

## House Mouse



In order to reduce the threat of rodent borne diseases, mouse allergens, and other possible health threats from mice, it is important to make every reasonable effort to prevent mice from becoming established inside buildings.

After humans, the House Mouse (*Mus musculus*) is the second most successful mammal in the world. They breed rapidly, can consume a broad variety of food, require little or no water, and are able to adapt to a wide range of habitats. Unfortunately, they are disease vectors and the proteins found in their urine circulate in the air and can be asthma triggers for sensitized individuals. They are considered one of the most troublesome pests in the United States. The acceptable indoor threshold for the House Mouse is zero.

Poorly sealed school buildings are highly vulnerable to mouse invasion. Most rooms are maintained at favorable temperatures and often contain edible items. A mouse running along the outside edge of a building is drawn into the building by warm air and food odors coming from under doors and through holes in the wall. Mice have good hearing, sense of smell, taste, and touch. They are excellent climbers and can run up vertical walls to get to food. They can move along wires, utility cables, or ropes, can jump vertically 12 inches, and survive an 8' fall. Adult mice can squeeze through openings slightly larger than 1/4 inch in diameter.

Once inside, mice often establish themselves inside food storage and prep areas, closets, cabinet bases, rooms with lots of clutter, or similar locations. They will also climb wall utility lines for electrical or plumbing, and nest within suspended ceiling spaces.

Portable-style classroom buildings are extremely vulnerable to a mouse invasion as portables provide attractive crawl spaces providing access to dark, dirt floors, cool in summer; warm in winter, and protection from predators. Once the mice have gained entry to the crawl space, they find their way up through the floor along crevices or gaps created by plumbing or other utility lines following their nose towards food odors or warm/cool air currents. Portables also contain gaps and openings directly into the portables through any broken vent louvers, screens etc.

### Excluding mice from buildings

Inspect for access points and seal them up:

1. Any gaps of 1/4 inch or more should be properly sealed using the appropriate sealant (steel wool, foam and other temporary materials are not recommended). Seal off using good materials (i.e., not steel wool nor expandable foam). We recommend silicone and acrylic urethane products because they stretch as gaps and cracks in buildings expand and contract due temperature changes and other factors. Larger holes and cracks can be stuffed with XCLUDER cloth or STUFFIT copper mesh, then sealed up with a silicone or acrylic urethane product.
2. Seal around water, gas, electric, and other pipes and conduits going through walls.
3. All external doors should be mouse proofed using the high quality brush-type door sweeps that seal the gap between the threshold and the door base.
4. All ventilation screens, louvers used in attic spaces, furnace closets, and so forth, should be kept in good repair. All gaps around the frames of screens and louvers should also be kept tightly sealed.
5. It is not realistic to attempt to mouse proof the crawl space skirt around portable classrooms. However, it makes sense to keep the skirting as tight as possible and in good contact with the ground to deny entry to other mammal pests such as raccoons, feral cats, skunks, rats, and other mammal pests.

### **Don't Attract the Mice**

Keep dumpsters clean, with lids closed. Drainage holes can be screened or plugged.

### **Don't Harbor Mice**

De-clutter storage areas and classrooms! It is best to use plastic (transparent) totes for storage. If cardboard boxes have not been opened in 2 years, the box and contents may be contaminated with urine and feces. Recycle, or Chuck-it-Out. Consider a management-mandated 15 minute clear-out session a few times each year. Consider Clutter Bug Awards for the worst offenders, or Clutter Free Awards for the best examples.

### **Mouse Vulnerable Areas (MVAs)**

Once inside, mice most commonly nest and/or forage about in mouse vulnerable areas:

- 1) Kitchen, pantry, food preparation areas, and food consumption areas (including classrooms/break rooms).
- 2) The crawl space beneath portable classrooms. Invading mice will often construct platform nests up on the various structural ledges made up of grasses, leaves, feathers, or the building's batting insulation. The mice will also carry in and store relatively large amounts of seeds, nuts, and insect carcasses in any available floor and wall nooks.
- 3) Furnace closets (especially if the closet's ventilation louver is not in good repair).
- 4) Beneath kitchenette and bath cabinets where utility lines come up through the floor.
- 5) Within the suspended ceilings during the cold weather months.
- 6) Stuffed chairs and couches in break rooms.

These MVAs are the target zones for setting out mousetraps.

### **Eliminating Established Mice with Snap Traps**

Snap trapping results in the fastest elimination of mice, however trapping is useless in a cluttered environment.

#### **You have to de-clutter if you want to de-mouse.**

Mice typically do not venture more than 30 feet from their nest (unless food is sparse). Traps are very effective for mice. They take advantage of their curiosity. Mice will be trapped easily the first night, but then they will be trap shy. Set many traps the first night (six per mouse, at least three feet apart); clear them in the morning, and remove. Set them again a week later, in slightly different locations. This technique will overcome trap-shyness. Dead mice and their fecal pellets should be handled as described in the "Safety Precautions" section at the end of this document.

No trash should be allowed to accumulate along the exterior walls. If food trash is allowed to remain, this condition will attract mice to the building perimeter. Do not place trash receptacles close to exterior doorways.

Plastic style snap traps (e.g., the Kness Snap-E, J.T. Eaton JAWZ, Bell Trapper Mini Rex, Woodstream Quick Kill, etc.) are more durable, and can be cleaned with disinfectants more easily. The disposable wooden-based traps are an option when a disposable trap is required.

Traps can be baited with small smudges of peanut butter or a few drops of vanilla, orange, or any other extract oils. Despite common myths, there is no one "favorite" bait for mice. They are opportunists, and will sample most food odors they bump into. Mice also forage for nesting materials as well as food, so cotton balls may be used with traps. Mice mainly travel along walls. Place traps up against walls with the snap end facing the wall.

### **Inspecting and Monitoring for Mice**

When carrying out inspections, look for fecal pellets in mouse vulnerable areas. Also look at cardboard boxes, stuffed furniture, and similar items for signs of gnawing.

In areas with past mice problems or potential mice problems, bait stations with nontoxic detection blocks (e.g. DETEX BLOX) may be used to monitor activity. Block baits should be replenished on an 8-12 week basis, or as necessary due to consumption, or spoilage of the blocks.

**It must be stressed that even when using non-toxic detection blocks, they should be put inside tamper-resistant bait stations that are designed so the blocks will not fall out should the stations be picked up and shaken.**

Possible locations for the stations include: 1) Within the furnace closet, in the back area of the closet, preferably behind the furnace; 2) beneath any kitchenette sink; 3) beneath any bath cabinet; 4) in the suspended ceiling, positioned directly above the kitchenette, bath, and nearby the furnace closet.

To monitor for mice under portables, put one or two tamper-resistant bait stations along the middle of the side of the skirts underneath the portable. To accomplish this, each portable must have an access door that is easily opened, and closes tightly.

Exterior storage sheds (bike sheds, dumpster sheds, equipment sheds, etc.) should also be monitored for mice. This can be accomplished by installing two bait stations; one on each side of the shed. The baits should be replenished on an 8-12 week basis, or as necessary as mentioned above.

## **PROTOCOL FOR ELIMINATING MICE**

### **Threshold: 0**

- A. Kitchen staff/custodial staff will set, check and clean snap traps using the information provided in this appendix when needed inside the buildings and sheds. Report actions taken in Pest Log.
- B. Maintenance Staff will set, check and clean snap traps and bait stations using the information provided in this appendix when needed under buildings, attics or in crawl spaces. Report action taken in Pest Log.

### **Safety Precautions for Handling and Removing Rodent Carcasses and Feces from Schools**

Despite good efforts, some mice inevitably gain entrance to schools and other public buildings. Most mice and the accompanying excrement are not considered to be highly hazardous to our health. Still, it makes sense to err on the side of caution, and practice good safety measures when handling dead rodents in traps, and/or cleaning up rodent excreta.

### **Precautions When Handling Dead Rodents**

- 1) Wear rubber or plastic gloves
- 2) Spray the dead mouse and any trap with disinfectant until wet.
- 3) Any inexpensive household disinfectant will suffice as will a weak (5-10%) solution of bleach and water.
- 4) Turn a ziplock bag inside out.
- 5) With a hand inside the bag, pick up the rodent and the trap.
- 6) Invert the bag over your hand and seal the bag.
- 7) Wrap the bag in a newspaper and dispose in a dumpster or garbage can.
- 8) Spray the area where the trap or the dead mouse was lying with a light spray of disinfectant and let dry.
- 9) Dispose of the gloves in the trash, or for re-useable gloves, spray the outside of the gloves with disinfectant, then remove the gloves and wash hands with soap and water.

### **Precautions When Cleaning up Small Amounts of Rodent Droppings**

- 1) Feces should not be swept up, or vacuumed because this can cause the excrement residues to become airborne and be inhaled.
- 2) Wear rubber or plastic gloves
- 3) Spray the droppings and affected area with disinfectant until wet.
- 4) Use a wet paper towel to pick up the disinfected droppings.
- 5) Place the droppings and paper towel into a ziplock bag and seal the bag.
- 6) Dispose the bag in a dumpster or garbage can.
- 7) Dispose of the gloves in the trash, or for re-useable gloves, spray the outside of the gloves with disinfectant, then remove the gloves and wash hands with soap and water.

\* Adapted from:1) CDC Hantavirus preventative Recommendations ([www. CDC.gov.](http://www.CDC.gov))2) Army Pest Management Bulletin, 2001. Vol. 22 (4) 3) Communications from Bobby Corrigan, Ph.D. RMC Pest Management Consulting.