

ANIMAL FACILITIES

Compliance: The construction and operation of all animal facilities shall be in complete compliance with the most current version of the *Guide for the Care and Use of Laboratory Animals*, a publication of the National Research Council and the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*, a publication of the Federation of Animal Science Societies, and any specifications of the *Health Research Extension Act* (overseen by the Office of Laboratory Animal Welfare, National Institutes of Health) and the *Animal Welfare Act* (overseen by the U.S. Department of Agriculture). These publications and regulations shall be viewed as the “final authority” on animal facility design. Compliance with these publications and regulations is essential in maintaining accreditation for granting agencies.

Special Review: Any new construction or remodeling that involves or impacts animal facilities shall be reviewed by the U of I Division of Animal Resources.

Location / Configuration: Animal facilities shall be consolidated where possible and isolated as much as practical from spaces of other usage types. Animal facilities shall be laid out so as to promote their convenient operation with minimal impact to adjacent space(s) and vice versa. This shall include provision for the convenient transfer of animals, feed, bedding, equipment and other supplies, as well as waste, into and out of the area. This shall also include adequate provision for the cleaning and sterilizing of equipment within the animal facility. Animal facilities shall be configured so as to maximize security (e.g. by providing a single point of entry/exit).

Sanitation / Sterilization: Animal facilities shall be laid out so as to facilitate the sanitation and sterilization of personnel, equipment, materials, etc. as they enter/exit each room within the facility as well as the facility as a whole. These facilities shall be designed and constructed so as to facilitate the routine wash-down of all surfaces of all areas.

HVAC Systems: Animal facilities shall be served by dedicated HVAC systems. Energy recovery systems that may recirculate air or

have bleed-over of hazardous chemicals shall not be used in animal facilities. HVAC systems, as well as any building or central utility systems that serve them (e.g. steam, hot water, chilled water, electrical power, compressed air, etc.) shall have sufficient reliability and redundancy to prevent loss to animals or research due to mechanical system failure. They shall be capable of satisfying any special requirements for space temperature and humidity (e.g. temperature control within 2 degrees F. of setpoint with individual room zoning/thermostats, humidity control within a range of 30 to 70% RH with individual room zoning/humidistats). These facilities shall be provided with 100% outdoor air ventilation. A ventilation rate of 15 air changes per hour will typically satisfy the HVAC requirements of an animal room although this should be viewed as a “rule of thumb” to be reevaluated for each specific application.

Filtration: Unless specific requirements dictate otherwise, supply airflow serving animal facilities shall be filtered by a 30% efficient prefilter followed by a 95% efficient final filter. Filtration (20% efficient minimum) shall also be provided at each exhaust grille in each animal room to protect exhaust air systems from becoming fouled with dust, hair, bedding material, etc. Filter efficiencies are dust spot efficiency ratings per the current revision of *ASHRAE Standard 52.1*.

Control Systems: Temperature control systems shall be specially configured so as to be “fail safe” such that overheating of areas occupied by animals does not occur as a result of loss of electrical power or loss of compressed air for pneumatic controls. This typically requires the installation of normally-closed reheat coil (and associated heat exchanger) control valves, which is not the standard approach throughout the environmental control industry as a whole, but is now the standard approach for all new HVAC systems at the U of I. Central station units are typically set up to fail to the full heating mode. Therefore, in order to minimize the potential for overheating, special consideration shall be given when selecting the failure mode(s) of central station units that serve areas that are occupied by animals. Special consideration shall be given to the control

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sequences/strategies that are applied to these units as well.

Odor Control: Air distribution systems that serve animal facilities shall be designed so as to minimize odor and airborne contamination problems. This can be accomplished to a large extent by maintaining appropriate relative air pressurization between each animal facility room and the adjacent corridor and between the corridor system and any adjacent non-animal facility area. For non-critical applications, this may be accomplished by means of static air balancing of the air distribution system(s) serving these areas. For more critical applications, where more positive differential pressure control is required, a more sophisticated pressure differential control system shall be utilized.

Noise Control: Facilities shall be designed to minimize noise both within the facility and outside the facility.

Sanitizing / Sterilizing Equipment: Cage washers, glassware washers and other sanitizing/sterilizing equipment that release concentrated heat and humidity shall be provided with an exhaust system and associated makeup air system that is designed to quickly remove the heat and humidity that is intermittently released by this type of equipment. A direct duct connection shall be made between each cage washing unit and an exhaust system that is designed to handle supersaturated exhaust airflow and is dedicated to such applications. If the cage washer is not designed for a direct duct connection, a canopy or capture type exhaust hood shall be provided. This is also true of glassware washers, sterilizers and other pieces of equipment that release concentrated amounts of heat and humidity. Where applicable, the exhaust system shall operate only for an appropriate length of time after the completion of each wash cycle. Special consideration shall be given to providing waterproof / humidity-resistant construction in areas that house this type of equipment. Desiccant wheels shall not be used with duct connections of sterilizing equipment.

Electrical Systems: Electrical systems that support critical services, including critical

HVAC systems, shall be served by an emergency back-up system.

Maintenance Responsibility: Maintenance of animal facilities and the systems that serve them will not be provided by the F&S Division, but will be the responsibility of the using department / campus unit.