

Rodents Teach Lesson of Failed Chemical Controls

City officials gather to learn new approaches to rodent management less dependent on chemicals, more focused on habitat reduction

It was big news when the District of Columbia announced that the *Rodent and Vector Control Academy* was coming to town in April. The *Rodent Academy* had already opened in New York City to rave reviews for a limited three-day engagement. While the *Rodent Academy* is not a Broadway, or even an Off-Off-Broadway, Show, it really could be. Former teacher and researcher in the Entomology Department at Purdue University, now international rodent management expert, Robert (Bobby) Corrigan, PhD, had the audience of city and federal officials caught up in the drama and the humor of a topic at the top of every big city Mayor's public health agenda—rodent control. Animated and walking across the stage with rolled up shirt-sleeves and a wireless microphone, Dr. Corrigan, who holds a doctorate in rodent and vertebrate pest management, delivered his opening lines (paraphrasing): *The chemical-intensive approach that the public and private sector use for rodent control is not working. There is a better way that relies on sanitation practices and exclusion techniques.* Dr. Corrigan piqued the interest of the audience.

Dr. Corrigan placed himself in the middle of the stage and said, "I'm going to take you into the world of this animal in a big way." With that began the three-day training session at the National Zoo, which served as a sponsor of the event, along with the District of Columbia (DC) government, Beyond Pesticides, the University of the District of Columbia, and the U.S. Environmental Protection Agency (EPA). A truly effective rodent control program is based on a holistic approach that includes all levels of government and city occupants. Understanding this, the DC government had recently formed a partnership to help kick off a new campaign, "Working Together for a Rat Free DC."

Dr. Corrigan did not need to convince anyone that current rodent control practices are not working. Those responsible for managing the problem already know this from their experience. That is why officials came to the academy from as far away as Baltimore and Philadelphia. The training was also attended by more than 100 District of Columbia (and other local governments), federal employees, pest control companies, and advocacy organizations.

The rodent problem

Because of the complex cultural and sociological components of metropolises, different infrastructures and uncoordinated agencies are often indirectly and in some cases directly responsible for causing rat populations to proliferate.

According to the D.C. Department Health (DOH) director, Gregg A. Pane, M.D., "Reports about rats are the number one source of complaints in the office as well as the number one public health issue." Babies in cribs, the confined elderly, and the indigent homeless are among the most vulnerable to foraging rats and mice. In the U.S. alone, estimates suggest up to 14,000 people are bitten by rats each year with the majority being children, according to Dr. Corrigan.

Rats and mice contribute to approximately 55 different diseases, including a diverse range of pathogens from viruses to parasitic worms. "Rat-bite fever"—whose symptoms include chills, fever, vomiting, aches, and pains—is often misdiagnosed for a severe case of flu.

Gerard Brown, program manager of the DOH Rodent Program, said the number of rat complaints in DC in 2006 is currently at 3,521, a decrease from 4,415 in 2000. Mostly, city officials attribute the decrease to their public-awareness and enforcement campaigns that make residents more aware of the factors that breed rats. The officials believe that the experience gained from participating in the *Rodent Academy* will substantially reduce the complaints and help to make DC rat free.



The rats that are plaguing the District and other cities are primarily the Norway rats. Weighing on average 12 to 16 ounces, these rats are about 16 inches in length. Because these rats are originally from the area along the border between Russia and Iran, they are ground-dwelling mammals that dig and construct nests within earthen burrows. Reproductive peaks for the Norway rat occur in the spring and fall. In ideal conditions, such as a rat colony living in a poorly maintained restaurant, breeding may occur for as long as an entire year. The gestation period for a rat is 22 days averaging litters of 8-12 pups. A female rat is able to produce 4 to 7 litters and ultimately wean 20 or more pups, provided she lives for a year or more. Their peak time of travel is at dusk and just prior to dawn.



Sanitation is key to successful rodent management.

The rodenticide problem

Typical rodenticides (pesticides) used to treat the problem also create problems. Rodenticides are hazardous and pose a very dangerous threat to children and animals, making them either very sick or causing death if ingested. They also contribute to the toxic load found in our nation's streams and waterways. The average pest professional uses second-generation anticoagulants to control rodents, such as cholecalciferol, bromethalin, aluminum phosphide and zinc phosphide that contain the active ingredients, warfarin, brodifacoum, bromadiolone and difethialone.

Anticoagulants have become problematic because: (i) they are associated with accidental poisonings of children and non-target wildlife; and, (ii) rodents are showing resistance to certain compounds. Rat poisons harm children in all communities, but African-American and Latino children and children living below the poverty level suffer a disproportionately high risk. In 2004 in New York state, for example, it was reported that 57 percent of children hospitalized for rodenticide poisoning are African Americans, although only 16 percent of New York state's population is African American; 26 percent of hospitalized children are Latino, although Latinos comprise only 12 percent of the state's population. Additionally, a disproportionate percentage of children hospitalized are below the poverty level.

Although buried, aluminum phosphide is blamed in the 2003 death of two red pandas at the National Zoo. According to zoo officials, it was the first time the zoo used the pesticide in an animal exhibit, although the zoo had used it in the past in non-exhibit areas.

How to address the problem

Dr. Corrigan's IPM approach places strong emphasis on sanitation, pest exclusion (which includes addressing human behav-

ior and structural pest proofing), education and training, while selecting least toxic chemicals if all else fails. Sanitation is the MOST important step to rodent control, stresses Dr. Corrigan. The goal of the program is not "extermination," but prevention. By preventing the presence of rodents, Dr. Corrigan teaches to reduce the need for pesticides through pest exclusion strategies that address structural and landscape planning.

Dr. Corrigan advocates the establishment of a mayoral task force comprised of the City's agencies and authorities, including Parks and Recreation, Housing, License and Inspection, Sanitation, Public Works, Health, Planning, Administrative Services, Education and the Transportation Authority—such as the one established in New York City in 2003 after a successful pilot program initiated in 2001 in Brooklyn.

New York City's Rodent Control Task Force was created to concentrate the city's efforts on eliminating the conditions in which rodents flourish and emphasize interagency collaboration. The task force meets monthly around the following objectives:

- Making city-managed properties and facilities a model for effective rodent control;
- Enforcing, rat proofing, providing owner/resident education for all properties, and eradicating in the target areas;
- Enlisting community involvement from elected officials, community boards and community-based organizations;
- Creating and advancing a legislative agenda to provide new tools against rodent infestations and reducing barriers to effective enforcement; and,
- Tracking the program's success by measuring neighborhood-level performance related to the implementation of rodent prevention measures, and rodent activity.

Dr. Corrigan's *Rodent Academy* trainings in 2005-2006 was a key part New York's program expansion. DC's Mr. Brown attended one of those trainings, where he recognized the value it could bring to the District's program.

Without a multi-level coordinated approach, Dr. Corrigan believes that big city rodent problems will never be solved. For example, if rats are exterminated from a "street level" area, the population can possibly be replaced by a nearby subsurface rat population, such as rodents living in sewers and subways. A rat infestation originating from an abandoned lot or house may replace the rats recently exterminated within a multi-family housing unit. Without a coordinated effort, city-level rat control programs are reduced to "harvesting," which Dr. Corrigan equates to harvesting crops.

The use of rodent-resistant trash receptacles, such as those now required by an ordinance in New York City, play a large role in the sanitation process, a message repeated many times at the *Academy*. Food waste issues, such as the garbage practices of homeowners, refuse from commercial food facilities, and junk piles, as well as clutter, contribute to the rat issues in cities. As Dr. Corrigan stresses, an ordinance is a key element for an effective rodent control program. In New York City, Mayor Michael Bloomberg committed additional resources to purchase over 8,000 new rodent resistant trash receptacles. The trashcans are being used to help communities avoid reoccurring infestations by providing them with a rodent-resistant container for residential refuse storage. Made of thick, tough plastic, a self-closing lid and attached wheels, the receptacle is designed to be compatible with refuse disposal equipment.

Educational materials

Educational material provided at the *Rodent Academy* consists of a folder filled with extensive materials, all justifying the need for municipalities to implement an IPM approach. Because a well-coordinated effort is required among all essential agencies, course materials include information on health, policy and regulation, planning, sanitation, enforcement and safety, followed by case studies—all in an effort to reach the diverse target audience that includes policy makers, rodent control program managers and facilities managers, environment, housing and health advocacy groups and federal and local government representatives. After the materials are distributed, Dr. Corrigan tells the class that, "You're going to know more about rats and mice than the average pest controller on the street."

The class learns that the majority of interior urban rodent problems can be eliminated if business owners, municipalities and building superintendents emphasize rodent proofing of all buildings. This includes simple things that homeowners should also do, such as fixing a hole in a foundation or installing a pest proofing brush on the bottom of a door. Proactive building design and construction materials are key in keeping pests out. Both residential and commercial doors must be kept

closed to deny rodents entry into buildings. By incorporating proper rodent proofing techniques at ground floor levels, pest entry can be eliminated, with an added benefit of reduction in energy cost.

Landscape planning measures aimed at avoiding rodent infestation are key to addressing rodent problems in cities. The class learned that landscaping choices and practices, often overlooked by facilities maintenance staff and landscaping companies, play an important role in the potential impact of pest pressures on buildings. An example cited by Dr. Corrigan is that rats love to burrow in ivy.

At the completion of the extensive three-day training, an exam is given and each participant receives a certificate of completion from the DOH.

Next steps for the District of Columbia

After attending the *Rodent Academy*, DC Office of Clean Cities and the Department of Health launched a pilot initiative with the Mid-14th Street Business Association and residents located in a two-block area in the Northwest section of the city. Members of the pilot team were given the educational materials that were used at the *Rodent Academy*. The initiative began with a community clean up event, entitled *Community Clean Up & Rat Abatement Inspection*.

The District also initiated an IPM campaign and will include the following goals:

- Organize community educational presentations;
- Work with business associations and development corporations;
- Educate children to become stewards of sanitation at school and home;
- Conduct baiting of targeted burrows on private property through petition process; and,
- Initiate a strict enforcement campaign with fines ranging from \$75.00 for residential violations up to \$500.00 for commercial violations.

Future steps

The *Rodent Academy* can visit cities across the U.S. Before arranging a conference, the following steps should be taken to identify groups needed to form a public-private partnership that includes government agencies, a local university, environmental agency and community-based public interest groups. The partnership should then be used to identify the agencies needed to eliminate conditions that lend to the proliferation of rodents. Next, begin to schedule a series of meetings to create a budget, create press material, and budget for the 3-day *Rodent Academy*.

Dr. Corrigan, RMC Pest Management Consulting, can be contacted at 765-959-2829, rcorr22@aol.com.