SECTION 5: PERSONAL PROTECTIVE EQUIPMENT AND SAFETY

NYC Rodent Control Academy

Safety Issues; Personal Protection Equipment

The correct Personal Protection Equipment (PPE) for on-the-job rodent control practices.

Gloves

Whenever handling rodenticide baits and/or cleaning equipment, placing your hands into areas where rodent droppings may be common, gloves must be worn.

Types of gloves

Disposable

Reusable

Coveralls:
When working in areas where rodent carcasses, droppings may be common, it is suggested coveralls be worn to protect your clothes and your person.

Respirators

Respirators can be worn to protect against inhaling any contaminated dirt, dust pesticides and other

Pesticide Respirators

Respirators to protect against inhaling viruses and other germs (Hepa respirators).

NYC Rodent Control Academy

On the Job Safety Tips and Considerations

* When rodenticides are used according to label directions, and the safety precautions adhered to, rodenticides present little hazard to non-target animals or to the environment. Still, it is important for all users of rodenticides to keep in mind that these pesticides have the potential to seriously harm people, dogs, cats, birds, livestock, various wildlife and extremely expensive zoological animals.

* Every effort must be made to analyze situations where children, companion animals or wildlife may be at risk and take extra precautions to ensure against accidental poisonings or secondary hazards.

The following list provides some safety recommendations regarding the storage and use of rodenticides:

- Handle rodent carcasses with rubber gloves, long tongs, or newspaper, and bury or incinerate all dead rodents.

- Store baits in a locked cabinet and post appropriate warnings on the outside of cabinet doors.

- Collect, remove and properly dispose of all unconsumed bait at the end of the poisoning program. Baits should not be tossed into inaccessible areas within structures and abandoned (i.e., no intent of recovering the rodenticide baits).

- Minimize bait translocation by using bait blocks secured on rods within secured bait stations, or within stations via their designs that will contain the block baits.

- Always keep baits out of the reach of people, livestock, dogs, cats, and wildlife.

- Have any dogs or cats or other animals (horses, livestock, zoo animals, etc.) that have access to the affected area or facility confined during baiting operations.

- Label all outdoor bait containers clearly with appropriate warnings, and keep unused baits in their original containers.

- If tracking powders are to be used in areas where children and pets are not present, they can be installed into the interior bait bays of inside tamper resistant bait stations, or applied directly into rat burrows according to label directions.

- Do not apply tracking powders where rodents may transfer the powder on their bodies or feet to sensitive areas (e.g., foods, or food preparation surfaces).

- Tracking powders should not be applied where they can be inadvertently encountered by people at later times (e.g., electricians, utility repair personnel, re-modelers, etc.).

- Tracking powders should never be placed near fans of utility equipment, nor near ventilation duct openings.

SECTION 6: FOOD SERVICE/SAFETY/REGULATIONS

Rodent Control and Food Safety: Proactive Programs are the Key

Features - Cover Story

Are conventional programs keeping up with the changes in food safety risks and expectations?

August 16, 2013

Bobby Corrigan

Editor's note: This article is a partial discussion from the Rodent Control and Food Safety Seminar delivered for the June AIB/RK Chemical Seminar on food safety in Hershey, Pa.

Many of the rodent control programs in place at typical food-handling establishments (processing plants, warehousing and distribution centers, and retail stores) are set up with some type of exterior bait/trap stations and interior mouse traps installed according to a pest company's commercial business plan or according to a facility's particular third-party audit format. The goal for these designs is to help protect the establishment against rodents that attempt to enter (or are eventually successful at entering) the facility from exterior areas, or even from within a delivery. Both the food-handling establishment (FHE) client and the pest professional traditionally rely on such equipment installments and setups as the primary defense in their protective program against rodents for the facility.

But in today's climate of globally enhanced food safety programs, are "typical" rodent control programs adequate? Another way of stating this might be to ask: Are conventional programs keeping up with the changes in food safety risks and expectations? Consider, for instance, the relatively recent legislation such as the Food Safety Modernization Act, in which the FDA has raised the bar for meeting the criteria of good manufacturing practices (GMPs).

Table 1. One example of a typical profiling of a current FHE rodent situation based upon a proactive inspection of the facility.

Interior Areas	
Level I-1	No rodents or active rodent signs (ARS) located in any areas of the facility.
Level I-2	Minor levels of mice (e.g., an incidental mouse or two periodically captured or noted indoors every few months).
Level I-3	Minor, but recurring activity of a few mice indoors at the same and/or at different locations in the facility.
Level I-4	Moderate levels of mice (e.g., several mice in same areas or different and ongoing with little or no real reduction over several months).
Level I-5	Ongoing and significant activity (daily sightings, repeating captures of mice in multiple traps in different areas of the FHE, etc.).
Exterior Areas	
Level E-1	No rodents or active rodent signs located in any exterior areas or within any of the exterior monitoring stations.
Level E-2	Minor levels of ARS in trap or bait stations (e.g., feeding, presence of droppings or trapped rodents in less than [+/-] 5 percent of all exterior stations).
Level E-3	Minor but repeating activity ARS in the same trap or bait stations (e.g., feeding, presence of droppings or trapped rodents in less than 5 percent of the exterior stations).
Level E-4	Moderate levels of activity and/or signs on different sides of the facility (e.g., upwards of 25 percent of the stations having feeding activity or showing the presence of rodent visits).
Level E-5	Ongoing activity and/or signs in different areas around the facility; more than 5 percent of the exterior stations on each side of the facility showing ongoing rodent activity.

Adding to this, consider the emergence of the various food safety regulations and auditing programs on a global scale. They truly do read as an alphabet soup. To be a

pest professional serving the food industry, it is common to have to consider and understand a list of acronyms way beyond the basics of FSMA, GMPs and HAACP. Acronyms and names such as FQPA, GFI, AIB, SQF, FS 22000, BRC and Global Gap are just a partial listing of where things stand these days in food safety and in pest management as part of all the food safety requirements. (Each of these food safety-related programs [and others] can be researched via Google or other Internet tools.)

So, should the installation of rodent control equipment be the primary defense against rodents in the food industry? And if not, what is primary, secondary and so forth? The fact of the matter is the order should be based on the inherent aspect of the science of rodents and their biology relative to the specifics of food-handling establishments everywhere. This includes, for example, the nature of how rodents invade food facilities from the exterior, their ability to escape detection once inside, and the ability of some rodents to evade even the best-laid trap and exterior baiting schemes.

The purpose of this article is to emphasize the importance proactive rodent pest management programs. And this begins by first thoroughly characterizing a facility relative to its current “rodent profile.” To do this, the primary defense in rodent control and food safety is to confirm, prior to the installation of any equipment, whether or not any rodents or rodent colonies actually are infesting the grounds and/or the facility itself. And if so: a) to what level; and b) the specific locations of any infestations.

Based on such an assessment, the goal then is to determine what will be the specific plan, in addition to the installation of any rodent control equipment to maintain a FHE as “rodent free” as possible. (“Rodent free” on a practical level means as close to zero as possible within the realization of everyday operations, surrounding exterior areas, etc.)

Proactive Programs.

So what does a proactive rodent control program look like? There is no one-size-fits-all type of program. However, I suggest the following eight steps can at least keep a program from slipping into a routine of merely “running the trap line” and relying on the results as the true barometer reading of rodents being present or about at the FHE.

Step 1. Formal rodent assessment of the facility and grounds

Remember, all areas of FSE buildings and grounds are vulnerable to rodent invasions. They do not restrict themselves to traveling along wall perimeters and property line fence rows and the like. Formal detailed rodent assessments for the presence/absence of rodents and a listing of the rodent active areas and the rodent vulnerable areas must be done in proactive programs (see later discussion for some of the areas that must be considered). Based on the assessment and the level of any rodent infestations inside or outside (see Table 1), the next steps as listed can be implemented.

Step 2. Professional pricing and bidding for proactive programs

Figure 1. Rodents are arguably the top and most important pests in and around most food-handling establishments. Despite even the best pest management programs, rats and mice are often capable of continually breaching our protective barriers and on-going inspections. Food safety programs must be unrelenting to offset the wily rodent's constant threat.

All too often, FHE clients and pest professionals attempt to establish a service cost for the pest management of a FHE before any type of assessment is done. The biggest mistake made in this regard, and what truly can jeopardize food safety, is to submit service bids based solely on the size of the plant (e.g., how many traps will be needed for 60,000 square feet of wall space; the number of exterior bait stations to be installed and the time required to service, etc.).

Proactive rodent control programs that maximize food safety require well-trained and experienced pest professionals. To implement proactive programs, it takes time. And excuse the no-brainer phrase here, but in the service industry, "time means money." Both parties have an important responsibility within the food safety partnership of pest management: quality pricing from the pest professional, and careful selection from a food company's procurement specialists. If indeed food safety is paramount to a food company, then selecting a pest professional based solely on a low price is to disregard the overall goal. It's a safe axiom that for pest threats around food facilities, food safety risks generally increase if the service quality and time (and thus charges) decrease.

Step 3. The installation and servicing of rodent control equipment

In proactive rodent programs, the installation of traps and bait station equipment is essential. But rodent control equipment always should be considered supplemental to the thorough rodent profiling of the facility and ongoing monitoring (surveillance) of areas in the specific facility that are considered "rodent vulnerable."

Many examples exist of rodent control equipment templates for the food industry and a full description is not the goal of this article (see Corrigan 2001, 2003). Suffice to say, rodent control equipment should be installed in both numbers and in locations based on Step 1, and not on some spatial yardstick measurement. The exception to this and where "yardstick installations" might actually be warranted is when — and for whatever reasons — the FSE is at a Level 4 or worse (see table), and the high rodent pressure demands as much equipment as possible.

If a proactive program is designed according to the initial assessment as described for Step 1, the pest professional will know which parts of the facility are most vulnerable; they will know the best locations for the bait stations and mouse traps. Certainly, rodent activity around large buildings is constantly changing. Equipment needs to periodically be added or relocated depending on the changing environments of the rodents themselves or changes in operations with a facility (e.g., large construction projects).

Step 4. A response plan for new or recurring activity
Rodents can arrive via any number of ways to even the best food facilities. They can scurry from a weedy patch across the parking lot to the first door or hole in the wall that allows them access to the interior. Or they can arrive within a trailer delivery. The point is a food plant or warehouse is always vulnerable to a new rodent incident.

Figure 2. Interior mouse traps along a food distribution wall. Such traps are an important component of proactive rodent control programs. But they are not more important than proactive inspections for rodent activity away from wall areas.

Sometimes, activity — new or old — is noted within the installed traps or bait stations. Other times, activity is noted from employee sightings of rodents or rodent evidence on pallets, along floors, purlins, rafters, wall sill plates and the like. Sometimes, sightings and signs of rodents occur far away from any perimeter wall equipment.

This means that skillful inspections and interpretations of any captures, the monitoring data and/or presence of ARS, is mandatory. Knowing “what to do next” when, say a mouse, has been captured in mouse trap #73, or when exterior bait station #24 is suddenly showing heavy activity, is part of a proactive program. Simply noting that a mouse was captured in MCT #73, and then moving along to the next trap is not proactive.

Rather a professional-level inspection for mouse sebum trails (i.e., grease stains) on the nearest door jamb or hole around a penetrating pipe at the squeeze point, checking a ceiling void above the capture area, or noting the nearest improperly fitting door, should all be part of a response plan as part of a proactive rodent control effort. Note that this is where the time element of providing a professional food safety service is so critical.

Step 5. Proactive inspections for non-wall areas
It is not uncommon for severe rodent infestations to develop and irrupt far away from any perimeter wall trap and/or exterior bait stations. When this happens, these rodents are never captured in any perimeter equipment. Some examples of non-wall area inspections include, but are not limited to:

- Beneath the slabs in warehouses around the bases of support piers that penetrate through the slabs (between expansion joints where cement slabs meet or surrounds piers).
- In pallets of incoming goods; these pallets may be slotted for virtually anyplace within a large warehouse.
- In the damaged goods section (morgue).
- In aisles containing foods highly attractive to rodents (birdseed, grass seed, bags of dry pet food, etc.).
- In ceilings voids (especially above heat-generating processing equipment).
- In insulated walls near high ceiling areas; along roof-level purlins (especially roof rats).

- In interior dividing walls (especially concrete hollow block and/or insulated sheet rock walls).
- In office areas; around employees desks/ within cubicle divider walls and bases.
- Cafeterias and break rooms.
- Within vending machines.
- Uncleaned dock leveler voids.
- Exterior Dumpster areas.

Step 6. Incoming supplies monitoring

The monitoring of incoming supplies is one of the heaviest lifts in rodent pest management for the client. Of course, it is not realistic to expect a food warehouse to inspect each and every pallet and every truck trailer floor for rodent droppings. Nevertheless, unloaders and other warehouse staff must be aware of the need to be alert for rodent stowaways. Mice, in particular, can and do periodically arrive directly into the facility within the everyday thousands of boxes that come off of trailers and are placed into slots.

When rodent droppings or other signs are spotted within any aisle of a plant or a warehouse, this information must be relayed to the pest professional. But just as important, the brands of products in the area of activity should be carefully checked and flagged for future attention. It's possible (but not absolute) that rodents came in as stowaways with some of those products; and more rodents might come in with future deliveries from those same brand name products.

Step 7. Open and ongoing communication and review

Communication between the pest professional and the QA team of a FHE must be given top priority. The PMP should be scheduled to meet with the designated food safety team involved with pest prevention and control at the conclusion of any pest management service. It should never be a case of the plant's shipping/receiving supervisor, or an office employee signing off on the service ticket with an "I'm OK, you're OK" routine.

Figure 3. Food safety demands a partnership between pest professionals and food clients. This exterior bait station, no matter how well placed and well baited, will not prevent rodents from freely entering into the distribution center through this decrepit screen door. Should that happen, the pest professional is often held "to task" for getting rid of the interior infestation of mice that has developed.

If the routine pest service report constantly states "No problems" or "Everything is good," the fact of the matter is everything is not good with such a pest service. Typically a proactive service from a quality PMP results in several recommendations for the FHE client. These recommendations are best delivered in some type of face-to-face meeting, however brief it may need to be.

Step 8. Quarterly review and progress reports

A review of where the plant is relative to the levels as listed in Table 1 (or whatever

other company-tailored profile the partners agree to employ) is important for tracking success and/or chronic rodent infestations requiring additional attention. With rodents, it is not enough to wait until an annual independent third-party audit to take a hard and close look at where things stand relative to progress or threats. Whichever type of assessment is employed, it is important for both parties to have a progress report.

Summary.

To those outside of pest management, the incredible complexity of rodents and their interactions with us, our large food-handling establishments, and the food distribution chain, is usually not readily visible. Sometimes, clients will reduce rodent control in commercial facilities to: “How many rodents did you capture this month,” or, “How many of the exterior stations are showing activity?” But, of course, this superficial understanding severely under-addresses food safety.

Similarly, the pest professional that services a food-handling establishment must go beyond “running” a trap and bait station line — even if they are using the most advanced bar coding and record keeping technology available. Those involved in food safety in the partnership of pest professionals and food-handling establishments must be trained to see the complexity and details of proactive rodent pest management that most others overlook. Modern day levels of advanced food safety regulations and audits require nothing less.

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References

Corrigan, R.M. 2001. Rodent Control: A Practical Guide for Pest Management Professionals. GIE Media. Cleveland, Ohio. 355 pp.

Corrigan, R.M. 2003. Rodent Pest Management for Food Plants. Pages 265-291 in: Food Plant Sanitation. Y.H. Hui, et. al (Eds). Marcel Dekker, New York. 745 pp.

Rodent Magnet: Pests, Dumpsters and the Nearest Door

Commercial food-serving establishments and their dumpsters are magnets for pests; the nearest door serves as an entry opportunity to the building. The combination of the two is likely the cause of your client's pest infestation. How can you stop this vicious cycle?

November 27, 2017
Bobby Corrigan, Ph.D.

Pause for a moment and consider this question: How do the pest issues of many of your commercial food-related clients actually *begin*? We should try to focus on the moment — the *actual moment* — when the very first mouse or rat or fly occurs at a facility and, more importantly, *where* it is likely take place.

This article poses the likelihood that the *genesis* of many of our clients' pest infestations originate where strong pest attractants meet easy pest entry opportunity. And, an all-too-common situation where this occurs is where food refuse dumpsters meet the nearest gappy door threshold.

So, how can we as pest experts, help our clients minimize such pest "startups"? Let's consider this premise and outline some on-the-job tips that address this issue specifically.

Table 1. A listing of food serving establishments (FSE) in which dumpsters and nearby doors are critical for assessment by pest professionals.

Bakeries	Multi-family housing complexes
Coffee shops	Nursing homes
Convenience stores	Office buildings
Delicatessens	Restaurants
Distribution centers/warehouses	Schools/universities
Food plants	Shopping and strip malls
Gas stations/foodmarts	Supermarkets/super retail/box stores
Hospitals	Fresh food markets (fish, vegetables, meats, etc.)
Hotels	

FSEs, DUMPSTERS & PESTS. Commercial food-serving establishments (FSEs) (see Table 1) must employ relatively large refuse containers such as dumpsters/compactors to accommodate their food waste. Dumpsters are particularly strong pest attractants for three reasons: 1) they hold copious amounts of decaying food refuse; 2) they are often located in out-of-sight areas of buildings; and, 3) they are usually misused by employees causing spills and additional filth, therefore attracting even more pests to the site.

Several urban pests such as cockroaches, mice, rats and flies are all opportunistic foragers *(see Figure 1)*. This means they tend to forage about searching for food and harborage cues and opportunities to increase their chances of survival. For sure, odors (food molecules) liberated from food waste during the decay process are usually easily detected and traced by these pests. The fact of the matter is that a food dumpster, depending on how it is maintained and where it is located, can generate billions of food-

related molecules. These molecules constantly drift into the air and settle downwards and into the zones of those animals that forage close to the ground. Naturally, these animals are specialized for detecting and follow such food opportunities back to their sources.

The majority of commercial dumpsters are located in areas of buildings that are out-of-sight and out-of-smell for obvious reasons. Most of us know that these areas are referred to as “around back.” These zones tend to be the areas where there is less foot traffic, and often they are hidden behind gates, walls or within sheds. As a result, such areas tend to be highly attractive to cryptic urban pests because they are quieter, often shadowy and contain fewer movements being made by unknown animals (e.g., humans, pets) that might pose a danger to the pest itself.

Figure 1: If not maintained, dumpsters act as powerful magnets for drawing rodents, flies and other pests to the *immediate* exterior walls of many of our most common commercial establishments.

And finally to this point, “taking out the trash” sounds like such a simple a task to most people that we actually fail to take any time to discuss and teach each other “how” to take out the trash. FSE employees are, more often than not, inclined to drag bags overloaded with food and liquid wastes along the ground and then sling them (vs. placing them) toward the “around back” dumpster. Sometimes the trash goes in; sometimes it misses and falls to the ground, creating a mess highly conducive to attracting even more pests. Sometimes the dumpster’s rain lid is closed, but often it is

not. And, cleaning these smelly, gross containers/areas is typically avoided by all even though it is *among the most important daily chores to ensure food safety!*

THE NEAREST DOOR. Dumpsters are usually located around the back of food-serving establishments. Here too, are usually the delivery doors and for many restaurants, the "kitchen doors" *(see Figure 2)*. So, the potential for problems is evident. The dumpsters attract the pests to the area, and if the doors are not properly pest-proofed (and how many are?), pests seize yet another opportunity for harborage within (or to also follow their noses to the foods emanating out from beneath those gappy doors).

Pest proofing a commercial door usually means the installation of professional door sweeps that contain stainless steel fabric meshes embedded within heavy-duty rubber encasements *(see Figure 3)*. (See also Corrigan, R.M. 2015. Of Rodents and Doors. Pest Control Technology. Vol 43. Number 8. Pages 34, 36, 38, 42, 44-46.)

All of this adds up to an unfortunate formula for these areas to serve (literally) first as *magnets* for pests; and then second as *entry opportunities* to food-related establishments — producing the actual genesis of what is now likely to become that client's pest infestation.

PREVENTIVE SERVICE. Unfortunately, many FSE managers and their employees mistakenly believe their pest infestations (however they may have begun) can be corrected solely through a monthly pest service that applies sprays, baits or traps. Worse, sometimes both the FSE client and the pest specialist will lazily place all the emphasis on the control of existing and future pests, by stressing exterior bait boxes flanking non pest-proofed doors and interior traps that are neatly "in place" to presumably capture all incoming mice (attracted by the dumpster) through those same gappy doors. Barely a word is presented between the parties relative to what is *drawing* the pests to the establishment, or by what means they are offered unchallenged entry.

And as many tenured pest professionals can attest, even when it is earnestly attempted to discuss the importance of interior and exterior sanitation and the correct pest proofing of holes and doors, the recommendations all too often receive weak responses and/or half-hearted attempts. Nevertheless, there are multiple things that can be done by both the client and the pest specialist (hopefully working in a partnership) to significantly address and negate the dumpster/nearest door threat.

Below, there is a "Dumpsterology 101 checklist" to that end. It is not all-inclusive by any means. However, it addresses the majority of mistakes/oversights made by the typical food service client as well as emphasizes the critical points for pest specialists to keep in mind while servicing FSE clients. (After all, it is usually the pest specialist who is blamed for any recurring pests caused by the mistakes made in sanitation and pest exclusion!)

Figure 4: Installing permanent bait stations on two sides of a commercial FSE dumpster pad or area is smart. Use both soft baits and block baits inside the same station to match the various feeding behaviors of individual rodents.

SUMMARY. Many times, the actual “birth” of pest infestations associated with those FSEs listed in Table 1 occur at the FSE’s dumpster zones, and the birth of the interior invasion which we have been hired to correct — and more importantly *keep* corrected — is via the door nearest the dumpster zone.

If we don’t keep an eye on this critical sanitation/exclusion relationship for them, our own history has taught us that they either ignore it, are too busy to address it, or don’t elevate it to the importance it deserves, relative to pest prevention and food safety. Whatever the reasons, ultimately it circles back to us, the pest professionals, usually culminating in complaints, costly callbacks and/or cancellations.

The bottom line then for helping our food-related clients be partners in preventive food safety is the pest control axiom: *Messy areas must be kept clean and doors must kept closed and tight*. That being said, how can we as their pest specialists, not be “ologists” for dumpsters and doors?

Whenever you are servicing an FSE account, always pause to ask yourself, “What is the relationship between the dumpsters and the doors nearest the dumpsters?

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Dumpsterology 101

An Inspection Checklist for Pest Professionals Servicing FSEs

1. The dumpster itself is kept relatively clean of grease and food films so as to not smell of rotting garbage. **Yes**___ **No**___

2. The immediate area below and around the dumpster is kept clean of foods and films on a daily basis. **Yes**___ **No**___

3. The rain guards are kept closed in between use. **Yes**___ **No**___

4. The dumpster is located as far away from any delivery/food prep area doors as is operationally practical. **Yes**___ **No**___

5. Vegetation is not growing around or in close proximity to the dumpster. (Rodents likely will establish burrows in any earthen space that is close to their daily foods.) **Yes**___ **No**___

6. The FSE is using the correct-size dumpster and employs a collection frequency matching their refuse output. Continuous overflowing refuse results in much greater numbers and types of pest infestations over time. **Yes**___ **No**___

7. Dumpsters are installed onto cement pads (never on bare ground, rough gravel, or grass, weeds, etc.). **Yes**___ **No**___

8. Two bait stations containing multiple rodent bait formulations are installed on two opposite sides of the dumpster (Figure 4). **Yes**___ **No**___

9. The doors nearest the dumpster (at whatever distance) are correctly rodent-proofed (i.e., not “weather- stripped”). Vinyl “weather stripping” will NOT deter mice and rats. **Yes**___ **No**___

10. Employees are trained in the correct usage of refuse bags and dumpsters. **Yes**___ **No**___

10a. Bags are not dragged along the ground from the back door to the dumpster. **Yes**___ **No**___

10b. Trash is placed — not thrown — into the dumpster. **Yes**___ **No**___

10c. Raw food materials are placed into bags/paper and not placed raw into dumpster. **Yes**___ **No**___

10d. Cardboard boxes (with or without food inside them) are not placed into the dumpster. These boxes take up and block the space needed for refuse bags filled with actual trash. **Yes**___ **No**___

RODENT CONTROL

Turning the Tables on Commercial Rodent Management

Sprague Pest Solutions focuses considerable control efforts inside facilities.

Jeff Fenner

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Rodent management is an essential function for many food processing, distribution and storage facilities. Protecting unprocessed and processed food from disease-laden rodents is a top priority for quality assurance and plant managers.

For years the thinking was to attack rodents on the exterior of a facility using perimeter baiting. But Tacoma, Wash.-based Sprague Pest Solutions discovered that the threat is sometimes higher *inside* the facility than outside. “It is more likely that rodents are brought into food facilities in shipments of raw ingredients like sugar, grain or flour or in packaging and shipping pallets of finished goods,” says Jeff Weier, Sprague’s veteran technical director.

To combat this threat, Sprague, which operates in six states in the Pacific Coast and Mountain regions, has turned its attention inward and found success using traps, rodent deterrents and exclusion practices to ward off rodents.

Sprague Technical Director Jeff Weier discusses his company's success in bringing multiple options to the table for a comprehensive and holistic IPM-based approach to rodent management.

Many food processing and warehousing facilities that are inspected by the Food & Drug Administration (FDA) and U.S. Department of Agriculture (USDA) have tight restrictions on using rodenticide baits inside a facility; some allow them under close supervision, others do not allow them at all.

Enclosed multi-catch rodent traps and secured snap traps are commonly and effectively used by Sprague technicians in these facilities. Not only do they produce immediate results — once a disease-carrying rodent wanders inside, its exploring and contamination days are over —traps are also a cost-efficient option for clients.

Since it may take one to 10 days for a rodent bait to deliver its lethal dose, it's understandable why some clients desire the immediacy of traps. Adding traps in interior areas around raw ingredients is a good way to capture rodents before they make their way further into the facility to contaminate food and damage structures.

Some facilities don't have large enough exterior rodent populations to justify a continuous baiting program, so Sprague is successfully deploying snap traps outdoors instead of bait. This reduces the volume of bait used but still provides coverage for the client. Bait and stations can be added if the rodent pressure increases outdoors.
Weier says food industry clients are benefiting from this evolving approach to rodent management because:

- Programs are more effective since their design is based on rodent biology and behavior and the actual risk to the facility vs. a formula.
- The risk-based program directs stronger protection measures to the facility's areas of greatest risk.
- It is more efficient, saving the client money and allowing more time for inspections, monitoring and management.
- The environmental impact is lessened: Non-target animals have more protection and less spoiled bait is thrown away.

"It provides a more comprehensive, holistic IPM-based approach to rodent management," says Weier. "Rather than relying upon just one control method, it brings multiple options to the table."

The author is a communications and marketing consultant with B Communications.

RODENT CONTROL

Slipping Through the Cracks

Structural exclusion is the industry's first line of defense against rats.

Sandra Kraft and Larry Pinto

Editor's Note: *This article was reprinted with permission from Techletter, a biweekly training letter for professional pest control technicians from Pinto & Associates. To subscribe, visit www.techletter.com.*

The effectiveness of "pest-proofing," or eliminating openings, for insects is often debated. But pest-proofing for larger animals such as rats has been shown to be an effective technique, especially as part of an integrated program involving other control measures.

"Rat-proofing" is a specialized version of pest-proofing. The primary purpose of rat-proofing is to keep rats out of the building (exclusion). When you have an ongoing problem with rats in an account, baiting and trapping alone may not do the job. You may find yourself simply harvesting rats that are quickly replaced by new rats moving in.

Indoor rat-proofing also can be used to control the movements of rats within a building (isolation). Sealing openings and blocking travel routes can confine rats to a certain section of a building, making them easier to control. High-risk areas, such as the loading dock, receiving or compactor room, can be physically isolated from the rest of the building.

Structural rat-proofing can be very labor intensive, depending on the size, age and condition of the building. Rat-proofing can involve everything from caulking cracks, screening vents and eaves, and sealing openings where pipes and utility lines enter, to reinforcing places where rats have gnawed, installing sweeps and metal kick plates on doors, and placing metal rodent guards on overhead pipes in commercial buildings. The work may be done by your company or by the client or by the client's contractor. As the rodent expert, you can identify and document problem areas to be sealed and make sure that susceptible sites are protected from rat gnawing.

Don't Overlook Residential Garage Doors as Routes of Entry

For private residences, attached garages of suburban homes are one of the main entry points for rodents. Although garage doors may be relatively tight when installed, rarely are they maintained in this manner on an annual basis by homeowners. Moreover, most people are not aware of the important but subtle difference between a door that is closed and a door that is closed and tight. Consider the long crevice along the base of a "closed" garage bay door.

With garage doors that are not tightly pest proofed, the crevice at the base of the door allows for the escape of attractive warm air currents during the hot summer months. Food odors produced within a residence several times daily also seep out of garage door crevices, providing yet another strong pest attraction.

It is easy for a pest professional while working inside any building to look outward at all doors for any thin line of light leaking into the home or garages from the outside. Light leaks should be shown to the client, with explanations as to the importance of pest proofing on energy losses. Certainly, pest management companies should offer services to pest proof the door and all other such areas of the home as part of a total residential IPM package.

Or PMPs can leave behind fact sheets, door hangers, website addresses, etc., explaining these aspects of rodents and human daily behavior (see related story, page 42) and the rodent-proofing services offered by their company (e.g., "Does your home need a pest vulnerability check-up? Call us!"). Such approaches not only offer excellent business opportunities but provide a valuable service to the community as well. – Bobby Corrigan

The preceding article was excerpted from the book, "Rodent Control: A Practical Guide for Pest Management Professionals" by Dr. Robert Corrigan.

SEAL CRACKS OR GAPS. You've heard it said that if a rat can get his head through an opening, he can get the rest of his body through, too. To truly rat-proof a building, you need to eliminate every critical opening that is larger than ¼ inch. Caulk openings beneath sinks, stoves and dishwashers. Use concrete or masonry grout to fix cracks in foundations and floors. Check roof joints and the areas where chimneys and fireplaces come through the floor from the cellar or crawlspace. Look for gaps around ground floor or below-grade windows and window wells.

REPAIR HOLES. Use strong materials such as ½-inch hardware cloth, welded wire mesh, sheet metal plates, concrete mortar, copper gauze or steel wool with expanding foam sprayed over it. It's important to use the right materials for rat-proofing since rats can chew through wood, soft materials, plasterboard, plastic and many other materials.

SEAL OPENINGS AROUND PIPES. Plug gaps around water, gas or heat pipes. For large holes around pipes, use galvanized metal pipe chase covers, sheet metal plates, mortar, plaster of Paris or cement. Wrap pipes that run along walls with sheet metal guards that fit closely to the wall and keep rats from climbing the pipe or cable.

PAY SPECIAL ATTENTION TO DOORS. In commercial accounts, add metal kickplates to the outside bottoms of doors, especially those leading to warehouses or food storage areas. Use 26-gauge sheet metal mounted no more than ¼ inch from the bottom of the door. Large commercial doors should close flush to the ground. In warehouses and other areas where people forget to close doors, install automatic door-closers or alarms. Exterior doors should have thresholds with weather stripping, sweeps or strip seals at the base. Garage doors and bay or delivery doors usually need new rubber gaskets at the bottom and sides. Trash chutes, laundry chutes and elevator shafts should be checked for rat access points.

CHECK VARIOUS VENT OPENINGS. Replace or rescreen stove exhaust, clothes dryer, roof, ridge-line or soffit vents. Screen vents with ½-inch woven or welded hardware cloth or special vent covers; use metal louvers on soffits. Seal space around heat registers, furnace and air conditioning ducts and attic fan openings.

CHECK FOR SEWER ENTRY POINTS. Check sewer outlets, repair broken sewer pipes, screen drains in basements and shower rooms with ½-inch woven or welded hardware cloth. Commercial floor drains should have a perforated metal drain cover that may need to be screwed down if rats can move it.

PAY ATTENTION TO ROOFS. Roof rats (and sometimes Norways) enter mostly near the roof line. Check attic or gable vents, utility line openings, other openings near the roof line and branches touching the roof. On flat commercial rooftops, look for gaps around headhouses, elevator shafts, pipes and utilities, air conditioning units and other roof structures. Screen rooftop ventilator openings, being careful to not restrict airflow.

Humans Often Invite the Uninvited

When we consider human efforts to keep rodents and other pests out of buildings, it often is as much rodent denial as it is rodent exclusion. The best rodent-proofed doors using the best technology are of little value if the doors are regularly left open or ajar.

This point is most applicable for commercial facilities, where the most common points of rodent entry are through doors left open by employees. Consequently, all doors of commercial facilities — especially those associated with storing, serving or processing foods — should be fitted with automatic door closers.

In large commercial warehouses and buildings, employees often want to leave doors open to regulate temperature or increase fresh air. If this is done, heavy-duty screen inserts must be used to prevent rodent (and insect) entry. Management must implement programs that stress to all employees the importance of keeping doors closed on a daily basis. Strategically placed door and wall placards emphasizing the importance of pest denial are very effective. But placards must be kept fresh and current (e.g., a different message every four months or so).

Similar to commercial facilities, homeowner habits in residential areas are the cause of many rodent invasions. Even if a garage door is structurally sound and fits tight to the ground, it is common for people seeking fresh air in their own “nests” during the spring and summer months to leave the garage doors fully or partially open most of the day, and up until the time they go to bed at night. Consequently, rodents and insects are often permitted unimpeded entry to houses directly. — Bobby Corrigan

The preceding article was excerpted from the book, “Rodent Control: A Practical Guide for Pest Management Professionals” by Dr. Robert Corrigan.

The authors are well-known industry consultants and co-owners of Pinto & Associates.

Pest Control
IT'S YOUR BUSINESS
As seen in THE SANITARIAN

The Science

Behind the Inspection Aisle

By Dr. Robert Corrigan, Guest Contributor

The perimeter inspection aisle (also referred to as the "sanitation line") in food plants and warehouses is a designated "product-and-materials-free" zone that borders the interior perimeter walls of production and storage areas. From a pest management perspective, the inspection aisle is one of the more critical zones of food production and storage facilities. But why is this so?

Let's briefly examine the operational reasons, as well as the science, behind establishing and maintaining the inspection aisle:

1. Direct connection to exterior areas—The area directly on the inside of perimeter walls is connected to the immediate building exterior via utility lines entering through the walls, or from the various wall and floor expansion joints and seams. Many times, these structural spaces and lines are not properly sealed, or the seals separate over time, providing ample space for pests to gain entry. For many insect pests, such as ants or grain beetles, entry space is measured by just one or two millimeters. Mice require about six mm to gain entry, while rats need about 12 mm.

2. Harborage-seeking behavior—Many of the pests that infiltrate food plants and warehouses, such as ants, rodents, grain insects and cockroaches, are "thigmophilic" and phototropic negative. These fancy terms basically mean "touch loving" and light-avoiding, respectively. These behaviors help pests avoid their predators, and thus live longer.

Once pests gain entry, they tend to gravitate toward dark and shadowy areas, or where cracks and crevices formed from wall/floor junctions provide pests with concealment. Consequently, when products are stored directly next to walls, this practice both attracts pests and also provides them with excellent harborage opportunities (Figure 1).

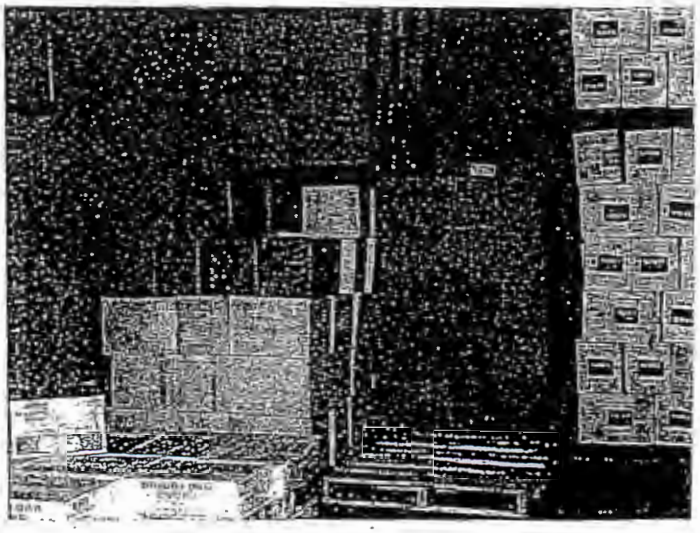


Figure 1:
Storing products up against the walls creates several pest problems, and prevents the proper implementation of pest control efforts.

3. Decreased airflow is attractive to pests—Many insects and rodents prefer areas of low air flow. Insects

lose body moisture rapidly when exposed to constant air currents passing over them. Rodents may lose precious body heat in these environments as well. And, as you might expect, areas that are congested with product have low air flow and are attractive to pests.

4. Food spillage remains unnoticed—Because wall areas are often where products get squeezed into available spaces, or where products are pushed up against walls, product breakage and food spillage is common. What's more, when product is stored too close to the perimeter walls, the wall area cannot be accessed by the cleaning staff. Eventually, this area becomes a case of "out of sight, out of mind," and it remains uncleaned for prolonged periods.

Why would mice explore holes in metal traps when there is an abundance of food, nooks and crannies among the cluttered boxes and pallets?

Pests hiding in this area discover food is now being delivered to their doorstep, and can be consumed in the total protection of the clutter and darkness. When this situation develops, mice, for example, decrease their investigative behavior, and do not venture into the perimeter mouse traps as readily as they do when they are searching for protective cover not readily available on a clean, uncluttered inspection aisle. In other words, why would mice explore holes in metal traps when there is an abundance of food, nooks and crannies among the cluttered boxes and pallets?

5. Pest control efforts are hampered—If the perimeter inspection aisle is not properly maintained, pest control efforts are severely hampered, or even totally wasted. Without the aisle, this area so highly vulnerable to pests cannot receive mouse traps, pheromone traps, monitoring stations and the possible pesticide treatments needed to control incoming pests. Or, if the inspection aisle becomes cluttered after pest control tools have been installed, the pest management professional cannot access the traps and monitors or apply any type of pesticidal treatment for crawling pests, should it be needed.

Worse still, when the inspection aisle is not respected by forklift personnel, the various trap and monitors are constantly smashed and broken due to forklift contact, or from products being shoved into and on top of them. Replacing these devices is expensive and annoying to both pest management professionals and food plant/warehouse managers alike.

6. Structural damage—Finally, when an inspection aisle program is not established or respected, forklift drivers regularly "bump" into the walls of the building, creating even more access for pests to gain entry—as well as providing interior pests with more harborage.

Guidelines for Inspection Aisles

There are no specific Food and Drug Administration (FDA) or United States Department of Agriculture (USDA) regulations regarding the inspection aisle. Most companies may have their own "in-house" guidelines, but several considerations are important.

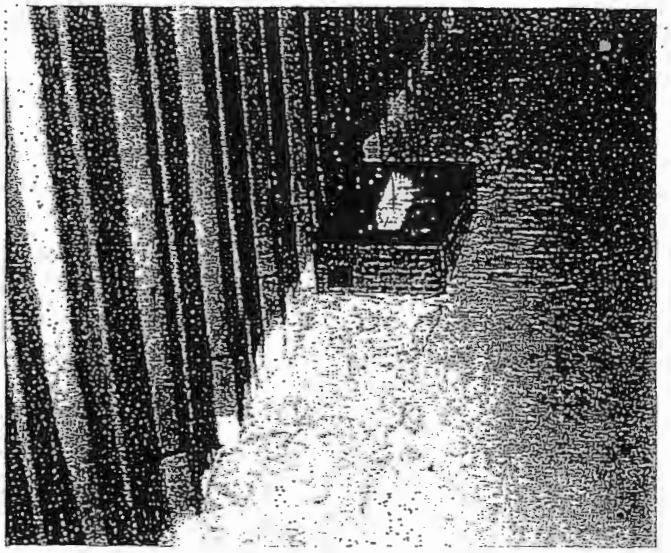


Figure 2:
The sanitation/inspection aisle is typically 18 to 24 inches wide, painted white, and should remain product-free at all times.

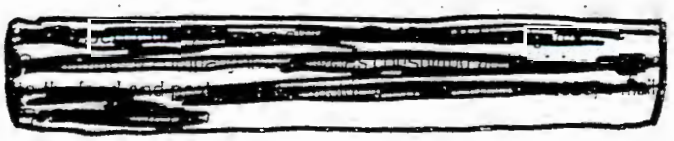
First and foremost, the aisle must be wide enough to allow for a person to comfortably and safely walk, sweep, mop or install and inspect pest control tools. Most aisles are between 18 and 24 inches in width. Some aisles may be somewhat larger, depending on the situation. But an aisle smaller in width than 18 inches will hamper access and cleaning activities.

Second, because this particular area is so vulnerable to pest invasion as well as the accumulation of spillage and dirt, the inspection aisle is often painted bright white. A clean white line provides for maximum visual inspections to quickly notice black rodent droppings, the dark bodies of insects or rodents, the fragments of wood pallets, product spillage, and many other contamination elements (Figure 2).

Third, protecting an established inspection aisle from product storage and forklift activity is a daily challenge for most food plants and warehouses. Some facilities simply leave the white border as the visual reminder for where the forklifts should stop. Other plants install formal protective barriers, such as heavy-duty guard rails or floor L-flanges. The choice of system used usually depends on the level of sanitation the facility sets as its goal.

In summary, it should be noted that many warehouses and food plants these days are suffering from growing pains, and floor space is an shrinking commodity. Still, there is no magic wand for managing pests. Maintaining and enforcing an inspection aisle is a critical component of hygiene and pest management.

Food industry and pest management professionals alike cannot afford to let pests get a foothold inside our food plants and warehouses by providing them with the vital resources of protective cover and food. ◆



The Hard-to-Reach Concept

By Dr. Robert Corrigan, Guest Contributor

Accessing the various hard-to-reach areas in our food plants for cleaning efforts is one of the key elements in eliminating hard-to-control pest populations. In large-scale food plants and food-serving establishments, pests sometimes become persistent and hard to control. This is true even in the facilities that practice adequate sanitation programs and employ regular pest management efforts. But why is this so? What factors are responsible for chronic pest sightings and pest population buildup despite our best efforts in eliminating them?

Persistent pest populations can occur in food plants for a wide array of reasons and complex factors. However, it's been my experience that there are three common reasons involved:

1. We clean our buildings and plants to the "people-clean" level, and not to the "bug-clean" level.

2. The pest populations exist in hard-to-reach areas.

3. We underestimate the size and scope of the pest problem (and thus, the intensity of cleaning and pest control efforts fall short of what is truly required).

The topic of cleaning food plants is covered in hundreds of food production-related books and articles, and this broad concept is beyond the objective of this short article. However, Mike Holcomb, in his lectures and publications over the years, has coined the terms "macro-sanitation" and "micro-sanitation." Macro-sanitation is cleaning a room to a level that is typically viewed from the human perspective ("people-clean"). But for small insects that harbor in the hundreds of different types of cracks and crevices (micro-environments), found in a large food plant, we must clean these areas via micro-sanitation efforts ("bug-clean"). Otherwise, pests easily locate the food left behind in the micro-environments, and thrive—even though we perceive we are "cleaning" our plants on a daily basis.

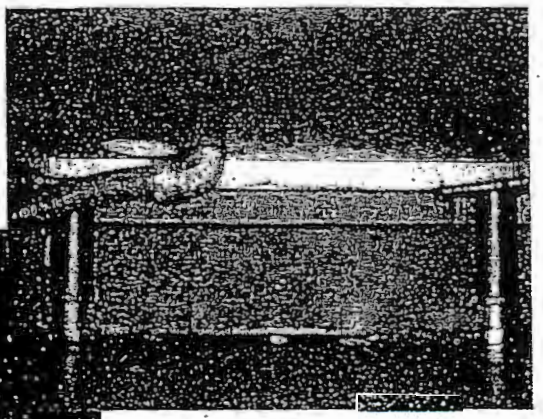


Figure 2: This micro-environment beneath a piece of equipment in a food plant must be thoroughly cleaned at the hard-to-reach tile areas beneath and behind the legs. Otherwise, many small insects will use these areas to breed.

In many everyday, real-world food plants, cleaning the micro-environments may be easier said than done, because the micro-environments are typically in areas that are either hard-to-reach or totally inaccessible to us on a practical level.

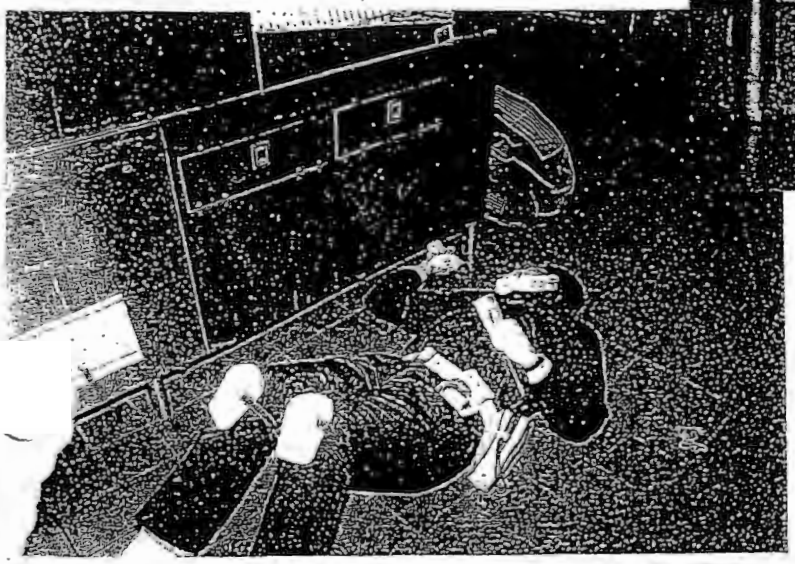


Figure 1: Accessing HTRs for cleaning and inspection requires extra effort and determination.

The Hard-To-Reach Concept

Hard-to-reach areas (HTRs) usually also translate to being either hard-to-clean areas, or in some cases, not cleanable. Moreover, hard-to-reach areas are often also hard to see.

Consequently, these areas are frequently overlooked for both cleaning and routine pest control services.

Pests take quick advantage of this situation. HTRs accumulate food residues, moisture, scum, and/or clutter. Pests also find these areas attractive harborage for raising their young, and for hiding from predators. The result? Food plant pests such as grain insects, ants, small flies, rodents and others, proliferate in the HTRs.

I have a dependable "80/20 rule" when attempting to solve tough pest problems in food plant environments. That is, 80 percent of the persistent pest problems originate from only 20 percent of the facility. And that 20 percent is usually in the HTRs of the plant.

So, knowing that pests (and dirt) tend to gravitate toward the HTRs in food plants that practice standard sanitation efforts, I believe that "Hard-to-Reach" is an entire concept worthy of the daily attention of everyone concerned with quality sanitation efforts and pest elimination programs, from management on down.

Figure 3: Enclosed, low-lying shelving such as this accumulates residues of powdery foods such as flour. This HTR then becomes a serious insect breeding area.

Corrigan's 80/20 rule: 80 percent of the persistent pest problems originate from only 20 percent of the facility.

Specifically, however, the HTR concept most directly impacts the sanitation personnel; maintenance and engineering personnel; and the pest elimination professionals. The goal (responsibility?) of each of these work groups—in coordinated efforts—should be to both locate and access as many of the HTRs as possible.

For the sanitation personnel, the HTR concept translates into hard work. Accessing HTR micro-environments usually requires extra physical efforts involving crawling, squirming, sitting and squeezing into various "tight spots" to properly clean. Unfortunately, we often do not train employees correctly on cleaning with the HTR concept in mind. Moreover, training or not, some people are simply not inclined toward making the extra effort for HTR cleaning.

Accessing HTRs also requires equipment such as ladders and scissors lifts, as well as various tools for disassembling cover plates and equipment access panels. Relative to pest infestation potential, not accessing a piece of equipment in an HTR (such as a motor belt cover void) to remove the accumulating food, is actually worse than a cleaning person not sweeping the floor of obvious food spills for several weeks. And of course, dirty floors are always unacceptable to anyone walking through the plant. But as the saying goes, "It's the things you can't see that are the real danger."

Maintenance crews and building engineers certainly have a responsibility to install equipment that allows for accessibility and easy cleaning. And finally, pest elimination personnel must think in terms of micro-environments when inspecting and treating for pests.

Practically speaking, it truly is not humanly possible to access all the thousands and maybe millions of micro-environments existing inside a food plant. In fact, it has been estimated that once a building is completed, people have access to only 50 percent of the structure. Certainly, no one knows how much access the pests have; perhaps in some cases it is as high as 95 percent.

Thus, the reality for most food plants is that we must rely on fumigation or modified atmospheres (such as heat treatments) to control the non-accessible pest populations. With the advent of losing methyl bromide, as well as possible significant restrictions placed on remaining fumigants, the HTR concept is one of the keys for eliminating the hard-to-control pest populations. Perhaps we need an attitude adjustment regarding how we clean, and, also, how much time pest professionals should spend attempting to directly access the hard-to-reach pest populations in order to eliminate them at the source. ◆

Dr. Bobby Corrigan is a pest management specialist who establishes IPM programs for the food industry and other sensitive-environment accounts.

SECTION 7:
TRAPPING/BAITING/MONITORING

Annual Rodent Control Issue

An Insider's Look at Trapping Urban Rodents

Tips for thinking outside the bait box from a seasoned rodent control specialist.

By Laura Straub

There's more than one way to catch a rat, and when working in an urban environment, pest management professionals need to trap smarter. From bait options and trap placement to catching it all on film, "thinking outside the bait box" makes trapping more effective.

"There is very little virgin territory when you're doing urban rat work," said Timmy Madere, special projects coordinator, pest control specialist, New Orleans Mosquito, Rodent and Termite Control Board. "You always have to assume some pest management professional has been there before and they've tried traps, they've tried baits, they've tried everything."

So to catch these conditioned rodents, Madere said that pest management professionals need to go in with a strategy.

"You're basically shooting yourself in the foot a lot of times when you go out to a site and just start throwing stuff down immediately and not taking into account that these animals have been trained for generations of pest control guys going in there and going straight to the big guns when they should be taking their time and approaching it a little differently."

BAIT OPTIONS. Although peanut butter is the go-to bait in the pest control industry, Madere suggests considering other options. Depending on the location of the infestation and the types of rodents, there may be better alternatives.

He said hazelnut spread, frosting, chocolate sauce, taffy and grape jelly can be sweet replacements in locations where people inside the building might be suffering from peanut allergies.

"Species to species, it's going to be a little different, what bait you use for each," said Madere.

Most species, especially roof rats, are interested in raw leaf spinach, cucumbers, apples, oranges, tomatoes, figs and bananas. He said that these wet baits are perfect for when it's hot in the summer, or in a drop ceiling space where there is no water available.

Madere also suggests bacon bits, canned dog food, tuna, beef sticks, shrimp heads and spam as wetter baits, and sunflower seeds, birdseed and dried corn as dry bait.

The problem with these baits, are they do not *only* attract rodents. Small insects and cockroaches could be getting to the traps before the rats.

"If you're going to use peanut butter, use crunchy, because if you get roaches and bugs feeding, at least they're going to leave behind some of the nuts," said Madere. "But sometimes we have to think a little bit differently with our bait options, because you'll never catch a rat in an empty trap."

To get around this issue, Madere uses cotton string soaked in vanilla extract, sesame seed oil, bacon grease or tuna juice.

The string is thick and easy to work with, plus it can be used on any trap, making it quick for prebaiting.

Female rodents are also interested in the string as a soft nesting material, but to get at it, they need to get up close and personal with the trap.

"Using string bait forces the rodent to interact with the trap more," said Madere. "He has to get in there and actually go for the string. Their first instinct is to pull on it, and that's going to set the trap off."

But to get the desired effect — the string, or any other bait — must be positioned correctly on the trap, said Madere. Don't crumple it and put it in the cup, or arrange it on the back of a Snap-E trap, and to prevent rodents from leaning over the trap to get a lick, try not to concentrate the bait on the back center of the trap.

TRAP PLACEMENT. Even if traps are baited with a rodent's favorite bait, if they're not set up in the correct location, the pests will never find them.

"When placing our traps, we need to look for run lines and shadows," said Madere. "That's where they're going to go naturally, so why not put our traps there."

He said to clean up before starting any trapping work — that way it's easier to pick out fresh droppings, holes in walls or things rodents may have brought inside with them.

Are the rats running the pipes? Madere suggests Zip-tying the traps directly to them.

"It's important where you place the Zip tie on the trap," he said. "The trap has to stay stable so it doesn't snap indiscriminately."

He added that T-Rex traps aren't great for pipes, because the rodent only has one access point, but there are other traps designed for this scenario, complete with predrilled Zip tie holes.

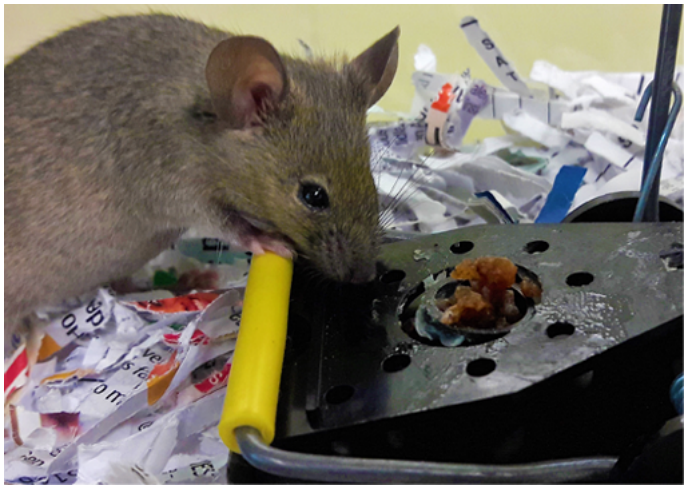
When placing traps on the ground it's tempting to place a trap in the corner, but that means there are two less access points that the rat or mouse has to the trap. Instead, set up two traps on either side of the corner with the trip plate facing the wall to catch two.

Many times, more traps result in more sprung traps, but it is important to watch the proximity so each trap remains effective.

"Put your traps too close together and you're working against yourself," said Madere. "I've caught the same rat four times."

When trapping outside, Madere suggests focusing on runs rather than burrows. Many rodents will end up jumping over a trap placed outside the burrow, but will collide head on with a trap on a path they run daily.

Trap placement can even accelerate the prebaiting process. Madere suggests setting up three traps next to each other, one prebaited on each end, and the one in the center set.



A rat cautiously approaching a snap trap baited with bacon.

It's also important to think about collecting the traps while you place them, said Madere. If a full trap falls down into a wall or an inaccessible corner of the attic, how will you empty it?

BAIT STATION BASICS. Madere's first rule of bait stations is to always read the label first.

"The label is law," he said. "Before I touch any kind of chemical, I want to know if it is going to hurt me, so I better read the label."

Once the right amount and type of bait is established, it's time to select the type of bait station and the bait that goes in it.

Mice like a lower profile box, while rats prefer something a little higher; however, if the box is too big, it could turn into a rat condo. They should come in, eat and leave, said Madere.

There should also be multiple bait types at each station. They need to be rebaited regularly, and the bait that hasn't been touched needs to be removed.

Madere said that the rodenticide should match the bait. "Use odors to match the species to what it might want to eat."

It is also beneficial to interchange rodenticide with non-active bait. "By using the non-active bait that also helps (the rodent) get over the fear of a food source and if it's going to hurt them or not," he said.

Once baited, each station should be placed with the entrance flush to the wall, creating a dark space that the rodents will want to investigate.

SEVEN 7 SIMPLE RULES FOR TRAPPING

When heading out to a new site, rodent trapping expert Timmy Madere follows seven simple rules for trapping.

1. Use multiple bait options

Madere said pest management professionals should put down the peanut butter and consider other options. "Peanut butter is king bait in our industry, and we need to stay away from that for a lot of reasons," Madere said.

Choosing a bait option other than peanut butter is important when working in a space with people who may suffer from peanut allergies, but it also may be more appealing to rats.

"Rats, they're browsers, they want to try a little bit of this, and a little bit of that," he said.

Rats in certain spaces may also be conditioned to associate the smell of peanut butter with pain. Madere said that if a rat approaches a trap and has a close call, possibly losing a vibrissa, that rat will be scared of the trap for an indeterminate amount of time.

2. Use their current food preference as a bait choice at the infested account

"My first question when I arrive at a site is, 'What are they eating?'" said Madere.

Instead of instinctively reaching for the peanut butter, research each location and use the rat's current food source as bait, because the desire to eat that food is passed on from the mother to the pups. Madere said that depending on the location, this could vary from shrimp heads in a seafood restaurant to salt water taffy in a candy shop.

Peanut butter is a popular bait.

3. Eliminate available food sources

Eliminating all the available food sources can be tricky when dealing with rats, because they often will go after things that have no nutritional value such as candles, toothpaste and even soap. Madere recommends thinking past the obvious, and trying to remove or secure anything that could possibly interest a hungry rodent.

4. Put out plenty of traps

Did you put out a dozen traps at a new location? Well there might be three dozen rats. "When you think you've put out enough traps, put out more," said Madere. "The more traps you put out, the more you're increasing your chances to catch a rat."

5. Bring the trap to the rat

Bait can attract other pests such as roaches, so it's important to place traps where the rats are; otherwise you might bring new pest issues to parts of the building where there was once none. When placing traps, follow signs like rub marks, droppings and gnaw marks.

6. Prebait traps

Prebaiting is a simple concept that has been around a long time — and it's necessary if you want to trap effectively, said Madere. Start by setting out a few baited traps that aren't set, and then wait for the rats to clean out the traps. After two or three consecutive nights of emptied traps, it's time to start setting them. Madere also suggests rat pheromones can prevent trap shyness. He found success placing his traps in a tank with lab rats for a few weeks before placing them out in the field. However, the easier trick is adding droppings from other traps — they also have the pheromones and are associated with feeding.

7. Always empty and rebait traps

Never forget to come back, empty and rebait traps, said Madere. "We want to get those dead animals out. Not only is it the smell and a sanitary issue, it's also working against us," he said. "If we don't rebait the traps, the effect of prebaiting goes away really quickly."

Madere suggests monitoring the boxes at least once a month depending on the site, because if the rats are not taking the bait, they could actually be nesting happy and healthy inside the box.

"In one or two months it could become a nightmare and something that actually makes your rodent problem worse for you," he said.

He also said to place boxes only where you need them, because putting out boxes as a preventative measure could be welcoming new pests like American cockroaches while wasting time, money and bait.

BURROW BAITING. According to Madere, pest management professionals should use pellets exclusively for baiting burrows.

"House mice have little pouches and they love to make food hoards, little food stashes, and they will gather up those pellets," he said. "If you're a technician and you service houses and you use pellet bait, I almost guarantee you if you look in someone's sock drawer you'll find a stash of pellet bait."

That pellet bait also looks like candy, which is dangerous to children.

Even when baiting burrows, it's still important to be careful with pellets.

"I do a lot of it, but I also see a lot of it done incorrectly," said Madere.

Before baiting the burrow Madere uses a flexible ruler to measure the distance inside.

"If I can't get in a foot without it collapsing, I don't bait that burrow," he said. If he does bait the burrow, Madere uses a ½ inch or ¼ inch length of rubber tubing attached to a funnel to insert the pellets.

"Underbaiting and overbaiting are often an issue," he said. "Be sure to read the label for the proper rate. Too little will not be effective, and too much will prevent the rats from even getting in the burrow — and once you put it in, you can't take it out.

"It's very much an art form. You have to be very delicate when you're doing this, because you're trying to be careful to not collapse the burrow, and burrows often have curves and hooks to them, so you're feeling for that as you do it."

When a burrow *does* collapse, the bait gets spread as the rodents dig out, making for a dangerous mess.

"What do you do in that situation?" Madere rhetorically asked. "You go and clean it up right away or you're in some serious trouble. You don't want to kill a non-target. That's bad for our entire industry and it's just sloppy in general."

CAUGHT ON CAMERA. "If you're in the industry and you're working with rats, go out and pick up a few game cameras," suggested Madere.

At about $85 apiece, these cameras open up a whole new world. Although it's an art to get the lighting and focus just right, once it's correct the infrared and black-and-white images and video can show a pest management professional exactly where the rodents are going and what they're doing, said Madere.

"The cameras give you all kinds of really good information," he said. The pictures can show were the rodents are eating and running, their patterns of activity and what they are doing with the bait.

According to Madere, pest management professionals should place cameras between three and six feet from the area they want to monitor, and should be aware of things like dripping water that could also trigger the shutter.

To adjust the lighting on the camera for the shorter distance, use duct tape on the flash, and if the pests are just too fast for the picture, try placing a brick in their normal path to slow them down.

Each of these strategies is just one piece of the trapping puzzle. To effectively end a rodent infestation, PMPs need to use resources like game cameras and location sweeps; stay up-to-date on the latest bait products; and have a thorough understanding of bait placement.

Time is money, but a little extra time at each site can result in a more successful trap, said Madere.

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Annual Rodent Control Issue

20 Trapping Tips

How to best place, bait and maintain snap traps.

By Sandra Kraft and Larry Pinto

Editor's Note; This article was reprinted with permission from Techletter, a biweekly training letter for professional pest control technicians from Pinto & Associates.

Mouse control can be challenging for even the most seasoned pest management professional. However, service technicians can enhance their chances of success if they use expanded trigger snap traps with a much larger pedal (sometimes called a platform trap or professional trap),

What follows are 20 tips for controlling mice with snap traps, including helpful suggestions for proper placement, baiting and maintenance.

SNAP TRAP PLACEMENT TIPS. Expanded-trigger traps that are properly placed along mouse runways will catch mice even without any food bait Other placement recommendations Include:

1. Place traps along mouse runways — next to walls and especially in dark. hidden areas such as behind the stove.
2. Place traps where mice are feeding or where droppings or nest material have been seen.
3. Use boxes or other large, movable objects to create a runway that will move mice along a pathway toward your traps.
4. Place traps with the baited or trigger end of the trap against the wall and at a right angle to the wall.
5. Don't place traps too far away from each other along an active runway. Use more traps placed closer together, about 6 feet apart, but cluster traps in areas of high activity.
6. To avoid mice jumping traps, use double sets with two traps placed side-by-side.
7. To protect traps from view, dust, children, pets or equipment. place them Inside a bait station. Place two or three traps inside at right angles to the long end so the mouse runs Into the trigger end of the trap as soon as it enters the station.
8. To set traps on pipe runways, screw a hose clamp onto the bottom of the trigger end of a wooden trap and use this to attach it to the pipe with the trigger end perpendicular to the pipe. Or, screw a cup hook onto each side of the trap and run a rubber band under the pipe and attach it to the hooks on each side. Initially, use lots of traps, about five times as many traps as you think there are mice.

SNAP TRAP BAITING TIPS. Snap traps don't have to contain food bait to catch mice, but bait usually helps. Studies show that bait is stolen less often from expanded trigger traps than it is from standard snap traps.

1. Use only a pea-sized amount of bait or a thin smear. Too much bait lets mice feed or steal it without ever touching the trigger.
2. When first baiting multiple traps, try food baits like what the mice are feeding on in the account but also try some new foods that might provide a missing dietary nutrient. If you find a preferred food, use that in your traps.
3. Some good food bait choices for house mice are peanut butter (avoid use in schools or where food allergies could be an issue). gumdrops, nut meats, bacon, caramel corn, hot dog slices or a dab of '"kitty malt' (treats hair balls in cats; comes in a convenient tube).
4. If mice keep removing bait without snapping the trap, try tying the bait onto the pedal with dental floss or melt a bait (chocolate. cheese or marshmallow) onto the trigger or use a sticky bait such as peanut butter or molasses that can't be carried off. Put a thin smear on both the top and bottom of the trigger.
5. If food is plentiful but nest material is not, tie bits of yarn or soft string. or strips of cloth onto the trigger. Or, bait traps with both food *and* nest materials.
6. Gain their trust by placing baited but unset snap traps for several nights until the mice are used to feeding from the traps. Then bait and set them.

SNAP TRAP MAINTENANCE TIPS. Once set. snap traps must be properly maintained by the PMP. Therefore, follow these recommendations:

1. Wear gloves when setting and baiting snap traps and when handling a mouse or trap that has caught a mouse to protect yourself from disease.
2. Check traps often, not only to *remove* catch and reset, but also to replace missing or rancid bait.
3. Attract more mice by letting some mousy smells of urine and droppings remain on the traps. In other words. don't wash your traps (scrape them dean if you need to), but don't let them get so gummy that the action of the trigger is slowed down.
4. If your food baits are getting *wet.* moldy or dusty m the account, place the baited traps inside rodent bait stations. Place two or three traps in each station_
5. Be careful how you store your snap traps. Don't store them near pesticides or other chemicals. To make traps more enticing to mice, store them in a plastic bag with some of your food bait. Precondition new traps by storing them with used, dirty traps.

The authors are well-known industry consultants and co-owners of Pinto & Associates.

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Pest Paths

Ten common ways pests can gain access to food-processing and warehouse facilities.

June 26, 2017

Pat Hottel (/author/3008)

Smart Exclusion Solutions, Sponsored by Xcluder (/news/category/exclusions-solutions)

Pests can run, crawl, fly and hitchhike their way into the facilities we service. Some paths are obvious like a door which is left open or poorly sealed, and some not so obvious. Here is a list of the ways pests can enter a building and the methods for preventing entry:

1. Dumpster Compactors. Not only can dumpster compactor chutes provide entry points through poorly sealed chute designs, but the dumpsters themselves can attract and serve as breeding sites for pests. In fact, the dumpster box could be transporting pests to and from the waste disposal site depending on how the box is handled. If the garbage is merely emptied and the receptacle is not cleaned, fly maggots and other insects can continue to thrive inside the residues left behind. If the old dumpster is dropped at the waste disposal site and a new box delivered, it can bring pests with the recycled dumpster. This is one of the reasons that monitoring this area is so important to make sure that rodents or insect pests are not being transported to the site. Facilities should have a program in place for cleaning dumpsters, and dumpster pads, especially during the warm weather months, and sealing around dumpster compactor chutes to prevent pest entry.

2. Trailers And Totes Held For Animal Feed And Farms. Though a great way to reduce the amount of food waste going to landfills, holding food for animal feed can potentially provide a path for pests. Traditionally, feed trailers are not routinely cleaned, which means that residues inside the trailer after loads are dumped can support pests. If the food waste is dry, it could provide an area for stored product pests to develop. If the food waste is moist and organic, filth flies can breed. These trailers may be transported to sites which are less sensitive to pests and whose on-site sanitation is even more poor. We have traced more than one rodent infestation in a food plant to the handler of feed totes. In one case, mice were brought into the facility on the totes. In another example, rats were introduced to the site via trailers returning the totes.

3. Employees. Several urban pests are excellent at hitchhiking. These include the German cockroach and the common bed bug. We routinely find that when these pests inhabit workplaces, they arrive on the belongings of employees. Having a separate area for employees to store their belongings, including lunches, is critical. Monitoring these areas for pest activity is also important with regularly scheduled employee locker clean-outs as a part of the monitoring and inspection process. Facilities should have a policy in place to deal with employees who have been found to be the sources of pests such as bed bugs. These policies should be established prior to the first incident because it will require the involvement of multiple departments, including human resources, when a situation is identified. A timely response means having the action plan in place well in advance.

4. Trailers Used For Pallet And Cardboard Storage. It is not uncommon for facilities to use a trailer to store pallets or other items as a way to increase warehouse storage space. However, often, it is difficult to completely seal around the warehouse door frame/trailer door junctures to exclude pests. Often these doors are left open to allow forklifts easy access to the stored items. Unfortunately, it also provides easy access for pests. These gaps, particularly along the base of the trailer, can be six or more inches wide. Most food facilities would not allow a 6-inch wide gap in a warehouse wall, yet they allow these imperfect seals around storage trailers. These trailers are an extension of the warehouse when used for routine storage. The use of trailers with roll-up doors tends to provide a slightly better seal against the dock than trailers with double doors that swing open. The double doors on the trailer create additional space between the dock and trailer and should be avoided when possible. The best remedy is to keep the dock doors closed while not in use.

5. Incoming Shipments. Just like pests can hitchhike on employees, pests can also hitchhike on raw ingredients and other materials coming into the building. A good inspection of incoming goods is required to make sure any unwanted guests are excluded. Once the product has been accepted into the site, it can be difficult to establish responsibility for the pest infestation. An infestation also can go unnoticed until populations have reached critical numbers. A good example of this issue is pallet mice that can be harboring in the center of a palletized product stack. Pallet mice can remain inside that stack where food is available and begin to infest neighboring products. Numbers can build up quickly and compromise food safety. A proper inspection program can help reduce this risk. Check between the top and bottom decks of the pallets while elevated on the forklift to look for droppings at a minimum.

6. Negative Building Pressure. One of the most expensive structural deficiencies to correct is a negative pressure situation, yet it can be responsible for bringing a wide variety of insects into a structure. In worst case scenarios, negative building pressure can make it almost impossible to open a door because the force of the outdoor air pressing toward the door is so strong. Negative pressure can pull insects into a building whether they want to come inside or not. Insect attractive lighting, building temperatures and food odors emanating from the structure can add to the complexity of the issue.

7. Improperly Functioning Air Doors/Curtains. Air curtains can provide a false sense of security when it comes to preventing pest entry, especially if the right air door is not selected and maintained. Over time, the doors may not function as well as originally installed, or may not have been installed correctly in the first place. An improperly functioning or poorly installed air curtain can do more damage than no air curtain by pulling insects into the building. The proper air stream should be 2-5 inches wide at the nozzle with a minimum air velocity of 1,600 fpm (feet per minute) of air, 3 feet above the floor and across the entire span of the door opening. Food facilities should periodically check their air doors for proper functionality. If a building has a negative air pressure issue, it may be difficult to find an air door or curtain strong enough to compensate for the force from the outdoor air. Negative air flow must be considered in selecting the right air curtain.

8. Dock Plates. Because of their nature, gaps around the dock plate may be required to permit movement. The best dock systems consist of a plate which is lowered from an upright position into a trailer versus the dock plates which are incorporated into the floor. Dock plates that are incorporated into the floor will have spaces around the plate that need to be sealed with brushes or plates. Special care is needed to ensure a proper seal where the dock plate seal meets the door seal. In addition, there will be chain pull openings, which require sealing. There are several different door seals available, including seals for the chain pull area, to exclude pests. Xcluder is one product line offering dock plate seals, door seals and dock plate chain pull seals.

9. The Wrong Screens Used For Doors, Vents And Windows. Most insects will be excluded using normal sized window screens. The average mesh is designed to exclude pests like house flies and mosquitoes. However, some insects, like fungus gnats and thrips, will get through normal window screening and require a smaller mesh screen. In the search for zero insect activity, these smaller mesh screens may be necessary, depending on the type of exterior pest pressures. PMPs should consider working with customers on this additional level of exclusion. BioQuip and U.S. Netting are two suppliers of finer mesh netting for small insect exclusion. In addition to the right size mesh, all screens should be tight-fitting and repaired if tears occur.

10. Floor Drains. A sewer system can provide an ideal harborage for pests like small flies, cockroaches and rats, which then travel into facilities. Drains, which are seldom used for water management, can be particularly problematic. Maintaining drains through cleaning and proper grating is essential in helping keep pests from migrating into structures through sewer highways. If a drain is not needed for waste water management, consider having the customer cap it. If it is needed and supporting pest entry, consider using special caps or screened “socks,” which will allow liquids to flow down the drain but help keep pests out. Some of these exclusionary devices are designed for insects only and not rodents. Liquid Breaker Green Drain is an example of a one-way valve insert for insect exclusion.

Pat Hottel, a member of the Copesan Technical Committee, has almost 40 years of experience in the pest management industry. She’s been with McCloud Services in South Elgin, Ill., since 1980 and serves as technical director. Hottel holds a bachelor’s degree in entomology, a master’s degree in educational technology, and is a B.C.E.

Copesan is an alliance of pest management companies with locations throughout North America. To learn more, visit www.copesan.com (http://www.copesan.com).

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COMMENTS

Why Is Rodent Tracking So Important?

Focus on Rodent Control - Focus on Rodent Control

Both still and video cameras are increasingly being used within the pest control industry to help build an effective rodent control program. Combining new technology with traditional tracking methods can be much more effective and efficient, and less costly.

February 22, 2017
Dan Austin (/author/5983)

"Tracking is one of the oldest tools in our toolbox," said Tim "Timmy" Madere, special projects coordinator/pest control specialist for the City of New Orleans Mosquito, Termite and Rodent Control Board. "It's an overlooked skill in our industry. We need to use it more in conjunction with technology."

Madere addressed this important topic during his presentation, "Tracking and Technology: Old Methods Meet New Tools," at a Rodent Control Virtual Conference hosted by PCT magazine. Madere pointed out that the industry has become too habitual, such as automatically placing bait stations every 15 feet around the perimeter of a building without taking the time to ask why. Is it even necessary? Time, manpower and chemicals are costly. Learning proper tracking techniques can increase the effectiveness of a treatment.

"Too often we overlook details because we're in a hurry," said Madere. "I understand our industry is all about getting the job done quickly, but with rats you can't be in a hurry. We've got to get out of the mindset that it's only going to take a half hour to handle a rat call. Sometimes it could take you days to do it correctly."

CHEESE! Some PMPs use still and video cameras for tracking, and both are being used more and more frequently within the pest control industry to help build an effective rodent control program. Combining technology with traditional tracking methods can be much more effective and efficient, and less costly.

"I can't say enough good things about cameras and why we should incorporate them as a technology we use daily," said Madere. "I've been using cameras for tracking for about three years."

"Cameras provide us with all kinds of useful information and help us identify where to focus our attention," said Madere. "They can tell us the species we're dealing with, which will help us determine the correct bait to use, and the types and placement of traps. They can help you estimate the population of rats or mice. And they can tell you when you've eliminated the problem."


Video cameras provide PMPs with useful information for tracking rodents.

Capturing images is also helpful when performing exclusion work. It can help you identify original entry points and where exclusion may have failed. "If you're doing rodent work and not including exclusion, you're not doing it right," said Madere. "Exclusion is something that should never be left out of any rodent control program. It's key to taking care of rodent issues."

Choose equipment that fits your budget and is easy to use. The memory capacity of your camera will dictate the number of images and length of videos you'll be able to capture. "I'm using an 8 GB memory card and it takes a couple weeks of monitoring to fill the card."

Your budget will dictate the number of cameras you purchase. The most convenient place to purchase cameras is through large online retailers. Sporting goods stores also may be an option if you require a large number of cameras as they may offer bulk discounts.

Game cameras, such as those used for hunting, work well. They're affordable, made for outdoor use, and generally have an easy-to-use interface. The resolution and sensitivity is good for tracking both rats and mice. Their compact size makes them easier to place in tight spaces and hidden from view. "I recommend choosing cameras that can take both photographs and video in the daytime and at night," suggested Madere. Memory cards, usually sold separately, should have at a minimum an 8 GB capacity to minimize the number of trips you need to make to download images.

Start slowly, beginning with one to three cameras, at an account with which you're familiar. Focus cameras on known runs, stations with consistent feeding and traps with frequent catches.

"Pay attention to the exposure of the images and tweak the flash and placement accordingly," said Madere. "After a few successful sessions with the cameras, you can determine if they're a tool you want to use on a larger scale."

After the first inspection, you should be able to determine how many cameras to use and placement, which varies by job site and size, and the extent of the rodent territory. "Let runs, droppings, rubs, smells, shadows, lines and tracks guide you as to where cameras should be placed," said Madere. There are a number of non-rodent factors to consider when deciding the number of cameras and their placement, including human activity, vegetation and the security of the cameras.

Timmy Madere captured this photo of a female roof rat. Photographing rodents is challenging. Knowing where to place cameras and lots of practice are keys to success, Madere said.

LIGHTING INDOORS AND OUT. Lighting is one of the biggest issues. Indoors, for example, if a camera is mounted just 6 inches under a drop ceiling the flash will be reflected and your image overexposed. The solution is easy: duct tape. Duct tape can be placed over the camera's flashers to control the amount of light. Every building and camera placement is different, so the amount of light needed is a matter of trial and error. Initially, Madere recommends going back the next day to check the pictures and make necessary lighting and placement adjustments to ensure the exposure is correct.

Vegetation is something you may not consider affecting an exposure, but the sheen can reflect a lot of light. You may want to consider covering the vegetation if it's overexposing images from your optimal vantage point.

CAMERA PLACEMENT. "It can be difficult to catch some rodents in a trap. It can be just as difficult to get them on camera," said Madere. "Positioning cameras takes practice, patience and problem-solving to get the shots you need." You may have to sift through a significant number of images, especially when you're first using cameras.

"I helped a friend get started using cameras, which he used immediately at one of the hottest rat sites. He was excited when he got over 3,000 pictures in the first weekend and couldn't wait to start watching them. He was disappointed when he found that of the 3,000 pictures only 28 of them showed rodent activity and none of them were relevant to helping him solve the problem."

Additional Effective Tracking Methods

Detective skills. "To be a good tracker you have to learn to be a keen observer and see more than the obvious. You need to learn how to read a room or a yard," said Timmy Madere. The smallest details can tell a big story and help solve the problem. "Anyone can follow droppings. You have to start looking for signs beyond that."

Gnaw and rub marks. "Gnaw marks are obvious and are very helpful in identifying the species. Carry a ruler and measure the gnaw marks. It also lets customers know you really know what you're doing," said Madere.

Rats produce pheromone-filled, oily sebum to communicate with each other. The resulting rub marks will help PMPs focus their inspections and identify movement patterns.

"Rub marks aren't always found against walls. Traps could be placed against a wall for years and never catch a single rat. PMPs and clients could conclude, 'Well, I guess we don't have a rat issue,'" said Madere. But you shouldn't necessarily abandon placing traps and bait stations along walls.

I smell a rat! The smell of rats and mice is distinct. To use odor to help distinguish the two and reinforce the scent among PMPs, Madere has a suggestion: "I recommend getting a lab rat and a lab mouse and raise them for a week or so in separate aquariums. Gather the bedding and put it in a glass jar. Give new technicians a smell of each so they know the odor. It sounds like torture, but if you're going to be in our industry you should learn the smells. You can't have a weak stomach and work with rodents!"

Droppings. Droppings are an obvious method to track rodents. It's also important to be able to accurately differentiate between the droppings of house mice and cockroaches, which look very similar. Mouse droppings have pointed ends, bulge slightly at the center and, if you look closely, contain tiny hairs. Droppings of larger cockroaches are cylindrical with ridges running from end-to-end and have blunt ends.

Add a bit of color. Another way to help track rodent droppings is to use a monitoring bait that colors droppings and makes them glow under black light. "I think monitoring bait products are under used," said Madere. "It may actually give the urine a bit of a fluorescent stain, too," making it easier to identify using UV light. "You may actually be able to see the coloration without a UV light. So even in daylight, it's very easy to track."

Rat runs. "We don't have to rely on walls anymore," said Madere. "Yes, when rodents first get to a building or a new area, they run along the walls. They learn them and memorize them, but then they break out and start to explore." Look for rat runs away from walls and place traps and bait stations along the runs for greater effectiveness.

Dust, chalk, talc and sand. "Dust is one of my favorite methods for tracking," said Madere. "We all work in attics, especially when there's a rodent problem. You'll see tracks and know which runs they're taking, and where to place traps." You can add your own "dust" by using chalk or talcum powder to track activity.

Sand also works well for tracking. Place small, low dishes, such as petri dishes, of sand in a suspected run. Wet sand works particularly well, because it's heavier and makes it less likely the dish will be knocked over. If you're in an area of the country with sandy soil, look around the building for tracks.

Ink. Tracking rodent activity using ink is definitely for outdoor use, as it can be very messy. You don't want to be responsible for cleaning up ink tracks.

The culprit was the location of the cameras, which were mounted on the wall-like security cameras, about 5 feet off the ground facing straight forward. Most of them were under motion detection lights, which seemed clever. Unfortunately, the cameras already had lights, so most of the pictures were overexposed.

Placing cameras outside has its own challenges. "Another guy just randomly placed cameras outside. They don't work like that. You have to aim them at exactly where you want to take a picture. He got more pictures of birds flying and people walking by than any rodent pictures, because they were mounted way too high and weren't aimed correctly. You could end up with false pictures of your neighbors or leaves blowing in the wind," said Madere. Another major issue of working with cameras outdoors is rain, which may produce thousands of false pictures.

Positioning cameras higher up may take more work, requiring technicians to climb a ladder to monitor activity, but it's worth it, Madere said. You'll be eliminating a lot of potential issues. If you're working with roof rats, for example, mount cameras up high. The top of a window air conditioning unit or pipe chase can be used to capture good images and keep cameras secure.

Experience has shown that cameras capture the best images when mounted no more than 15 feet from the area you're trying to cover. Beyond 15 feet, you lose the ability to identify rodent movement. Regardless of camera positioning, rodents don't seem to be spooked by either the camera or the flash.

MOUNTING CAMERAS. Duct tape and industrial-strength Velcro are effective for securing the base of the camera and are both easy to remove when you remove the cameras. Mounting materials that don't work include: zip ties, which tend to break; string, which causes cameras to swing; and magnets, which may affect the memory cards and internal electronics.

Mounting cameras is a two-man job. "Have one person angling the camera and the other where you want the camera to shoot," explained Madere. Using the test light on the camera, the person on the ground or on another ladder can ensure the camera you're placing is focused on the intended area.

CAMERA SECURITY. Securing cameras can sometimes be an issue. "The best recommendation I have is to only use cameras in secure sites. We haven't come up with a way to keep people from messing with the cameras," shared Madere. "Now we only use cameras in sites where access is restricted."

CONCLUSION. "Traditional techniques will improve rodent tracking and help determine where cameras should be placed," concluded Madere. "In combination, we're going to increase effectiveness, which increases productivity, which everybody loves."
The author is a Florida-based freelancer.

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PCT Magazine / August 2018

What's The Buzz?

Annual Rodent Control Issue

PMPs share what's happening in the field with digital rodent monitoring. And what's next for this new technology?

August 28, 2018

By Lisa Lupo

Technology is affecting all facets of life — personal and business, and the day-to-day work of the pest control industry is no exception. One of the most impactful of these is the wave of remote digital rodent monitoring systems being rolled out. Although the trend is relatively new in the United States, with many PCOs still in testing phases, there is no shortage of options, with at least six companies providing monitoring systems. *(See Digital Rodent Monitor Product Profiles, below.)* This is, at least in part, because the technology was originally introduced in Europe where it has been gaining ground for the last few years.

It was the phase-in of the EU Biocide Regulation in 2012, which set new limitations on the use of anticoagulant rodenticide products, that caused EU companies to seek alternatives to baits. “The EU made the decision a few years ago to phase out anticoagulants around customer sites, and that drove the need for something different,” said Anticimex Vice President Jens Peter Nielsen. Sweden-based Anticimex, which has been expanding throughout the U.S. since 2016, primarily through acquisitions, began using WiseCon digital monitoring systems in 2008. In 2017, the company bought out the supplier and now has more than 77,000 placements worldwide, but only nine in the U.S.

A key factor in that discrepancy is price, Nielsen said. Because of the cost of the systems, service is likely to be more expensive when they are used, but Europeans are willing to pay more because the monitors are a need rather than a want. That is, he said, “Europe is driven by regulatory compliance; in the U.S., it is driven by the will of the customer to add value.”

Burt’s Pest Control Owner Doug Foster, who has tested systems in two accounts thus far, also has seen some aversion to price. While the tests were well-received at both sites, only one opted to continue with the program once the test was completed. This was because, Foster said, “After about six months of testing, they saw a dramatic drop-off in mouse activity.” The other company said it would reconsider the systems at some point, but did not feel it was right for them now, partly because of price and partly because they did not have a severe rodent problem, he said.

Both Foster and Nielsen emphasized that the systems should not be thought of as stand-alone solutions, but part of an Integrated Pest Management program. In fact, Foster said, service at the test accounts also included worker and supervisor training with an emphasis on inbound product inspection and increased exclusion particularly around dock doors. “Between the three things, we saw six months with no rodent activity,” he said.

Ecolab Pest Elimination, which is testing the monitoring technology to manage rodents in the commercial sector, also sees the digital monitoring systems as just one tool to use in rodent elimination, said Senior Director of Marketing for North America Meg Carr. “This IoT, remote monitoring, can help give us insight, but it’s not the only thing,” she said. “It’s an extension in our toolbox to help deliver advanced elimination. We feel very strongly that it’s a tool and not the solution that fits as part of our science-based offering.”

One of the challenges this brings is managing the expectations of the customer and ensuring they understand how it fits into the overall program, she said. Not only does this mean increased customer communication — both on the front end and in reporting, but, Carr said, “We view it as a way for our service specialists to spend more time in areas that really matter, such as high-risk areas. So, we view the IoT as making us better at delivering outcomes as promised.”

Photo courtesy of Insects Limited and Arctic Systems
Digital rodent monitoring technology is being deployed by a growing number of tech-savvy PMPs.

It is just such reallocation of resources where IoT can provide the greatest benefits. New technologies are driving some of the biggest advancements we've seen in businesses, in general, over the last decade, said George Westerman, principal research scientist with the MIT Sloan Initiative on the Digital Economy. Business is becoming faster, more capable and more connected, enabling companies to "overcome the difficulties of the pre-digital age. Where we had to put manual efforts, we can now put automation," he said.

NOTIFICATION. It is the very fact that the systems increase the ability for technicians to more efficiently use their time to deliver better outcomes that is causing PCOs to test and implement the systems despite the challenges. For example, RK Environmental President Hank Hirsch said the monitors can be placed in hard-to-reach areas that are difficult to access on a regular basis. And, wherever they are placed, they can serve as a set of "eyes" that notify technicians when an alert is tripped but they are not around.

But that notification also is a factor that is still being worked out by many PCOs. Does the client receive the alerts? Or just the technician? Or a supervisor? And, once notified, how soon must the trap be checked?

The answers are most frequently made based on discussion with the client and their preferences, although most of the PCOs noted that their own, and often the customer's, preference was to notify solely the technician. While the alerts can be set differently for each client, Foster said, "We opted to have it just go to our phones, and going forward

that will be part of the selling process." Although some customers are more hands on, it's not difficult to convince them they probably would rather not be awakened at 2:00 a.m. when an alert goes off.

Additionally, as Nielsen said, the equipment is not sold to the customer, rather it is sold as a part of the service. As such, he said, "We get the notification. We don't want the customer to be worried that they have a potential rodent infestation. That's our worry."

How Electronic Monitoring Works

There are a variety of monitoring systems available and each has a slightly different design. Some systems focus on alerting when a rodent is caught in a snap trap and others fasten to a multi-catch trap. Some rely on physical components becoming dislodged when the snap trap triggers, and some complete a type of circuit when an object (e.g., a rodent) physically touches it. Others rely on a change in momentum or an infrared beam of light to detect a triggered snap trap or movement in a multi-catch device.

The overarching theme in all systems is one of rodent detection, data collection and notification. Regardless of the specific design, the systems include a central hub and remote sensors. The sensors are installed in traps throughout the facility or in specified locations to automatically monitor and report rodent entry; some systems report other data as well, such as trap status, temperature, battery status and signal strength. All the data is relayed through a cellular or Wi-Fi data connection to the system hub, then onto the technician's device (and/or other specified devices) to alert them of a capture. Some systems use e-mail to notify technicians and clients of captures, others use text messages, and still others rely on push notifications. Source: Tech Talk by Andrew Taylor and Caroline Kirby, PCT, December 2017

Ecolab has found that many customers aren't interested in getting the alerts themselves, Carr said. "Notification is only as impactful as the action you take to resolve it — that is, to eliminate the pest." And, because the company will implement the systems globally, it has to adhere to different regulations for action and response required by different countries — and even different states within the U.S.

With its alerts and data, electronic rodent monitoring is particularly well suited to highly regulated industries, such as food processing, said Rentokil Steritech Vice President of Technical Services Judy Black. "The desire to remove captured rodents quickly is strong, based on food safety, regulatory authorities and third-party audits," she said. "These types of facilities have been using data to verify pest management programs for years; electronic rodent monitoring enhances those efforts."

SCHEDULING. As with any new service, there are decisions to make on the organizational fit. But rather than trying to make this new service fit your organization, you need to make your organization fit the service, Nielsen said. The "old model" is scheduling a set number of visits for technicians per day or week. The "new model," he said, "is to set your organization to work with data-driven services."

As such, Westerman (the MIT expert) cites three major ways a new technology can be used:

1. You can do what you're doing now, but a bit better.
2. You can extend: Continue to do what you're doing now, but incrementally improve.
3. You can transform your processes, because the technology enables it.

In the pest control world, transforming processes not only means a change in how technician's time is scheduled, but also in the skills that are needed by the technicians and administration. "Generally, there will be more callouts but fewer service issues," Nielsen said. In the past, pest problems were generally detected because an employee saw something, or a problem was found, and the customer called the technician. But with the monitoring systems, it is the technician who calls the customer to say, "You have a potential problem, and I need to come out," he said. Thus, he said, speaking as the customer: "Before I called the pest control company when needed; now the pest control company calls me to tell me it's needed."

A Word from the Suppliers

The monitors free up pest technicians to focus on risk assessments, prevention, and client reinforcement — rather than inspecting non-active devices. The immediate alerts lead to more efficient responses: identifying and treating before infestations occur or grow. In food manufacturing facilities, they provide better information to the pest professional and quicker audit data to the quality assurance manager." — *Ethan Vickery, President, VM Products*

The immediate alerts help with scheduling of onsite visits, determining needed exclusion work, and placement of other pest control devices that will be needed to help expedite elimination of current issues. Value is gained by being able to better service customers and having real-time data that provides a platform for preventive pest control. With some customers we have seen fewer visits required and the immediate addressing of real problems." — *Craig Velte, Sales Consultant, ServicePro*

The systems allow for monitoring in pest-vulnerable but hard-to-access areas and enable quicker detection and corrective action: In a Kansas pet food manufacturing plant, traps with sensors were placed inside wall voids that were 10 feet deep and snap traps with monitors were used in an elevated, locked utility room which had no floor, requiring technicians to walk across boards and step over piping. In a Chicago bakery, remote monitoring ended a USDA threat of closure by enabling the bakery to speed elimination of a mouse infestation through more rapid trap service in a difficult-to-access roof harborage — where the mice had gone to escape fumigation." — *Mike Hanson, Product Manager, Dow AgroSciences*

As PMPs use these new tools to expand and optimize their rodent control services, the customer ultimately wins. Traps will no longer be limited to specific, easy-to-reach areas of the facility. They can be deployed in the best possible locations to achieve control based on the specific needs of any facility. Corrective action can be taken immediately once a trap alert is received." — *Mike Goldstein, Sales Manager, Professional Products, Woodstream*

The systems represent a significant opportunity for PMPs looking to elevate their business and transform their service offering. Most PMPs we've seen successfully integrate the technology adjusted their service intervals to gain efficiency, enabling them to pursue new business opportunities. The early adopters are leveraging the technology to create differentiation in the marketplace, engage and energize their organizations, elevate technicians' roles, and increase the utilization of effective technicians." — *Scott Broaddus, Sales and Business Lead, Bayer Digital Pest Management*

Although the pest control industry is excited for the potential that electronic monitoring could offer, the current available technology has yet to offer a viable business model that provides economic value through to the end user. Bell's belief is that the biggest benefit of electronic monitoring comes in the form of information that can be gathered to help solve the pest problem at a given account. When a PMP can effortlessly collect information about a wide array of rodent activity, their ability to get and maintain control of a site goes up exponentially." — *Patrick Lynch, Vice President of Sales U.S. & Canada, Bell Laboratories*

The monitors create value for the customer because the focus is no longer on checking empty traps, so focus can be moved to securing the site, the main areas of activity and the root cause of the infestation. The annual collection of data can give insight into seasonal trends and eventually help predict future rodent outbreaks. The use also removes rodenticide from the environment allowing companies to adopt a green practice." — *Tom Mueller, National Sales and Marketing, Insects Limited*

In most cases, the PCOs determine needed response time by the sensitivity of the site. For example, an alert from a sensitive area in a health-care center or food plant could elicit an immediate response within a few hours. An alert sounded from a perimeter trap might be less of an emergency, but most customers tend to still prefer a response within 24 hours.

CONNECTIVITY. Even once the notification and scheduling questions are answered, however, there can be challenges in some facilities with connectivity. This is particularly an issue in food and beverage facilities that have highly complex environments, lots of equipment and thick walls. “There are still challenges in networking connectivity,” Carr said, and that lack of connectivity can lead to performance challenges. “The technology needed to catch up to reliably connect to the cloud,” she said. “However, recent equipment advances suggest an attractive opportunity to identify and leverage the perfect system.”

Foster has seen similar issues in connectivity. “One of the biggest challenges was the initial set-up which took quite a bit of time to determine where to set it up,” he said. A lot of buildings are steel and concrete, so determining applicable placement for the router and hub created some issues. “It takes a lot more work than determining where to set the traps,” he said.

Additionally, as beneficial as the monitors can be with their alerts and scheduled response time, the system does not completely alleviate the need to check the traps, Hirsch said. Traps are often subject to damage or movement by forklifts, sanitation crews or housekeeping, and technicians need to regularly check, reposition and clean traps as needed. Depending on the system, such movement also can trigger a false alert, causing an extra visit to check and reset the trap.

Having piloted remote monitoring in food manufacturing and distribution facilities for five years, Hirsch also has seen price to be a challenge. Although clients like the system they sometimes see them as more beneficial to the service provider than to themselves, so they don’t want to take on the extra expense.

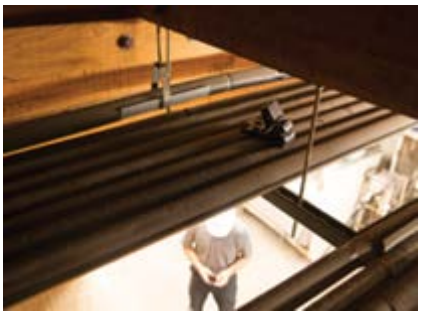
Because such systems do not reduce time in the account for the technician, Hirsch said he does not see the ROI for the industry — yet. “I do think it has its place in the future of IPM in food plants,” he said. “I’m excited about the technology, I just don’t think it’s where it needs to be yet.”

Digital Rodent Monitoring Product Profiles

Bayer

www.beyondsmarterbusiness.com The Bayer Rodent Monitoring System is a wireless network of high-tech sensors that provides 24/7 monitoring, real-time capture alerts and up-to-the-minute rodent program verification. It helps PMPs provide proactive, effective pest management while helping food safety professionals defend their facilities and safeguard public health. Sensors are added to each interior multi-catch or snap trap and transmit their status through radio signals. These signals are transferred to the Microsoft Azure cloud via cellular communication enabling a real-time capture notification to be sent via email or text message.

Dow AgroSciences



www.activesense.com

The ActiveSense system is a 24/7 remote monitoring and analytics platform that provides detailed information about pest activity in and around commercial and residential properties. System sensors in rodent stations or on traps immediately alert users to pest presence to speed response. Knowing exactly when and where activity occurred can uncover the root cause and the ability to take corrective action. Proven in hundreds of sites across the U.S., including a broad range of commercial environments, ActiveSense is intuitive to use and delivers multiple benefits for PMPs and their customers, the manufacturer says. ActiveSense is a true system consisting of rugged hardware, reliable cellular communications, a customizable dashboard plus technical training and marketing support, according to Dow AgroSciences.

Insects Limited

www.arctic-systems.com

With the introduction of RATMO by Arctic Systems to the U.S., facilities can now use a remote rodent monitoring device that will allow different industry traps to be utilized. (The partners behind Insects Limited and Arctic Systems have a 20-year history working together in pest control on both sides of the Atlantic.) Brands are changed according to the rodent's neophobia ("trap shyness"). Features provided by Arctic Systems include over-the-air software updates using IBM's Watson technology. Traps automatically check in once a day and send temperature, battery and signal information. This system will work with Watson to learn snap trap and rodent frequencies in efforts to eliminate false positives. Using three AA batteries, the unit can operate for a year at -8°F and for roughly two years at 77°F. All devices can be monitored via mobile device.

ServicePro

www.servsensor.com

ServSensor by ServicePro allows remote monitoring of traps and bait stations with leading wireless and sensor technology. The patented module is installed on virtually any pest control device to easily monitor rodent and wildlife activity. Various thresholds can be set to monitor for specific scenarios and Servsensor also does battery and heath checks for maximum up time. Whenever ServSensor records activity, a real-time notification (text or email) is sent showing the exact location and account where the activity occurred. ServSensor integrates with ServSuite enterprise pest control software to provide management tools and reporting for commercial and residential accounts.

VM Products

www.vmproducts.com/products/ez-square

The EZ Square Rat is a stand-alone Wi-Fi trap system that allows the PMP to install the device in 60 seconds or less anywhere with a Wi-Fi connection or to a Wi-Fi hotspot. The EZ Square Rat can be used to tackle an infestation or to build an IPM program onsite with as many traps as needed. EZ Square Rat works with all E-type snap traps. The trap can be replaced as needed without touching the technology; PMPs simply put the magnet on the snap trap and it is ready to go. The separation of the reed switch and magnet creates the alert, letting PMPs know the snap trap has been triggered.

Woodstream

www.vlinkhq.com

The new Victor VLINK Electronic Mouse & Rat Trap delivers a high-voltage shock that humanely kills rodents in seconds with zero escapes — and alerts the technician to the catch. The platform comes with a free app for easy setup, trap monitoring and alerting. VLINK traps can communicate through tough construction materials like concrete and steel, and each VLINK hub covers up to 100,000 square feet of warehouse space without the need for relays. Because the electronics come fully integrated into the trap, setup is hassle-free, Woodstream says. A set of four AA lithium batteries (included) will last three years or more.

Manufacturers: PCT will feature additional information about electronic monitoring trends in future issues. If you'd like to be included, send a press release and high-resolution photo to jdorsch@gie.net.

AN OPTIMISTIC OUTLOOK. Despite the challenges, the overall feeling about digital rodent monitoring is tending toward the positive — by both pest control companies and customers.

“While the Internet of Things (IoT) is still a relatively new category of technology, many of our clients have been looking for ways to leverage more technology, to make better business decisions, continue to improve client satisfaction, have more proactive solutions and protect their brand,” Black said. Additionally, she said, “It allows them to think differently about the possibilities as it relates to more connected pest control, the automation of captures, in-depth reporting and more proactive pest management programs.”

“The customer likes it because it gives them a ‘security blanket,’” Foster said. “Besides my eyes, there is 24/7 monitoring in the facility.” By placing the monitors in areas where they didn’t usually expect to find mice, such as drop ceilings, the IT room, maintenance area and offices, they were able to detect unexpected activity, he added. “No one had thought to look in those areas before.”

Foster also says the systems save time for technicians — time that can then be spent providing more value by offering services such as inspecting product, training staff what to look for, and making recommendations when trucks are unloaded. And, he said, “I think the price will come down some, although not a lot initially because the companies have so much invested in R&D.”

Westerman also noted both the time value that can be attained with technology and the tendency for prices to drop. By eliminating manual monitoring, a firm can rethink what technicians do. “It allows the use of people only where necessary to do what only people can do — and makes their jobs better,” he said. Too, time has proven that technology decreases on a regular scale, so that what is expensive now will be half the cost in a year or two. “So you can wait, but you need to stay on top of it.”

Citing Bill Gates, Westerman added, “We tend to overestimate what will happen in two years and underestimate what will happen in 10 years.” IoT has moved rather slowly in the past, but it is picking up speed, and beginning to move very fast. In fact, he envisions it escalating past monitoring triggers to camera tracking.

Westerman likens the adoption of new technologies with the emergence of caterpillar into a butterfly. You have to be willing to change, he said. Too many companies think “fast caterpillar” instead of striving for the flying power of the butterfly. “You have to realize that at least one competitor will change and you will be left behind,” he said. “Think beyond doing what you’re already doing and how you can do things differently.”

And the benefits of new technologies and innovation implementation go far beyond the person or firm developing them, he said. “Evidence from competitive industries shows that creating standards allows boatloads of information across industries.” That, then, allows for further innovation and, he said, “enables a whole wave of functionality we never dreamed of.”

“The greatest benefit to the customer and pest control provider is being fully preventive,” Anticimex’s Nielsen said. He compared the evolution of the digital rodent monitoring systems to that of building security systems. In the past, companies would hire a security person to walk the facility on a scheduled route, checking doors, windows, etc. “No one is doing routes anymore. It’s all monitored with better security systems. It’s the same with pest control.”

Although most PMPs say they are providing prevention today, if service is provided on a monthly basis, an account could potentially have an issue for 29 days. “It is changing the paradigm because we, as an industry, will become proactive instead of reactive by interpreting the data,” Nielsen said. “And that data can then be used to improve the system. The more data we have, the more potential problems we can address. It’s a truly preventive solution.”

The author is editor of PCT’s sister publication, QA magazine. Email her at llupo@gie.net.

SECTION 8: APPENDIX

Pest Trap Monitoring Sheet

Date:

School or Facility:

Name of Employee:

Email of Employee:

Phone Number of Employee:

Trap ID #	Trap Location/ Map Code	Pest	Number Caught	Stage of Pest

Comments:

Pest Control Contractor Activity Report

Building: _____

Date: _____

Have you made previous recommendations for this building?

If so, have they been implemented?

What do you see as the most significant barriers to effective pest control in this building?

Recommendations

Sanitation -

Water Sources -

Harborage/Access -

IPM inspection/ Action Form

Campus: Date:

Applicator: Work Order #:

IPM Inspection

Specific Area Inspected:
Observations:

Action Threshold Met?
Recommended Actions:

Pest Monitoring

Devices Checked On:
Results/ Action Threshold Met?
Recommended Actions:

Pesticide Application

Treatment Date: Applicator's Name/License #:
Specific Area Treated:

Posting Date: Time:
Re-entry Date Time:

Target Pest:
Pesticide Name/EPA Registration #:
Amount Used/Formulation:
Product Category:
Outdoor Applications:
Wind Direction/ Speed: Temperature:
Notes/Observations:

Follow-Up Observations:

Signatures:

Applicator: _____ IPM Coordinator: _____

Date: _____ Date: _____