

## Opti Rack SOP - Building HVAC Outage

### Introduction

Animal Care Systems racks and cages do not use electricity and are exhausted directly through the building's HVAC exhaust system. Building HVAC systems require periodic maintenance that may temporarily limit or stop airflow; this document addresses steps to ensure animals continue to receive airflow.

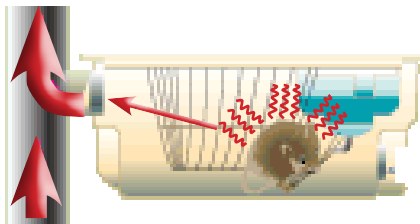
### Hose Disconnection

If there is a total HVAC failure (i.e., no redundancy systems), disconnect all hoses from the top of the racks **within 4 hours**.

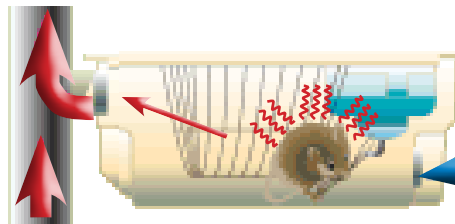
The air changes will be adequate, though reduced, due to a natural convective heat transfer in each cage. The more cages on a rack, the more convective the heat transfer; therefore, consolidate cages among racks to maximize the number of cages on any one rack.



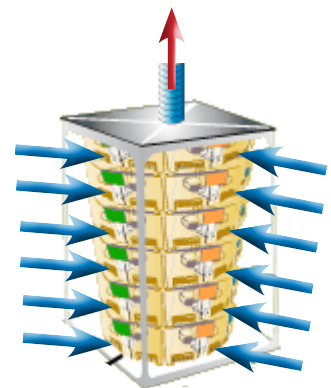
### Convection Within the Cage and Rack



Convection drives the warm air generated by the animals out of the cage into the central air plenum.



As that warm air exits the cage, convection also pulls room air through the front filter.



The warm, filtered air exits the rack and the room.

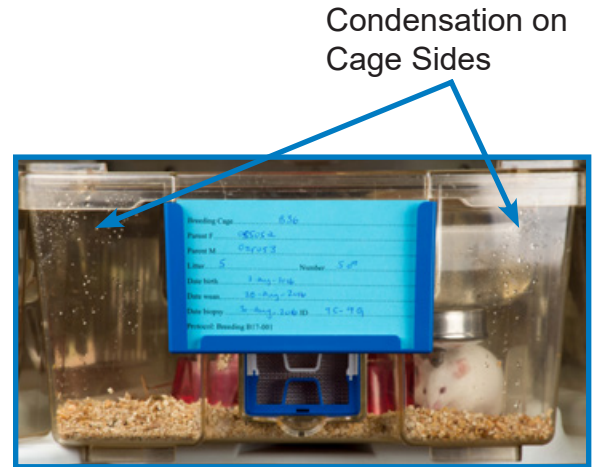
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## Monitoring Cages

The macro-environment (for example, room temperature, room humidity) rather than cage air quality will generally impact the frequency of cage change. Because room air supplies cage air, it directly impacts cage air quality and conditions. Room temperature and humidity should be checked daily. If temperature and humidity levels are outside recommended ranges, room values must be brought within recommended ranges.

If moisture is observed in cages, a cage change must be performed.

Ammonia levels also may accumulate more steadily, requiring more frequent cage changes than when cages are ventilated. The ammonia levels will depend on several factors: bedding type, experimental conditions, and the number, strain, and health status of the animals.

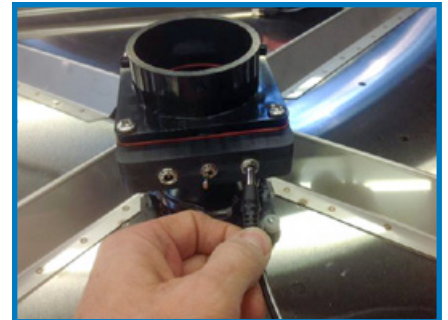


**Wet or moist filters will impact air quality to the cage.**

## Back-up Ventilation: Fail-safe Fan

Fail-safe fans also can be used in the event of prolonged total HVAC failure.

Refer to the [fail-safe fan procedure](#) for installation and use.



## Partial Failure

In some situations, the facility's HVAC system loses only exhaust ventilation — not air supply. Animal Care Systems recommends the following course of action:

1. Keep the rack(s) connected to the exhaust system. The air supply will pressurize the room and force the excess air through the cages and out the room via the exhaust drops.
2. Keep the room door(s) shut as much as possible to maintain the pressure within the room.