EXCERPT FROM MALLIS HANDBOOK, 11TH EDITION!

#1 Component to Rodent IPM

Pestproofing is effective in preventing recurring pest problems for many residential and commercial facilities. Progressive companies that offer and implement pestproofing programs achieve long-term results — and happy clients.

Rodent exclusion programs via the rodent proofing of structures are the process of denying rodents entry into buildings by proactively designing them to be rodentproof, or by improving an existing building's structural integrity. Used in conjunction with effective and ongoing environmental sanitation programs, these two practices provide the best long-term and cost-effective component of any rodent IPM program. Storer (1952) noted, "Exclusion is the real solution to rodent pest management. All other methods give only temporary relief." In a study by Douglass et al. (2003) relating to minimizing the chances of building occupants contracting hantavirus, these researchers demonstrated that unless a building is rodentproofed, exterior mice quickly occupy spaces inside buildings that become available when the previous mice are killed through control programs.

Fundamentally, exclusion involves the elimination of dead spaces, cracks, crevices, and other openings so pests cannot hide in, enter, or leave a specific building, room, or piece of equipment (Scott 1991). Rodentproofing varies from the simple to the complex. Plugging holes and confining rodents to smaller areas can enhance trapping programs. Corrigan (2005b) presents an on-the-job fact sheet for pest professionals on how to correctly seal the various types of small holes that occur in walls and foundations.

About this Excerpt

The *Mallis Handbook of Pest Control* has been an essential educational resource for pest management professionals for nearly eight decades, documenting the biology, behavior and control of virtually all structural pests they encounter. Last year, PCT's parent company, GIE Media, published the 11th edition of this 1,300+page reference book featuring editorial contributions from some of the industry's most respected university educators, independent consultants and urban entomologists.

In this excerpt, Dr. Robert M. Corrigan, a frequent speaker at industry trade shows and educational events, shares his rodent exclusion insights. For information about the references mentioned here, visit bit.ly/3JccnWU.

This special supplement is sponsored by Xcluder (www.buyxcluder.com).

Unfortunately, many property owners, as well as some pest professionals, bypass even the simplest rodentproofing efforts in favor of repetitive trapping and baiting efforts because it takes time to find and patch all openings 1/4 inch (6 mm) or more in diameter. Usually, this is due to neither the client nor the servicing pest professional wanting to take the time out of a route routine to schedule the rodentproofing work and/or costs. In other cases, it is because both parties misperceive rodentproofing efforts to be too time-consuming, costly, or requiring special expertise.

Other factors working against rodentproofing include results that are not immediately obvious. Nor can pest professionals guarantee activity will not recur despite extensive rodentproofing efforts (e.g., rodents can arrive as stowaways inside shipments). Property owners are also sometimes skeptical as to whether it is actually possible to exclude rodents that are capable of entering through small holes and crevices. As such, they may believe rodentproofing is money wasted.

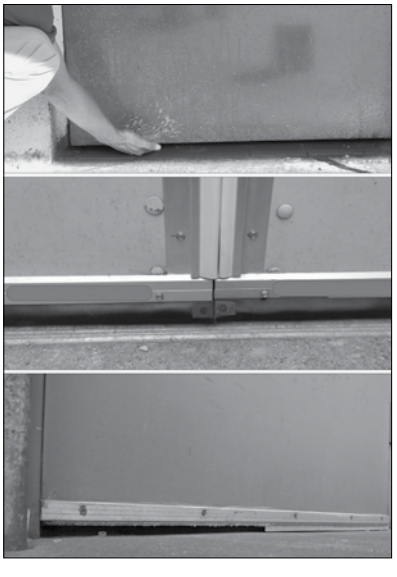
But in this era of environmental awareness, many argue that the future of professional-level pest exclusion programs and services is bright. Forces creating a better marketplace for pestproofing services include the following five factors: (1) the public's awakening to "green"; (2) the adoption of urban IPM by the public sector; (3) litigation potential associated with pesticides and pesticide mishaps; (4) a growing interest in the use of nonchemical solutions to pest problems; and (5) further restrictions on the use of pesticides around people, pets, and wildlife.

The bottom line is that pestproofing is effective in preventing recurring pest problems for many residential and commercial facilities, especially those that produce food odors and temperatures highly attractive to pests (i.e., restaurants, hotels, schools, etc.). Progressive companies that offer and implement pestproofing programs to their clients offer sound testimony to the long-term results.

Regardless of the cost or thoroughness, rodentproofing programs require continuous vigilance. Soon after a rodentproofing effort, a semi-trailer may back into a newly repaired shipping receiving door, a basement window may get broken, or a plumber may fail to install the escutcheon plate around a new pipe. Furthermore, even after 100 rats have been excluded as a result of quality rodent proofing, the 101st rat may gnaw a new opening into the building. If a building is in a neighborhood subject to rodent reservoirs (e.g., nearby fields, creek beds, infested streets and lots, etc.), there can be ongoing rodent "pressure" on the building. Thus, for facilities where rodent exclusion efforts are paramount (e.g., food and pharmaceutical plants, warehouses, schools, hospitals, etc.), the building and all its elements (doors, windows, vents, cable, and all pipe penetrations) should be inspected on an ongoing basis (e.g., monthly) to be vigilant for any new breaches in the structure granting perimeter rodents access they did not have perhaps just one day earlier.

A modern concrete and brick building can be rodentproofed with a minimum of alterations. **The following is a list of rodent entry points and associated rodent proofing recommendations:**

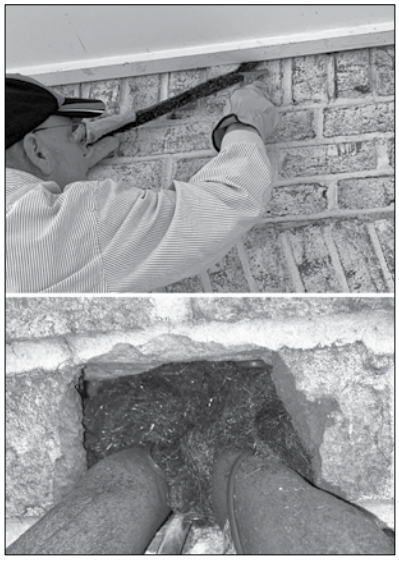
1. With buildings lacking basements, rats frequently burrow beneath foundation walls. These buildings can be protected by installing a "curtain wall" or barrier of metal, concrete, or brick around and below the foundation of the building. Vertical curtain walls 2 feet (0.6 m)



Gaps under doorways are the more frequent path for rodents to enter buildings (top) and should be secured with tight-fitting weatherstripping (middle). Rodents can still chew through weatherstrips (bottom) so these should be regularly inspected.

below the surface of the ground with an 8 inch (20 cm) horizontal "L" or flange directed away from the building is effective. Although rats can dig deeper, the horizontal flange discourages them from doing so. Corrugated 29-gauge iron sheets, as well as concrete, can be used.

2. Doors of all sorts and their various types of sill and astragal gaps are perhaps the number one means by which rodents gain entry to buildings (see photo on page 2). However, over the past several years, several types of new technologies have emerged on the market for denying rodent entry in and around doors and door components (Corrigan 2016). Certainly, wooden doors are continuously vulnerable to the gnawing of rats (but not mice). Galvanized, 24-gauge sheet iron flashing around the bottom of the door, door sills, and jambs prevent rat entry provided the doors are tight-fitting. No more than 3/8-inch (9.5 mm) clearance should be present between the door and sill.
3. Openings around pipes passing through foundations and other vertical surfaces can be covered with galvanized, 24-gauge sheet iron flashing, HD escutcheon plates, or in some cases by using tightly compressed stainless steel fabric mesh (e.g., Xcluder™). An appropriate high-grade elastomeric sealant (i.e., not caulking compounds) also can be used to close the spaces around pipes that are passing through brick, stone, or cement walls. An additional tool to close holes against rodents is to use a barrier paste (e.g., Rodent Stop™). This paste contains metal fragments, cures hard in about 48 hours, and is waterproof and paintable, although it cannot be applied around any heat sources. For barrier pastes, the opening must be at least 1/4 inch (6 mm) wide and 3/4 inch (18 mm) deep. The paste is applied in the same manner as caulking.



Plugging holes with products such as Xcluder® rodentproofing fabric effectively exclude rodents from entering openings in foundation walls until permanent construction changes can be made.

4. To deter rodents from entering through foundation holes, tightly packed stainless steel fabric mesh (e.g., Xcluder™) can be used for blockage until permanent construction changes can be made (see photo above). It is important to note that ordinary "steel wool" as might be purchased in any hardware store is not effective for rodentproofing of holes and crevices. For more permanent results, stainless-steel fabric mesh can be enmeshed into a preapplied soft dollop of high-density foam sprayed into the hole, with the hole then covered with the proper final seal material (concrete, wood, sheetrock, etc.).
5. Ventilator grills should be covered with 18-gauge, 1/2-inch (13 mm) mesh, galvanized, expanded metal or 16-gauge, 1/2-inch (13 mm) mesh, galvanized wire cloth. Low windows can be protected with 19-gauge, 1/2-inch (13 mm) mesh, galvanized wire cloth.
6. Sidewalk gratings should be closed with 18-gauge, 1/2-inch (13 mm) mesh, galvanized expanded metal.
7. Openings into hollow walls, particularly between the floor and floor-sills, should be closed with 19-gauge, 1/2-inch (13 mm) mesh, galvanized wire cloth, or galvanized, 24-gauge sheet iron.
8. Rats often travel inside defective drainpipes or burrow along such pipes. A metal cover with small perforations should be cemented over the drainpipe in the floor, and openings around the drain where it enters the building should be patched with cement mortar.
9. Large sidewalk cracks on building exteriors should be sealed with cement or high-quality exterior-grade sealants. Otherwise, rats can enter these spaces and explore along the foundation walls below for breaches where they can gain entry.
10. Circular rat guards of galvanized metal should be placed around vertical wires and pipes to prevent rats from climbing upward. Rats may wedge themselves between a drain and the wall and thus reach the upper stories of the structure; a circular rat guard on the drain will prevent this from happening.
11. In homes, the gap under the shingles along the front edge of soffits commonly allows rodents and other pests to enter. Installing metal gutter aprons effectively closes off this entry pathway.
12. Roof returns where two roof elements meet on houses is another common rodent entry site into attics. These can be sealed with formed sheet metal to close off these gaps.
13. A common avenue of entry for rodents (especially roof rats but even Norway rats) into the open eaves of an attic is via a tree limb touching the roof of the building. Such limbs should be pruned back a minimum of six feet.
14. Roof turbines and mushroom vents should be closed off from entry by placing commercially available wire cages designed for excluding animals. ✦

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