

**Chapter 1 -- Animal and Plant Health Inspection Service,  
Department of Agriculture**

**PART 3 -- STANDARDS**

**Subpart A -- Specifications for the Humane Handling, Care,  
Treatment, and Transportation of Dogs and Cats**

**FACILITIES AND OPERATING STANDARDS**

**CLEANING AND DISINFECTION**

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The importance of proper care and the time involved make cleaning a major aspect of the daily duties of the orangutan caregiver. It is essential to promoting good health and deterring contamination of living areas and food items. All areas should be cleaned as required by United States Department of Agriculture (USDA) regulations and as often as needed to prevent excessive accumulation of feces, food waste and odors, and to reduce exposure to pathogens and pests.

**OUTDOOR EXHIBITS**

The method of cleaning outdoor exhibits will vary with the type of substrate. Natural outdoor exhibits with dirt or other absorbent substrates must be spot-cleaned on a regular basis (Appendix 1 Reference 2). This will ensure that the animals can avoid contact with feces and food waste which will reduce the numbers of pathogens and pests (Appendix 1 Reference 6). The frequency of cleaning will depend on the exhibit size and the number of animals. Porous materials such as rope, fire hose, or burlap should be frequently replaced or disinfected with steam (Appendix 1 Reference 1).

**INDOOR ENCLOSURES**

Daily cleaning of indoor enclosures is required by the USDA. Nesting materials should be checked routinely for urine and feces and regularly replaced. If the nesting materials are dry and clean they can be reused.

Routinely providing new nesting material for the animals promotes species typical behavior. Enclosures should be stripped of all bedding and thoroughly cleaned and disinfected a minimum of once every two weeks (Appendix 1 Reference 7). It is desirable to allow these areas to dry before clean bedding is added. Orangutan enclosures often accumulate a buildup of body oils on walls, enclosure barriers and climbing structures. Commercial degreasers (Appendix 2) can effectively and easily clean this buildup. Indoor enclosures should be cleaned as often as necessary to prevent excessive accumulation of dirt, oils and mineral buildup and to remove all organic materials. Periodic power washing, using a mechanical system which highly pressurizes water, is recommended for all hard surfaces.

## **DISINFECTION**

Disinfection of enclosures is vital to the physical well-being of orangutans (Yerkes 1925; Maple 1980). Spot-cleaning and hosing only remove the visible organic matter. Disinfection should remove all organic matter and bacteria. This can be accomplished by the proper use of chemical disinfectants. Adequate ventilation is essential when using any type of cleaning or disinfecting chemical (Appendix 1 References 3 and 5). Disinfectant preference can vary widely, but is based on availability, cost and disinfecting qualities. A good source for evaluating disinfecting chemicals are material safety data sheets (MSDS). These sheets, available from the manufacturer, list all known health, safety and physical data about the product. Note: chemical disinfectants can alter medical test results of urine collected from an enclosure substrate. Your veterinarian should be consulted in choosing the appropriate disinfectant and collection method.

Steam cleaning utilizes a mechanical system that heats and pressurizes water into steam. Steam temperature should reach over 300 degrees Fahrenheit to be an effective disinfectant for hard surfaces and porous materials such as fire hose and rope.

Disinfecting cleaning tools is important. It is recommended that separate cleaning tools are used for each group.

## **POOLS AND MOATS**

Pools and moats should be regularly cleaned to ensure water that is safe for the animals to drink. The cleaning schedule will vary dependent on animal use and algae growth. Algacides may help alleviate the need for frequent cleaning in warm weather. All chemical products should be approved by your veterinary staff for animal safety.

and effectiveness. Power and steam cleaning pool and moat surfaces works well, especially if the surfaces are textured.

## **BEHAVIORAL ENRICHMENT DEVICES**

Zoos have developed enrichment programs to promote the psychological well-being their animals and to comply with USDA regulations. Enrichment devices should be regularly cleaned and disinfected or replaced.

## **CAREGIVER WORK AREAS**

Work areas including kitchen and food storage areas surrounding the exhibit and holding enclosures should be regularly cleaned according to USDA requirements. For example, monkey chow has to be kept in a covered container and toxic chemicals may not be kept in food preparation or animal holding areas (Appendix 1 Reference 4).

## **PEST CONTROL**

Pest control is an important aspect of animal health and is required by the USDA (Appendix 1 Reference 8). Rodents and cockroaches can carry organisms detrimental to apes (Fiennes 1987). A multifaceted program is the most effective. Screening openings and filling cracks in your facility will help prevent entry of rodents and insects, as well as eliminating breeding and refuge sites. Excess clutter should be disposed of and organic trash should not be allowed to accumulate. Hormonal treatments for cockroaches have proven effective for long term control when used in conjunction with pesticides at the Little Rock Zoological Park (Anne Rademacher and Bruce Roberts, personal communication). These hormones can be used inside animal enclosures safely (See Appendix II). Application of pesticides should be performed by trained personnel and should be documented. Various methods of trapping rodents as well as rodenticide chemicals can be an effective means of vermin control. Your veterinary staff should always be consulted for pest control recommendations.

## **PROTOCOLS**

Written standards of operating procedures should be developed for cleaning your facility. Methods, products, and frequency of cleaning should be included in the protocol. Personnel should be trained to follow these protocols to maintain a consistent routine throughout the animal's life span and to provide optimal care. Products should be evaluated routinely for their effectiveness, the specific needs of the collection and the safety of the staff and animals by veterinarians.

Routine health screening, fecal cultures and parasite checks can help determine the effectiveness of these protocols.

## REFERENCES

- Fiennes, R. 1967. *Zoonoses of Primates*. London: Wiedenfeld and Nicolson.
- Maple, T. 1980. *Orang-Utan Behavior*. New York: Van Nostrand Reinhold.
- Yerkes, R.M. 1925. *Almost Human*. New York: The Century Company.

## APPENDIX I

### ANIMAL AND PLANT HEALTH INSPECTION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, SUBCHAPTER A, SUBPART D: SPECIFICATIONS FOR THE HUMANE HANDLING, CARE, TREATMENT AND TRANSPORTATION OF NONHUMAN PRIMATES

#### REFERENCE 1- 3.75 (C) (2) Maintenance and replacement of surfaces

All surfaces must be maintained on a regular basis. Surfaces of housing facilities- including houses, dens, and other furniture-type fixtures and objects within the facility- that cannot be readily cleaned and sanitized, must be replaced when worn or soiled.

#### REFERENCE 2- 3.75 (C) (3) Cleaning

Hard surfaces with which nonhuman primates come in contact must be spot-cleaned daily and sanitized in accordance with 3.84 of this subpart to prevent accumulation of excreta or disease hazards. If the species scent mark, the surfaces must be sanitized or replaced at regular intervals as determined by the attending veterinarian in accordance with generally accepted professional and husbandry practices. Floors made of dirt, absorbent bedding, sand, gravel, grass, or other similar material, and planted enclosures must be raked or spot-cleaned with sufficient frequency to ensure all animals the freedom to avoid contact with excreta. Contaminated material must be removed or replaced whenever raking and spot cleaning does not eliminate odors, diseased, insects, pests, or vermin infestation. All other surfaces of housing facilities must be cleaned and sanitized when necessary to satisfy generally accepted husbandry standards and practices. Sanitization

may be done by any of the methods provided in 3.84 (b)(3) of this subpart for primary enclosures.

#### REFERENCE 3- 3.75(d) Water and electric power

The housing facility must have reliable electric power adequate for heating, cooling, ventilation, and lighting, and for carrying out other husbandry requirements in accordance with the regulations in this subpart. The housing facility must provide running potable water for the nonhuman primates' drinking needs. It must be adequate for cleaning and for carrying out other husbandry requirements.

#### REFERENCE 4- 3.75(e) Storage

Supplies of food and bedding must be stored in a manner that protects the supplies from spoilage, contamination, and vermin infestation. The supplies must be stored off the floor and away from the walls, to allow cleaning underneath and around the supplies. Food requiring refrigeration must be stored accordingly, and all food must be stored in a manner that prevents contamination and deterioration of its nutritive value. Only the food and bedding currently being used may be kept in animal areas, and when not in actual use, open food and bedding supplies must be kept in leakproof containers with tightly fitting lids to prevent spoilage and contamination. Substances that are toxic to the nonhuman primates but that are required for normal husbandry practices must not be stored in food storage and preparation areas, but may be stored in cabinets in the animal areas.

#### REFERENCE 5- 3.76(b) Ventilation

Indoor housing facilities must be sufficiently ventilated at all times when nonhuman primates are present to provide for their health and well-being and to minimize odors, drafts, ammonia levels, and moisture condensation. Ventilation must be provided by windows, doors, vents, fans, or air conditioning. Auxiliary ventilation, such as fans, blowers, or air conditioning, must be provided when the ambient temperature is 85°F (29.5°C) or higher. The relative humidity maintained must be at a level that ensures the health and well-being of the animals housed, as directed by the attending veterinarian, in accordance with generally accepted professional and husbandry practices.

#### REFERENCE 6- 3.84(a) Cleaning of primary enclosures

Excreta and food waste must be removed from inside each indoor primary enclosure daily and from underneath them as often as necessary to prevent an excessive accumulation of feces and food waste, to prevent the nonhuman primates from becoming soiled, and to reduce disease hazards, insects, pests, and odors. Dirt floors, floors with absorbent bedding, and planted areas in primary enclosures must be spot-cleaned with sufficient frequency to ensure all animals the freedom to avoid contact with excreta, or as often as necessary to reduce disease hazards, insects, pests, and odors. When steam or water is used to clean the primary enclosure, whether by hosing, flushing, or other methods, nonhuman primates must be removed, unless the enclosure is large enough to ensure the animals will not be harmed, wetted, or distressed in the process. Perches, bars, and shelves must be kept clean and replaced when worn. If the species of the nonhuman primates housed in the primary enclosure engages in scent marking, hard surfaces in the primary enclosure must be spot-cleaned daily.

REFERENCE 7- 3.84(b)(2) Sanitization of primary enclosures and food and water receptacles

Indoor primary enclosures must be sanitized at least once every 2 weeks and as often as necessary to prevent an excessive accumulation of dirt, debris, waste, food waste, excreta, or disease hazard, using one of the methods prescribed in paragraph (b)(3) of this section. However, if the species of nonhuman primates housed in the primary enclosure engages in scent marking, the primary enclosure must be sanitized at regular intervals determined in accordance with generally accepted professional and husbandry practices.

REFERENCE 8- 3.84(d) Pest control

An effective program for control of insects, external parasites affecting nonhuman primates, and birds and mammals that are pests, must be established and maintained so as to promote the health and well-being of the animals and reduce contamination by pests in animal areas.

## **APPENDIX II**

### **Product Information**

Hormonal treatments for cockroaches have been used effectively at the Little Rock Zoo. The products used were:

Gencor and Gentrol, available from Professional Pest Management, A Division of Zoecon Corporation, Dallas TX, 75234.

### **Product Survey Results**

A survey was sent to member institutions on the cleaning products they use and general comments about the products. The following products were the most widely used. The number following each product is the number of institutions that use them.

A-33, (by Airkem/ Ecolab), 8

A-500, 2

Bleach, 21

Breakup, (by Johnson Wax), 4

Chlorine, 4

Degreaser, 4

Dishwashing Liquid, (as a degreaser), 2

Glass Cleaner, 2

HTH, 2

Laundry Detergent, 3

Unicide (#s 128 & 256), 4

The following products were used by one institution each. Comments are in parenthesis.

Ajax

Alphacide (a disinfectant)

Ammonia

Alkyl-dimethyl benzyl ammonium chloride (a disinfectant)

Alkyl-dimethyl ethylbenzyl ammonium chloride (a disinfectant)

Attack A

Cardinal Chemical Systems (glass and hard surface cleaner)

Cherry-O (odor control)

Clean QWick (by Procter & Gamble, all purpose cleaner)

Dalco Window Cleaner

Formula 260 (by Rochester-Midland)

Germ-O-Solu II (by Rochester-Midland)

Hi-Tor Cleaner

Kitchen Cleanser

Lemon "10" (a disinfectant)

Lift Away (a degreaser)  
Lime Away (for glass and urine scale)  
Lime-Sol (helps with water spots)  
Maintex  
Master Kleen  
Mical  
One Stroke  
Orange Plus (hydro citrus cleaner/degreaser)  
Parvo Plus  
Quinticare  
125 Sanox (blue star cetemigal)  
Spic and Span  
Spritz  
Sundry 44  
Tectrol  
Tergiquat (as disinfectant only)  
Trend Detergent  
Triad II (by SC Johnson)  
Tri-Quat  
Vetocide  
Vinegar  
Virex