
Flaws in Federal Regulations Pertaining to the Welfare of Primates Kept in Research Institutions

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Federal welfare regulations for primates kept in research laboratories fail (1) to include recommendations pertaining to the legal requirement of the avoidance of stress and unnecessary discomfort during handling procedures, (2) to specify how the legally required "uniform illumination" can be achieved in the prevailing double-tier caging system, (3) to require sufficient space for caged primates to make "social adjustments", (4) to define the ad hoc created term "psychological well-being", but they (5) include the clause that the useless space beneath too low resting surfaces can be counted as part of the floor space.

The legal standards of the housing, care, handling and treatment of nonhuman primates are formulated in the Animal Welfare Regulations [Regulations] which are enforced by the United States Department of Agriculture (USDA, 2002). Many of these standards are progressive, but there are a flaws that make their translation into animal welfare benefits problematic.

HANDLING PROCEDURES

The handling of primates shall be done "in a manner that does not cause .. behavioral stress, physical harm, or unnecessary discomfort" (§2.38). The Regulations fall short of promulgating rudimentary standards for the accomplishment of this important directive. Restraint is the handling procedure that has the greatest animal welfare relevance. Subjects are forcibly restrained during almost all hands-on procedures. The Canadian Guide to the Care and Use of Experimental Animals reminds that "physiological, biochemical and hormonal changes occur in any restrained animal .. restraint should [therefore] only be invoked after all other less stressful procedures have been rejected as alternatives" (Canadian Council on Animal Care, 1993, p. 95). Training nonhuman primates to cooperate, rather than resist during procedures is such an alternative (Baserville, 1999; Laule, 1999; Prescott & Buchanan-Smith, 2003; Young & Cipreste, 2004). The International Primatological Society admonishes that "restraint procedures should be used only when less stressful alternatives are not feasible. .. Primates of many species can be trained for sample procedures .. such training is advocated whenever possible" (International Primatological Society, 1989, p. 16). The Home Office points out that "the least distressing method of handling is to train the animal to co-operate in routine procedures" (Home Office, 1989, p. 18). The US Guide for the Care and Use of Laboratory Animals does not explicitly recommend alternatives to restraint but at least mentions that "nonhuman primates, and other animals can be trained, through use of positive reinforcement, to present limbs or remain immobile for brief procedures" (National Research Council, 1996, p. 11).

UNIFORM ILLUMINATION

Lighting "must [sic] be uniformly diffused" (§3.77). The International Guidelines for the Acquisition, Care and Breeding of Nonhuman Primates also recommends that "illumination should be uniform" (International Primatological Society, 1989, p. 12). This is a prerequisite to exclude differences in light quantity [distance to light source] and light quality [direct light versus light reflected from walls] possibly affecting research data. There is a general consensus that the number of research subjects needed to achieve statistically significant results can be reduced by eliminating extraneous variables that have the potential of influencing data variance (Home Office, 1989). Illumination is such a variable (Mulder, 1971; Ott, 1974; Weihe, 1976; Clough, 1982; Heger, Merker & Neubert, 1986).

The majority of primates are small enough to be caged in a double-tier arrangement. This system prevails because it allows the holding of maximum numbers of animals in one room, but it makes it problematic to provide illumination conditions that are the same for all subjects. At least half of the room's animals will live in the shade cast by the cage row above them. Bottom-row cages may be so dark that flashlights are needed to properly identify their occupants and to assure adequate cleaning of dark corners (Reasinger & Rogers, 2001). This situation does not "aid in maintaining good housekeeping practices, adequate cleaning, [and] adequate inspection of animals" as required by the Regulations (§3.76).

The regulatory requirement of uniform illumination is important, yet unrealistic as it ignores the fact that uniform illumination cannot be provided in the conventional double-tier caging system unless a facility has only a few animals and can afford special light fixture arrangements for each cage.

MINIMUM SPACE REQUIREMENTS

Minimum space requirements are defined as "sufficient space .. to make normal postural adjustments with freedom of movement" (§3.80). No special provision is included for primates living in a social setting. Subjects need sufficient space beyond the bare minimum for postural adjustments to also make social adjustments so that conflicts, social distress and possible injuries resulting from overt aggression can be minimized or avoided. It is difficult to understand why the Regulations address this issue for marine mammals (§3.104) and other species that are relatively uncommon in research laboratories (§3.128) but not for nonhuman primates.

"Minimum space requirements must [sic] be met even if perches, ledges, swings, or other suspended fixtures are placed in the enclosure", yet "low perches and ledges that do not [sic] allow the space underneath them to be comfortably occupied by the animal will be counted as part of the floor space" (§3.80). This self-contradiction implies that a primate cage with a built-in elevated structure is in accordance with the law, even if this structure blocks part of the minimum floor space that is required by the animal(s) to make "normal postural adjustments with freedom of movement" (§3.80). Often, the cages of medium-size primates barely provide the legally required minimum floor space. The perch, however, is usually placed at a height of only 20-30 cm (Allentown Caging Equipment, 2002) making it impossible for the caged subject(s) to use the space underneath to turn around without touching the walls of the cage or without being forced to step up on the perch in order to turn around.

PSYCHOLOGICAL WELL-BEING

The Regulations do not define the ad hoc created term "psychological well-being". The requirement of "environmental enhancement adequate to promote psychological well-being" (§3.81) is meaningless, hence not enforceable without such an 'official' definition. The introduction of this ambiguous term has created a lot of confusion (Wolfe, 1991; Crockett, 1993;

Philbin, 1998) and contravened rather than promoted attempts to improve the housing conditions for primates. Investigators can use the term to justify the status quo, arguing that there is no scientific evidence that such attempts are in fact enhancing the so-called psychological well-being primates.

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