

Defense Supply Center Philadelphia
West Coast Support Office

Pest Management Techniques

**Rodent Management:
Prevention, Surveillance,
Trapping and Baiting**

Domestic Pest Rodent Management

Introduction

Most successful domestic rodent pest management programs use a combination of tools and techniques to reduce existing populations or prevent new infestations. Methods used combine habitat alteration and rodenticide application. The following components should be incorporated into an effective management program:

- 1) Sanitation
- 2) Rodent-proofing (Exclusion)
- 3) Trapping
- 4) Baiting

Sanitation

Food and Water

Although obvious and extremely important, reducing the amount of food and water available to rodents is often overlooked. Baiting and trapping programs often fail because adequate food is available. The rodents, therefore, simply ignore the traps and baits, preferring the existing cuisine. Reducing access to their normal diet or using this food to attract the rodent will substantially improve trapping and baiting programs. Concentrate on the following:

Outdoors

- ?? Close and/or repair waste receptacles. Ensure they are emptied and cleaned regularly and are located away from the facility.
 - ?? Clean the area around waste receptacles insuring spilled or improperly discarded debris does not collect.
 - ?? If possible, do not let water collect in areas outside the facility. Not only does this provide a necessary resource for rats, in particular, biting insects often use these areas to breed.
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Indoors

- ?? Examine loading dock and storage areas for food spills and water leaks. Insure employees eat and drink in designated areas.
- ?? Examine incoming and stored food products for packaging damage. Return or discard immediately. Ensure food products are rotated properly (first in, first out) and is stored on pallets, not on the ground or against walls. Pallets should be at least 18 inches from sidewalls and placed so that aisles permit inspection and cleaning.

Eliminate Harborages

Outdoors

- ?? Create a 3 foot landscaping (plants) free boarder around the facility
- ?? Remove high grass, weeds and workplace debris that will permit rodents to live adjacent buildings.

Indoors

- ?? Reduce clutter in rarely used rooms. Organize storage areas.
- ?? Do not allow pallets to collect for an extended period. Institute a recycling program.

Exclusion

Facility Exterior

- ?? Identify and seal cracks and holes throughout the facility
- ?? Block openings around water and sewer pipes, electrical lines, air vents and communication lines.
- ?? Screen air vents
- ?? Ensure all doors fit tightly and are closed when not in use

Facility Interior

- ?? Identify and seal spaces inside hollow block voids. Repair broken blocks and holes around pipes
- ?? Identify and repair gnaw holes.
- ?? Secure floor drains with sturdy metal grates held firmly.

Trapping

Snap trap

Trapping has several advantages. There is less non-target risk than from poison bait. The results are determined instantaneously rather than waiting to see if the rodent has taken bait. Traps allow for disposal of the carcass so that there are no odor (sanitation) issues.

The snap trap is an effective method of killing rodents when used correctly. Trapping is advised for places where rodenticides are considered too risky or are not working well, if the odor of dead rodents in wall or ceiling voids would be unacceptable, or when there are only a few rodents infesting a limited area. Snap traps may also be used in conjunction with baiting programs.

Careful attention to detail is necessary to ensure proper placement in adequate numbers or rodents will avoid them.

The most effective traps are those with expanded triggers (treadles) set for a light touch.

The following ideas will increase the effectiveness of your trapping program:

- ?? **Leaving traps unset for a few days may increase catch by allowing the rodents (particularly rats) become acclimated to a new object in their environment.**
- ?? **Bait traps with foods the rodents are currently feeding, but leave the trap unset for 3-4 days.** Following this acclimation period set the trap. In addition to the foods the rodents are currently eating, try the following: Norway rats-peanut butter, hot dog slices, bacon or nutmeats. Roof rats- dried fruits and nuts, fresh fruits such as apple or banana.
- ?? Tie moveable bait to the trigger using string or dental floss. This will reduce the risk of bait removal without trap engagement.
- ?? Sprinkle cereal, such as oatmeal, around traps to make them more attractive.
- ?? Set unbaited traps along runways, along walls, behind objects, in dark corners where the rodent is forced through a narrow opening. **Place the trigger side of the trap next to the wall.**
- ?? When runways are located on rafters and pipes, set expanded trigger traps directly across them, fastening them to pipes with wire, heavy rubber bands or hose clamps and to rafters with nails.
- ?? **Use enough traps (a hundred or more may be needed for a small warehouse).** Set five or ten traps in an active corner. Set three traps in a row so a rodent, leaping over the first, will be caught in the second or third. **If unsure about sites or placement, set traps along possible runways spaced 5 to 15 feet apart.**
- ?? Camouflage traps when left with only a few rodents that become very difficult to capture. Set traps in a shallow pan of meal, sawdust or grain (again unset at first). Place a small piece of cloth or plastic over the trigger to prevent materials from jamming the mechanism.

- ?? In stubborn cases, expose food in shallow pans until the rodent readily feeds. Then add a buried trap.
- ?? Move boxes and objects around to create narrow runways to the traps.
- ?? Avoid spraying insecticides on the trap, or even storing traps with application equipment. The odor of other rodents improves a trap's effectiveness. Likewise, the odor of a chemical may keep rodents away.
- ?? Inspect traps frequently to remove dead rodents and change old/infested bait.

Glue Boards

Another way to trap rodents is with glue boards. Although most often used against mice, they may be effective against rats. Be sure to use the appropriate size board for the pest. Be aware that unlike snap traps, glue boards and multiple catch rodent traps do not kill the rodent.

The following ideas will increase the effectiveness of your trapping program using glue boards.

- ?? Place glue boards in the same locations as the snap traps. Place them lengthwise flush along the wall, box or other object that edges a runway. Overhead runways along pipes, beams, rafters, and ledges are good sites.
- ?? Do not place glue boards directly over food products or prep areas.
- ?? Secure the glue board with a nail or wire so a rodent cannot drag it away.
- ?? Install glue boards in bait stations where people may contact it or in areas with excessive dust or moisture.
- ?? Check glue boards frequently. Remove if covered with dust or debris. Do not use glue boards in areas characterized by temperature extremes (below 40: above 85 degrees F)
- ?? Adding a dab of bait in the center of the glue board may improve effectiveness.

Bait Stations/Boxes

Bait stations/boxes are often used as a preventive management measures as well as to control active infestations. All bait boxes must be tamper resistant. Tamper-proof bait boxes differ in the type and quality of construction, but they are usually metal or heavy plastics. Rat bait stations are normally larger than those used for mice. Most designs are not considered to be truly tamper-proof unless they can be secured to the floor, wall or ground. **Because baits will cause the rodents death a day or two after feeding, you will be unable to determine where the rodent will die. Therefore, rodents which feed in bait stations in inaccessible areas (resulting in sanitation/odor issues) or gain access to the facility after feeding at exterior bait stations may die indoors.**

PLEASE NOTE: Rodenticides are recommended for use indoors in conjunction with the following conditions:

-Rodenticide baits should not be used as an ongoing, preventive program

-Bait placements only into those areas of chronic activity as determined via thorough inspections

-Use formulations and bait stations which reduce the risk of bait translocation (e.g., secured bait blocks)

-Use the smallest amount of bait per placement as possible by label instructions

-Never install baits where they may be encountered by heavy traffic

-Establish routine monitoring of the bait placements and strict record keeping

-Remove all baits upon successful elimination of the rodents

-Resume preventive trapping programs and careful follow-up monitoring.

The following ideas will increase the effectiveness of your trapping program using bait stations/boxes.

?? Ensure that bait boxes are clearly labeled with precautionary statements. Remember that baits are toxic to people/pets as well as rodents. Provide training to employee to avoid bait boxes.

?? Check stations/boxes periodically (weekly to bi-weekly) to ensure rodents are taking the bait and that the bait is fresh (rodents rarely feed on spoiled bait). Ensure that the bait is secured inside the station/box. Unsecured bait may be removed by the rodent.

?? Instead of bait (particularly in sensitive areas) place snap traps or glue boards in bait stations.

?? Bait stations should be placed wherever the rodents are or may be most active as determined by droppings and other signs (near burrows, runways, gnaw marks, damaged food products).

?? **Put out enough bait and check it often (incomplete baiting can lead to bait shyness and make control difficult). Consider using one dose baits and alternating between anticoagulant (Talon, Maki) and non-anticoagulant (Quintox, Vengeance) baits, reducing the risk of resistance. If possible, use paraffin-based rather than grain-based baits to reduce the incidence of insect infestation. This choice, however, may be restricted due to rodent preference.**

?? **You must limit the rodents' normal food supply or baits may be rejected.**

?? Remember that rats fear new objects at first so that your baits may not be taken for a period of time. Monitor the bait station to determine effectiveness

?? **Good bait box placement is essential.** Place stations along perimeter fence lines at intervals of 50 feet with the entrance to the box parallel and in contact with the fence. Insure these stations are secured to the ground or fence and are tamper resistant. Place secured, tamper resistant stations at 40-50 foot intervals along the facility perimeter. These boxes should be placed at shorter intervals near or on either side of

exterior access points to the facility (garage, loading dock doors) with the entrance to the box parallel and in contact with the wall. Inside the facility, secured bait boxes should be placed with the entrance to box parallel to and in contact with perimeter walls at 30-40 foot intervals, with a slightly higher concentration of boxes near areas where infestible products are stored. The position of all bait boxes should be mapped and monitored frequently. **Note: Consider using light colored bait boxes during the summer in west or south facing areas to control temperature effects.**

- ?? **Ensure all employees receive training/information about baiting programs.**
- ?? **Ensure pest management professionals explain all actions and providing training.**

Sample Rodent Prevention and Control Program for Food Processing Plants

The following rodent management program was developed by the American Sanitation Institute for food processing plants based upon Good Manufacturing Practices. This program is provided as an example of baiting and trapping procedures. A complete integrated rodent management program should be developed, using baiting and trapping as a component.

- ?? A formal written program must be maintained at the facility. It should include all aspects of rodent exclusion or elimination that needs to be addressed in the facility.
- ?? Interior and exterior harborage elimination should be undertaken
- ?? Interior rodent control shall consist of mechanical traps set at 30-foot intervals along the inside perimeter wall. Ketch-alls (mechanical traps) should be wound seven full turns. All traps should be numbered and designated on a map. Glue boards and snap traps can also be used.
- ?? Interior baiting for rats can be done in non-production, processing, raw or finished goods and warehouses.
- ?? Exterior rodent control should be done in tamper-resistant bait stations with plastic security seals and EPA-registered rodenticides. Exterior stations should be placed at 50-foot intervals at fence line perimeters, 40-foot intervals around the exterior of the facility and 30-foot intervals in any other non-food area. Service is recommended at four-day intervals for bait stations.

For further information regarding rodent pest management, contact your local pest management professional or DSCP-WCSO at DSN 686-8122, commercial 510-337-8122 or email at paa5245@exmail.dscp.dla.mil.

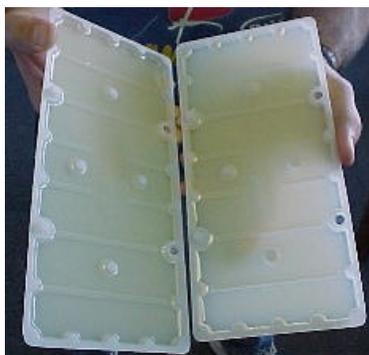
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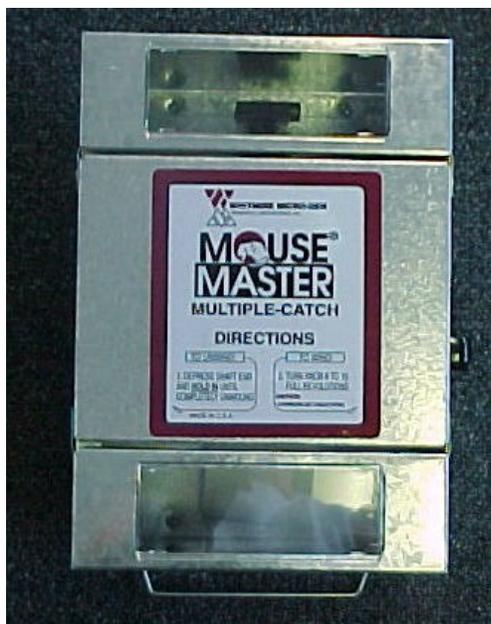
Tamper-proof bait station by Aegis Research



Rodent Glueboard by Catchmaster



Trapper glue trays for rats by Bell Labs



Multiple-catch rodent trap by Mouse Master



Traditional snap trap by Victor



Quick set mouse and rat trap by Victor



Expanded trigger mouse and rat snap traps by Victor