will change. The EH&S Office serves as a resource to track regulatory developments by subscribing to EH&S newsletters and regulatory bulletins, attending EH&S conferences and seminars, monitoring agency web sites, and participating in agency advisory committees. The EH&S Office will also coordinate programs to train Fitchburg State employees on regulatory requirements.

3. Environmental Health & Safety Policies

Fitchburg State encourages and supports all programs, which promote safety, good health and well- being of faculty, staff, students, and visitors. Fitchburg State is committed to providing a safe and healthful environment for all members of the Fitchburg State community and to reducing injuries and illness to the lowest possible level. To assist academic institutions and businesses in enhancing the safety of laboratory personnel, OSHA published standard 29 CFR 1910.1450, "Occupational Exposure to Hazardous Chemicals in Laboratories". This regulation, known as the "Lab Standard", is designed to protect laboratory personnel from potential hazards associated with the use of laboratory chemicals. Refer to Fitchburg State Chemical Hygiene Plan.

4. Hazardous Agents Policies

Fitchburg State is committed to protecting the health, safety, and welfare of faculty, staff, students, and the public and to protecting the environment through a comprehensive hazardous substances management program. The elimination of dangerous combinations of hazardous chemicals in storage, the elimination of hazardous accumulations of unwanted substances, the improvement of chemical storage conditions, and the prevention of inappropriate disposal of chemicals through proper handling and disposal of hazardous wastes greatly improves overall safety, reduces potential liability expenses, and protects the environment.

A comprehensive and effective hazardous substances management program, including hazardous waste reduction (toxics use reduction), can only be achieved through control of hazardous substances from the time of purchase through waste generation and final disposal (cradle-to-grave). Proper and complete documentation must be practiced at every stage, to promote safety, to meet legal requirements, to reduce liability, and to provide for the effective management of hazardous wastes.