

Last Update: July 1, 2009

A. Published Design Guidelines

1. "Guide for the Care and Use of Laboratory Animals," American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE),
2. ASHRAE Handbook "Heating, Ventilating, and Air-Conditioning Applications," (latest edition) chapter titled "Laboratory Animal Rooms"
3. The University of Iowa Design Reference Manual

B. Design Requirements

1. All penetrations shall be sealed watertight.
2. Install a waste gutter with a sediment trap floor drain under each row of cages.
3. Each room requires a stainless steel or porcelain sink with an automatic temperature controlled mixing faucet.
4. Disposable filters should be installed at the face of each exhaust grille.
5. Minimize all exposed ductwork and piping. If ductwork must be exposed, it shall be stainless steel and have no exposed duct insulation. Provide access doors in addition to doors required for equipment to provide access for cleaning ductwork.
6. Exhaust grilles and supply diffusers should be stainless steel
7. A visual differential pressure gauge (e.g. magnahelic) should be installed close to the door of each room that has pressure requirements
8. If a heat reclaim system is used it should be "run around" with no means of cross contamination
9. To the extent possible equipment requiring maintenance should be located in a mechanical space

C. Controls

1. HVAC zone controls, including room temperature and humidity controls, should be housed in a stainless steel cabinet. Install the temperature sensor such that only a stainless steel plate is exposed inside the room.
2. In general provide control alarms for temperatures that deviate more than 5 degrees from set point. The type of animal housed may dictate temperatures cannot deviate more than 2 degrees.
3. Safeties that shut down the air handler, such as freeze-stat and smoke, should be alarmed prior to actually turning off the AHU.

*Comments:*

- B.2 You need to be careful with the floor drain in animal rooms; if there is a lot of bedding material the bedding can clog up the drain. For animal housing rooms always have a removable bucket in the trap.*
- C.3 We don't want to shut the AHU down at the first alarm and risk an experiment going out of limits endangering months of research or having no temperature control and endangering the animals. So the first step is an alarm, the second step could be shut down of equipment.*