

Guidelines for General Species Environmental Enrichment

This document provides the NIH Intramural Animal Care and Use Programs with a generic environmental enrichment framework for developing their own plans. This example is only a starting point, and each Institute/Center (IC) should develop an individualized plan to address and balance the enrichment needs of their animal species with the unique requirements of their research programs. For USDA regulated species each IC will develop an individualized plan as specified in the Animal Welfare Act Regulations (AWAR). Two supplemental documents, 'Environmental Enrichment Strategies for Rodents in the Laboratory', and 'Strategies for Environmental Enrichment (Behavioral Management) of Primates', accompany this document for additional specific guidance regarding enrichment recommendations for rodents or non-human primates.

Indicators of Well-being

- 1) Physical Well-being
 - a) Minimal illness and injury
 - b) Normal weight gain and food consumption
- 2) Psychological Well-being
 - a) Displaying a range of species-typical behavior
 - b) Low levels of aberrant behavior
 - c) Appropriate response to challenges or stressors

An integrated approach to behavioral management should include:

- 1) Environmental Enrichment
 - a) Elements of enrichment
 - b) Implementation processes
- 2) Behavioral Management
 - a) Identifying and treating animals in distress
 - b) Record keeping
- 3) Involvement of all animal facility personnel including veterinary, animal care, facility management, and behavioral staffs

Environmental Enrichment is the provision of stimuli that encourage species appropriate behavior and satisfy an individual animal's physical and psychological needs. (*NIH Division of Veterinary Resources (DVR) Environmental Enrichment Plan, 2013*)

- 1) Modifying a captive animal's environment to provide it with greater range of behavioral opportunities and the ability to cope with stressors
- 2) Enhancing species-appropriate behavior and activities
- 3) Increasing behavioral choice
- 4) Encouraging appropriate responses to environmental challenges (reducing fear and chronic distress)

It is critical that an Enrichment Plan takes into account the natural histories and normal behavior of the species for which it is designed.

- 1) Foraging behavior

- 2) Territorial versus nomadic
- 3) Social system
- 4) Environmental Ecology

Types of Enrichment

- 1) The best enrichments are response-contingent and they change depending on how an animal interacts with them
- 2) Social
 - a) Types of Social Enrichment
 - i) Sensory contact (visual, auditory, olfactory)
 - ii) Partial contact with individuals (grooming panels, intermittent social access)
 - iii) Full unrestricted access with multiple conspecifics
 - iv) Continuous pair or group housing
 - v) Positive interactions with humans where appropriate by species
 - b) Considerations for social enrichment
 - i) Species
 - ii) Individual animals' previous social histories
 - iii) Protocol limitations
 - iv) Housing limitations
 - v) Risk assessment
 - vi) Plan of action when fighting occurs
 - vii) Acceptable amount of enrichment
- 3) Structure/Substrate
 - a) Bedding material
 - b) Raised surfaces
 - c) Visual blocks
 - d) Nest boxes, huts, tubes
 - e) Swings
 - f) Amount of usable space
- 4) Manipulanda
 - a) Toys
 - b) Puzzles
- 5) Novel Foods
 - a) In their natural environments, most laboratory species spend a majority of their day searching for a variety of foods
 - b) Types of Novel foods
 - i) Foods that are time consuming
 - ii) Foods that are highly desirable
 - iii) Novel distribution of food
- 6) Animal Training

Positive reinforcement training provides animals with "options" and ways to cope with stressors of laboratory

Documentation of the Enrichment Program

The documentation requirements regarding plans for the appropriate exercise for dogs and provisions for environmental enhancements adequate to promote the psychological well-being of non-human primates are well described in the USDA Animal Welfare Act Regulations, Title 9 CFR, Chapter 1, Subchapter A – Animal Welfare. The relevant portions of the regulations are excerpted below and are available on-line at: <http://www.gpo.gov/fdsys/pkg/USCODE-2012-title7/html/USCODE-2012-title7-chap54.htm>

Enrichment programs and plans for non-regulated species should be documented according to facility specific standard operating procedures.

NOTE: The information in this document contains excerpts from the published regulations and standards in 9 CFR, Chapter 1, Subchapter A- Animal Welfare, Parts 1 – 4. Interested readers are encouraged to access the current USDA documents directly for the complete text.

Part 3 - Standards

Subpart A - Dogs and Cats.

Section 3.8 Exercise for dogs.

Dealers and exhibitors and research facilities must develop, document, and follow an appropriate plan to provide dogs with the opportunity for exercise. In addition, the plan must be approved by the attending veterinarian. The plan must include written standard procedures to be followed in providing the opportunity for exercise. The plan must be made available to APHIS upon request and, in the case of research facilities, to officials of any pertinent funding Federal agency. The plan, at a minimum, must comply with the conditions and requirements set forth in section 3.8 (a) (b) and (c). (Sect.3.8).(d)

Exemptions.

(1) If, in the opinion of the attending veterinarian, it is inappropriate for certain dogs to exercise because of their health, condition, or well-being, the dealer or exhibitor may be exempted from meeting the requirements of this section for those dogs. Such exemption must be documented by the attending veterinarian and, unless the basis for the exemption is a permanent condition, must be reviewed at least every 30 days by the attending veterinarian. (Sect.3.8 (d)(1)).

(2) A research facility may be exempted from the requirements of this section if the principal investigator determines for scientific reasons set forth in the research proposal that it is inappropriate for certain dogs to exercise. Such exemption must be documented in the Committee-approved proposal and must be reviewed at appropriate intervals as determined by the Committee, but not less than annually. (Sect.3.8 (d)(2)).

(3) Records of any exemptions must be maintained and made available to USDA officials or any pertinent funding Federal agency upon request. (Sect. 3.8. (d)(3)).

Subpart D - Nonhuman Primates.

Section 3.81 Environment enhancement to promote psychological well-being.

Dealers, exhibitors and research facilities must develop, document, and follow an appropriate plan for environment enhancement adequate to promote the psychological well-being of nonhuman primates. The plan must be in accordance with the currently accepted professional standards as cited in appropriate professional journals or reference guides, and as directed by the attending veterinarian. This plan must be made available to APHIS upon request, and, in the case of research facilities, to officials of any pertinent funding agency. The plan must address the requirements set forth in section 3.81 (a)(b) (c) and (d). (Sect. 3.81).

Exemptions

(1) The attending veterinarian may exempt an individual nonhuman primate from participation in the environment enhancement plan because of its health or condition, or in consideration of its well-being. The basis for exemption must be recorded by the attending veterinarian for each exempted nonhuman primate. Unless the basis for exemption is a permanent condition, the exemption must be reviewed at least every 30 days by the attending veterinarian. (Sect. 3.81 (e)(1)).

(2) For a research facility, the Committee may exempt an individual nonhuman primate from participation in some or all of the otherwise required environment enhancement plans for scientific reasons set forth in the research proposal. The basis of the exemption shall be documented in the approved proposal and must be reviewed at appropriate intervals as determined by the Committee, but not less than annually (Sect.3.81 (e)(2)).

(3) Records of any exemptions must be maintained by the dealer, exhibitor or research facility and must be made available to USDA officials or officials of any pertinent funding Federal agency upon request. (Sect.3.81 (e)(3)).

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