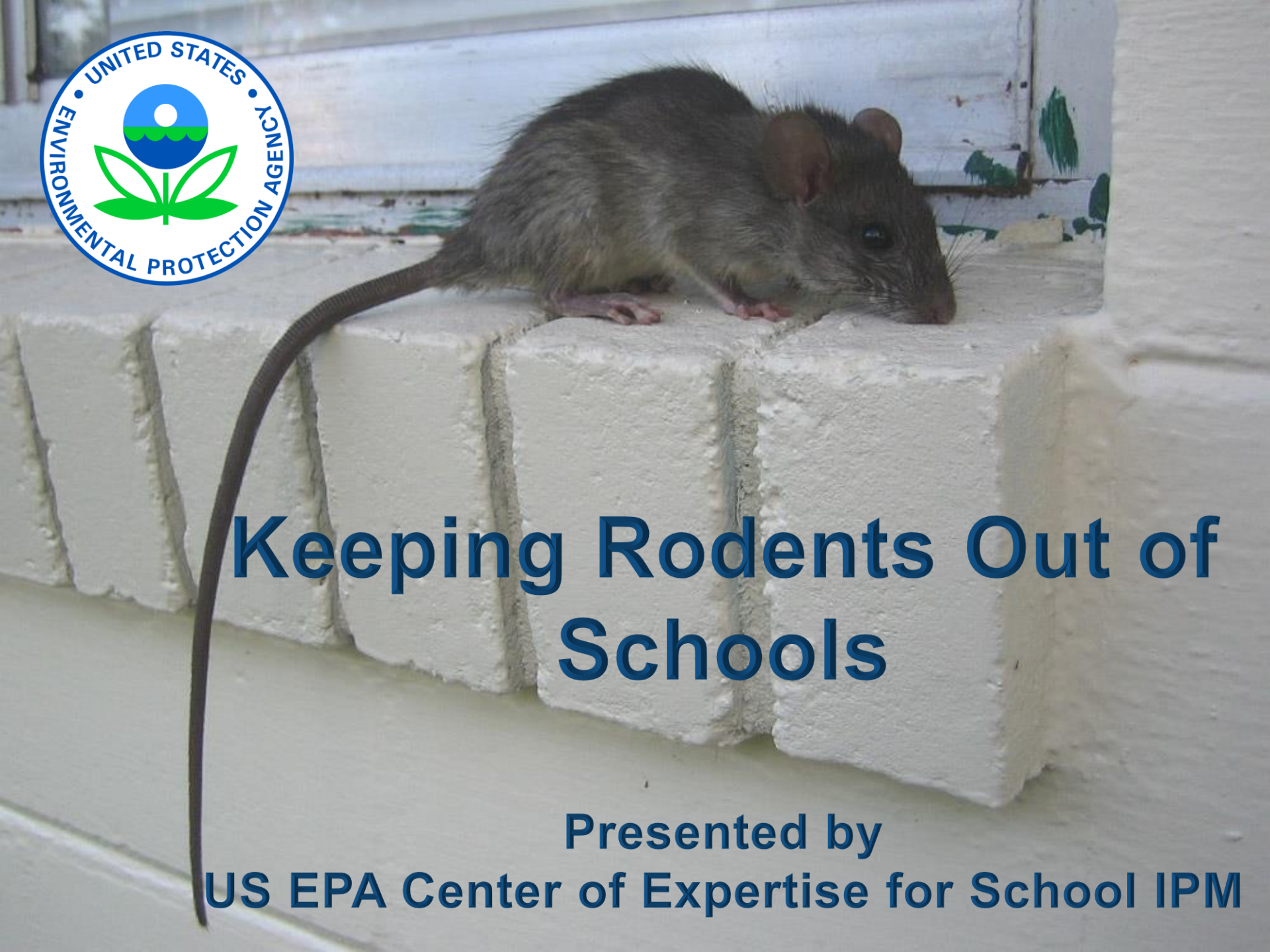

Keeping Rodents Out of Schools

Presented by
US EPA Center of Expertise for School IPM

Quick Refresher on IPM

- **Integrated Pest Management (IPM) is a safer, and usually less costly option for effective pest management in the school community.**
- **A school IPM program employs common sense strategies to reduce sources of food, water and shelter for pests in your school buildings and grounds.**
- **IPM programs take advantage of all pest management strategies, including the judicious use of pesticides.**

The Promise of School IPM

- 71% reduction in pesticide use
- 78% reduction in pest-related work orders
- Reduced asthma triggers, reduced absenteeism
- Lower costs as pest problems are reduced (IPM implementation requires initial investment)
- No increase to workload of school facilities staff ("Do what you're already doing, just think pests.")

Benefits of School IPM

- **Smart:** healthier learning environment for children
- **Sensible:** addresses the root cause of pest problems
- **Sustainable:** better long-term control of pests
- **Savings:** Long-term implementation may reduce energy and pest management costs

Presenters

Dr. Bobby Corrigan

- Ph.D. in rodent IPM from Purdue University
- Research scientist with the NYC Department of Health
- National/International pest control expert with 25 years experience in urban pest management
- Author of 160+ technical publications and four books/chapters

Dr. Claudia Riegel

- Ph.D. in nematology from the University of Florida
- Director, New Orleans Mosquito, Termite & Rodent Control Board
- Passionate advocate of IPM in schools
- 15 years of experience in urban pest management with an interest in providing information about termites and mosquitoes to pest control professionals and the public

Rodents in Schools

Part I

Webinar
Sponsored by
US EPA - OPP,
School IPM Center of Expertise

Bobby Corrigan, Ph.D.
Urban Rodentologist
Richmond, IN.

January 29, 2014

First:
A word from our sponsor:

A glass capsule 300ft over the | Peak perfection! Photographer snaps | Could the UK's first spaceport be in | Photobambi'd! Tourist captures | Taking creepy to new heights: New | Drivers to with £1 ch

New York-bound flight delayed for five hours after pilots discovered a MOUSE inside the cockpit

- **Norwegian Air Shuttle was delayed hours on Tuesday thanks to a mouse**
- **Airline suffered string of technical problems after opening long haul routes**
- **'At least the mouse was caught,' says spokesperson**

By INDIA STURGIS FOR MAILONLINE

PUBLISHED: 00:00 EST, 30 October 2014 | **UPDATED:** 11:24 EST, 30 October 2014

One small mouse caused a five hour delay on a flight from Norway to the US.

Norwegian Air Shuttle, already plagued by costly flight delays on its long-haul routes, was forced to delay the flight on Tuesday thanks to a hunt for a mouse inside the cockpit.

'The pilots discovered a mouse on flight deck,' said Charlotte Holmbergh, a spokesperson for the airline. 'We had to make sure that no cables or wires had been chewed.'

Mouse hunt: The rodent was spotted just before take off and caused the flight to be severely delayed

'This does not happen very often, but it does happen from time to time.'

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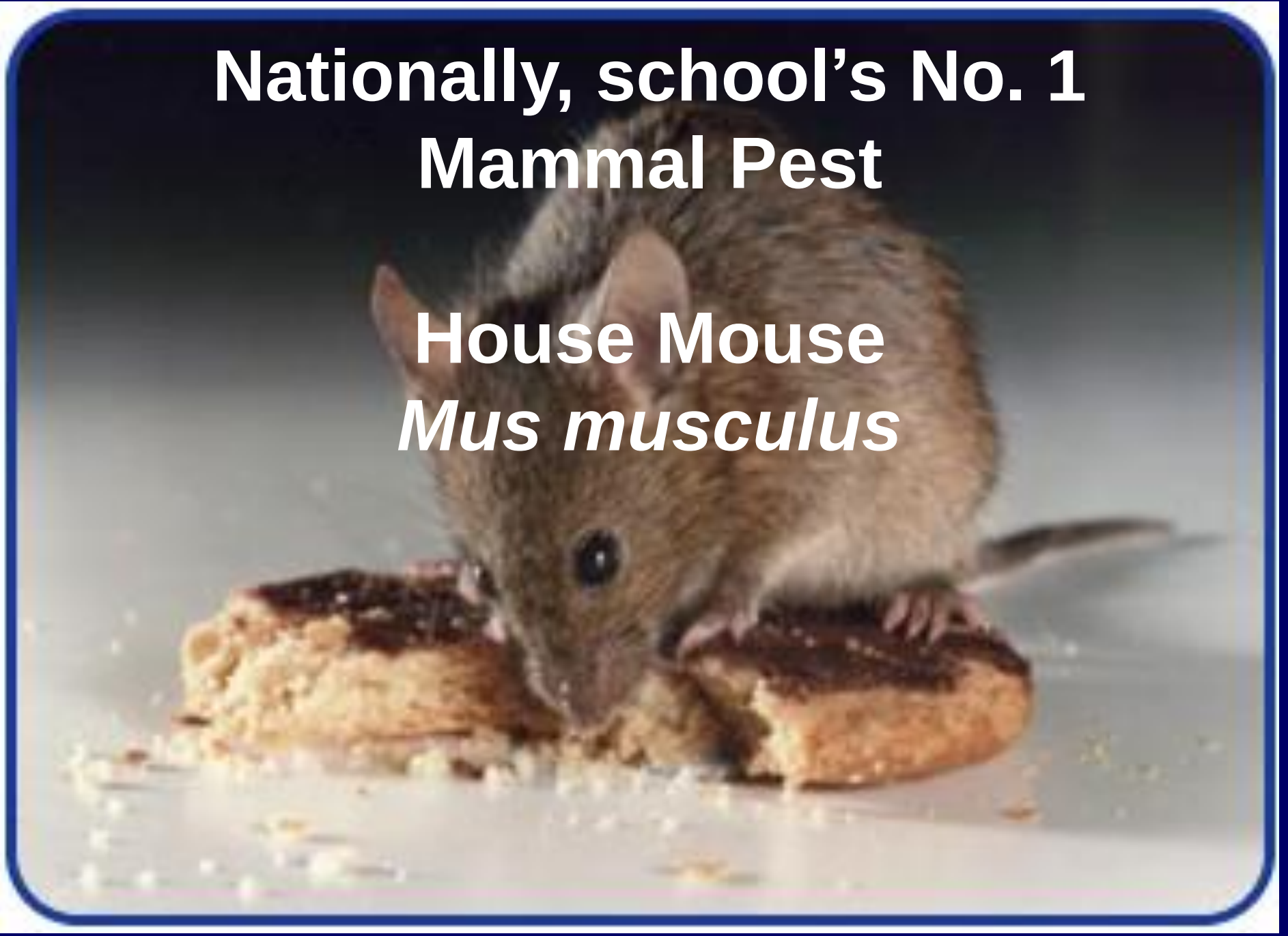
TOP STORIES IN TR

- Could the UK's first spaceport be in Scotland? Prestwick Airport ready for 'transformational change' that will see it become gateway out of Earth
- Which cities are the most dangerous for women to travel in? New study reveals the world's most unsafe public transport systems
- Taking creepy to new heights: New app lets you Facebook stalk your fellow passengers before boarding a plane
- Drivers to be hit with £1 charge every time they drop off family o friends at Aberdeen airport (and they face a £30 fine if they linger for more than 10 minutes)
- Peak perfection! Photographer snaps spectacular images showing the beauty o the French Alps from above
- Déjà vu for cruise ship as it gets stranded in Norway for the second time this year (and the pl where it was to moo is agonisingly in sight)
- Life in plastic, it's

1. House mouse
2. Norway rat
3. Roof rat
4. *Peromyscus spp.* mice

Nationally, school's No. 1 Mammal Pest



House Mouse
Mus musculus

Health Significance of Urban Rodents in Schools

1. Allergens (esp. mice).
2. 50-60 potential pathogens (Urban rodents & area-specific).
3. Food borne illness potential if in food prep areas.
4. Electrical damage.

If we consider just allergens alone….

The house mouse has been proven to be a very important pest of schools and other “sensitive environments”.

Published in final edited form as:
Ann Allergy Asthma Immunol. 2009 February ; 102(2): 125–130.

Mouse Allergens in Urban Elementary Schools and Homes of Children with Asthma

William J. Sheehan, MD[a,b], **Pitud A. Rangsithienchai, MD, MA**[c], **Michael L. Muilenberg, MA**[d], **Christine A. Rogers, PhD**[d], **Jeffrey P. Lane, CIH, MPH**[e], **Jalal Ghaemghami, PhD**[f], **Donald V. Rivard, BA**[g], **Kanao Otsu, MD, MPH**[h], **Elaine B. Hoffman, PhD**[i], **Elliot Israel, MD**, **Diane R. Gold, MD, MPH**[b,k], and **Wanda Phipatanakul, MD, MS**[a,b]

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c*McGaw Medical Center, Northwestern University, Evanston Program, Evanston, Illinois*

d*University of Massachusetts, School of Public Health and Health Sciences, Amherst, Massachusetts*

e*Facilities Management*

f*GREAT Partners, Boston, Massachusetts*

g*Rivard's Resources IPM, Waltham, Massachusetts*

h*University of Massachusetts Medical School, Department of*

a child wheezes), parental report is a
and International Study of Asthma and Allergies in Childhood (ISAAC) questionnaires, and in many US studies is highly predictive of asthma,[28] slower lung function growth,[29] and methacholine reactivity.[30] While other rodent allergens such as rat (*Rat n* 1) or guinea pig (*Cav c* 1) were not measured in our study, our assay was specific for the major mouse allergen and previous studies do not show cross-reactivitiy between the major allergens of these rodents.[31-33] Furthermore, we did not have information regarding allergen sensitization, specifically mouse, on the children with asthma enrolled in our study.

In summary, our results demonstrate that children with asthma encounter varying levels of allergens in environments outside the home, such as schools. In addition, we found higher levels of mouse allergen in the schools we evaluated compared to the homes that we evaluated from students in these schools. Allergen exposure outside of the home may be a potentially important trigger for asthma and should be further investigated.

owledgements

Declaration of Funding: Dr. Sheehan is supported by an NIH NRSA grant (T32-AI-007512). Dr. Phipatanakul is supported by an NIH K-23 grant (AI-054972) and an NIH R-01 grant (AI-073964).

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Indoor Air 2005; 15: 228–234
www.blackwellpublishing.com/ina

INDOOR AIR
doi: 10.1111/j.1600-0668.2005.00363.x

Mouse and cockroach allergens in the dust and air in northeastern United States inner-city public high schools

Abstract Considering that high school students spend a large proportion of their waking hours in the school environment, this could be an important location for exposure to indoor allergens. We have investigated the levels of mouse and cockroach allergens in the settled dust and air from 11 schools in a major northeastern US city. Settled dust samples were vacuumed from 87 classrooms, three times throughout the school year. Two separate air samples (flow = 2.5 lpm) were collected by 53 students over a 5-day period from both their school and their home. Mouse allergen (MUP) in the dust varied greatly between schools with geometric means ranging from 0.21 to 133 μg/g. Mouse allergen was detectable in 81% of the samples collected. Cockroach allergen (Bla g 2) ranged from below limit of detection (<0.003 μg/g) to 1.1 μg/g. Cockroach allergen was detected (>0.003 μg/g) in 71% of the dust samples. Bla g 2 was detected in 22% of airborne samples from the schools. By comparison, mouse allergen was only detected in 5%. These results indicate that the school may be an important location for exposure to allergens from mice and cockroaches and is an indoor environment that should be considered in an overall allergen intervention strategy.

G. L. Chew, J. C. Correa, M. S. Perzanowski
Department of Environmental Health Sciences, Mailman School of Public Health, Columbia University, New York, NY, USA

Key words: School; Mouse; Cockroach; Allergen; Airborne; Dust.

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Received for review 18 February 2005. Accepted for

Recent Research (2014) Also Points to Disease Potential from City Rats…

mbo-mbio/mbo00514/mbo2023d14z | xppws | S=3 | 9/30/14 | 12:52 | ArtID: e01933-14 | DOI:10.1128/mBio.01933-14

RESEARCH ARTICLE

Detection of Zoonotic Pathogens and Characterization of Novel Viruses Carried by Commensal *Rattus norvegicus* in New York City

AQ: au Cadhla Firth,[a*] Meera Bhat,[a] Matthew A. Firth,[b*] Simon H. Williams,[a] Matthew J. Frye,[c] Peter Simmonds,[d] Juliette M. Conte,[a] James Ng,[a] Joel Garcia,[a] Nishit P. Bhuva,[a] Bohyun Lee,[a] Xiaoyu Che,[a] Phenix-Lan Quan,[a] W. Ian Lipkin[a]

AQ: aff Center for Infection and Immunity, Mailman School of Public Health, Columbia University, New York, New York, USA[a]; Immunology Program, Memorial Sloan-Kettering Cancer Center, New York, New York, USA[b]; New York State Integrated Pest Management Program, Cornell University, Elmsford, New York, USA[c]; University of Edinburgh, Centre for Immunology, Infection and Evolution, Ashworth Laboratories, Edinburgh, United Kingdom[d]

* Present address: Cadhla Firth, CSIRO Biosecurity, Australian Animal Health Laboratory, Geelong, Victoria, Australia; Matthew A. Firth, Division of Molecular Immunology, Walter and Eliza Hall Institute of Medical Research, Melbourne, Victoria, Australia.

ABSTRACT Norway rats (*Rattus norvegicus*) are globally distributed and concentrate in urban environments, where they live and feed in closer proximity to human populations than most other mammals. Despite the potential role of rats as reservoirs of zoonotic diseases, the microbial diversity present in urban rat populations remains unexplored. In this study, we used targeted molecular assays to detect known bacterial, viral, and protozoan human pathogens and unbiased high-throughput sequencing to identify novel viruses related to agents of human disease in commensal Norway rats in New York City. We found that these rats are infected with bacterial pathogens known to cause acute or mild gastroenteritis in people, including atypical enteropathogenic *Escherichia coli*, *Clostridium difficile*, and *Salmonella enterica*, as well as infectious agents that have been associated with undifferentiated febrile illnesses, including *Bartonella* spp., *Streptobacillus moniliformis*, *Leptospira interrogans*, and Seoul hantavirus. We also identified a wide range of known and novel viruses from groups that contain important human pathogens, including sapoviruses, cardioviruses, kobuviruses, parechoviruses, rotaviruses, and hepaciviruses. The two novel hepaciviruses discovered in this study replicate in the liver of Norway rats and may have utility in establishing a small animal model of human hepatitis C virus infection. The results of this study demonstrate the diversity of microbes carried by commensal rodent species and highlight the need for improved pathogen surveillance

Above, below and along side

Urine droplets

Potential of 3000 micro-droplets per 24 h.

- ***MUPs***

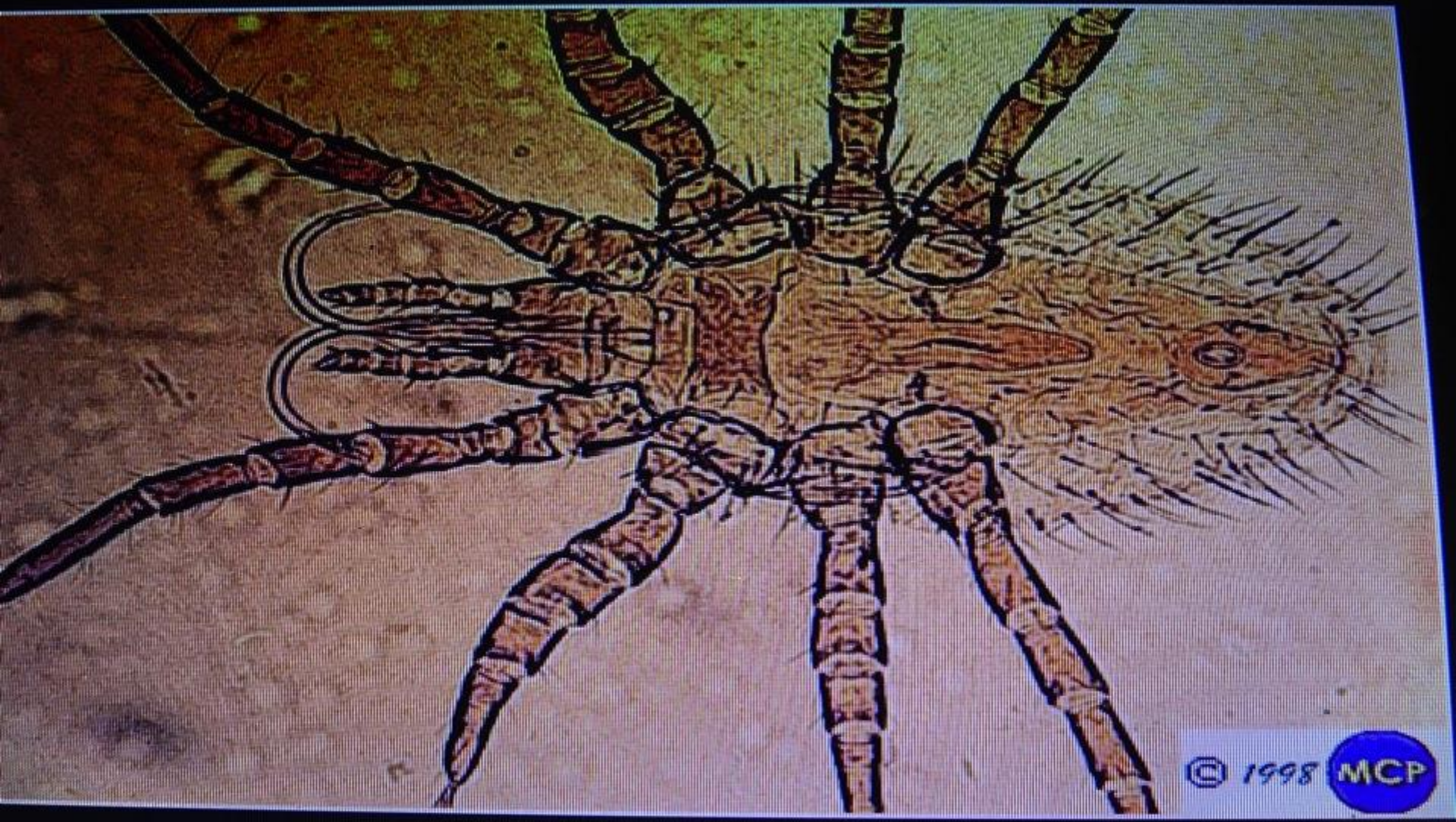
From a pathogenic microbial perspective:

100 dog feces in a ceiling vs.

100 mouse feces.

The house mouse mite (*Liponyssoides sanguineus*) common on mice, readily attacks people in mouse-infested buildings causing dermatitis.

Mullin, G. and B. M. O'CONNER. 2009. Mites. Pages 433-492 In: Medical and Veterinary Entomology. (G. Mullin and L. Durden, Eds.) 2nd Ed. Academic Press. San Diego, CA. 637 pp.


© 1998 MCP

Minor Infestations:
Simple cleaning and removal

Severe entrenched infestations:
PMPs
and
Industrial Hygienists

i.e., pay as you go; or *really* pay later.

An Obvious Take Home:

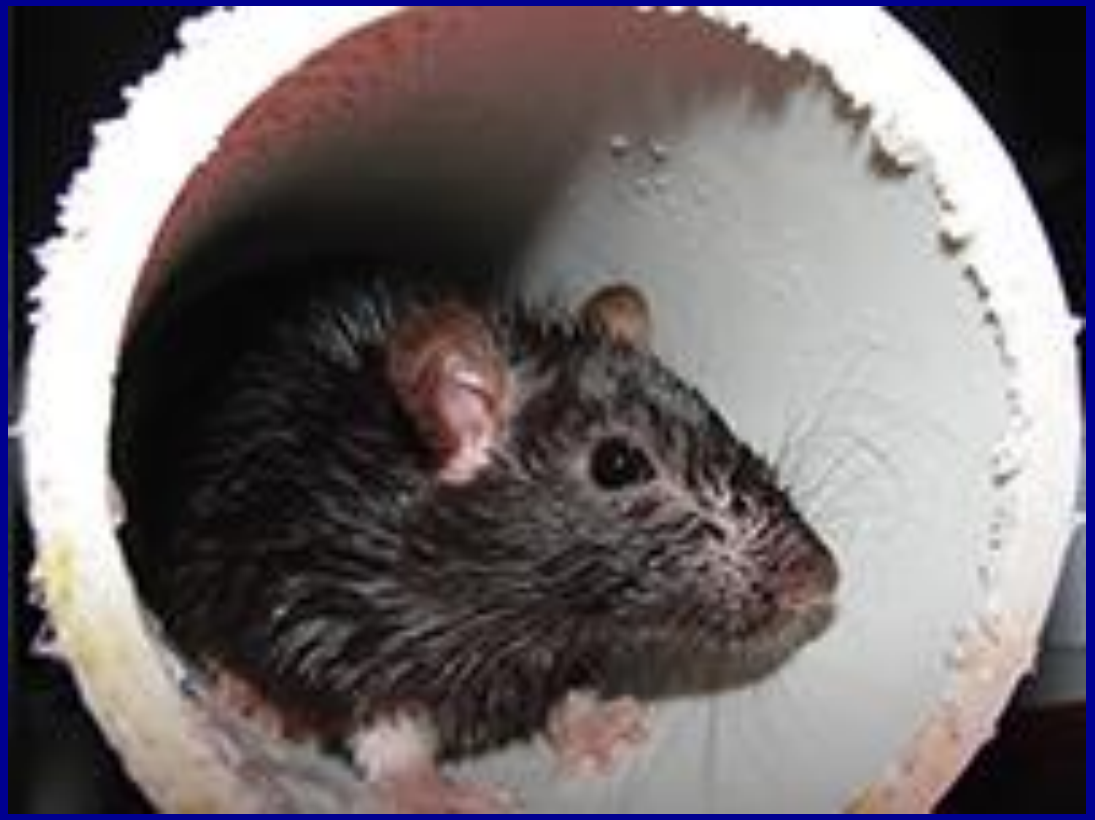
What should be our action threshold and tolerances for rodent *infestations* in and around schools?

Ask any city dishwasher repair man;

or a large city apartment complex building super.

Biology and Behavior

A short overview only as it relates to schools and school IPM



Opportunists


ONLY
BUSES


© RMC Pest Mgmt. Consulting.

and 3/4in/19mm in width. **(Figure 9-2)** Note:

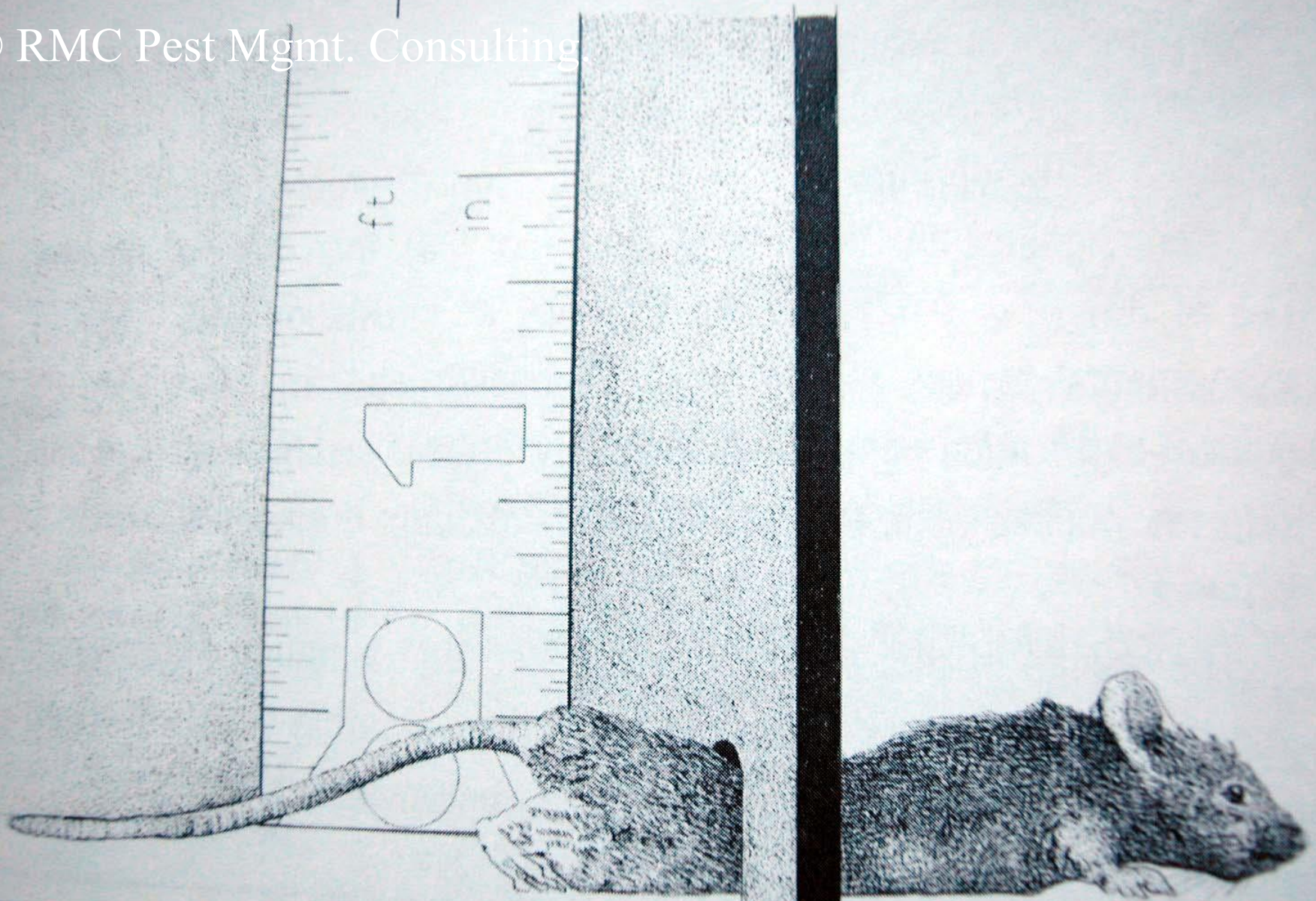
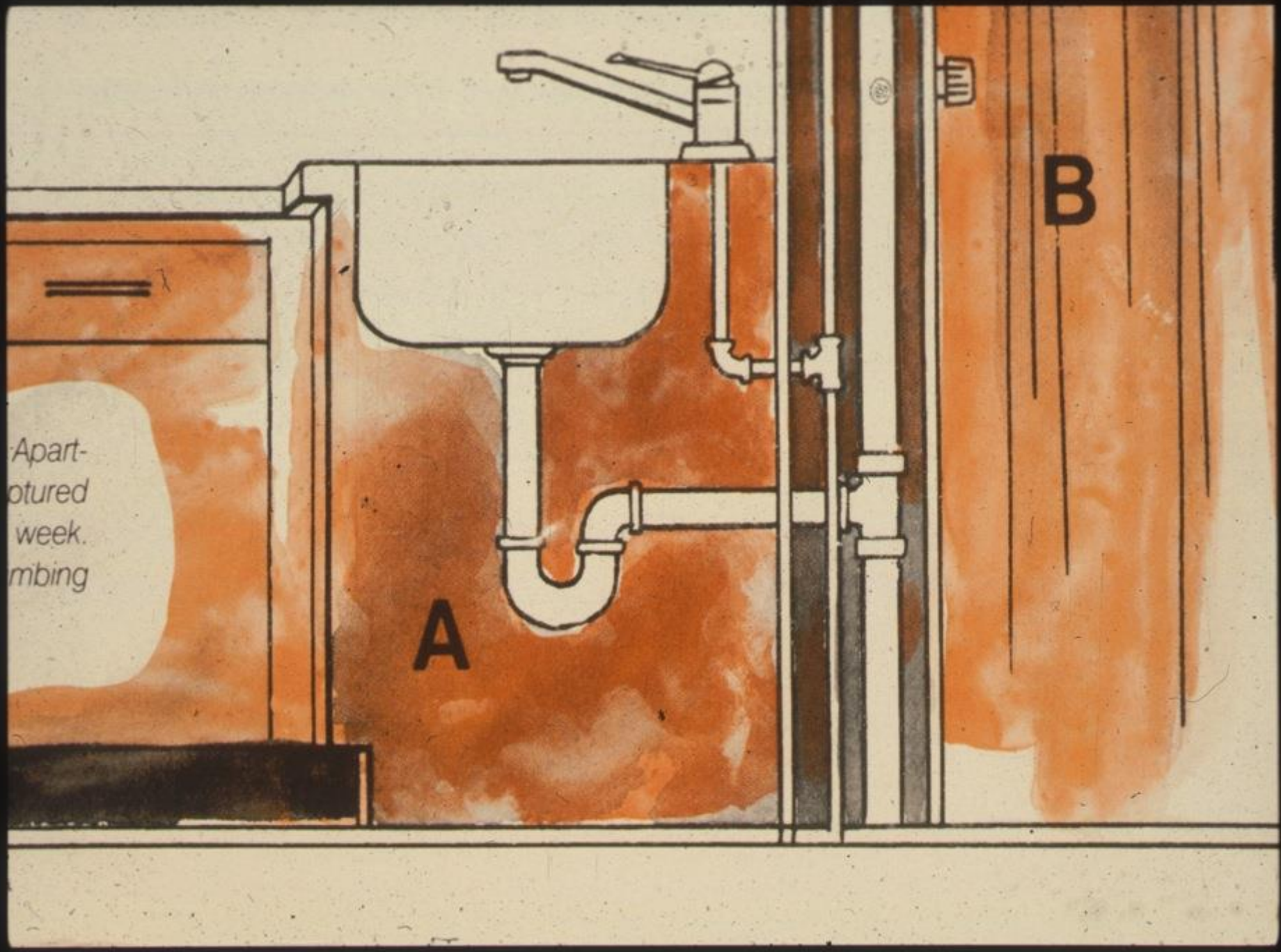


Figure 9-2


B
A

School Mouse Harborages

1. Warm areas nearby food
2. Cluttered rooms and areas.
3. Quiet
4. Ceilings, furniture, desks
5. Concrete hollow block

Highly Rodent Vulnerable Areas (RVAs) Of Typical Schools

①Kitchens & Store rooms

②Storerooms (especially conc. Hollow block + 2x4 / plywood shelving

③Beneath counter voids in serving zones

④ Band boosters storage and kiosks

⑤ Science classrooms

⑥ Any suspended ceilings above the above.

⑦ Crawl space areas (N. rats)

⑧ Soffits zones ands attics (R. rats)

⑨ Exterior earthen areas below cave shaped landscaping nearby food dumpsters


MC Pest Mgmt. Consulting.

Food Selections:

Mice: opportunistic on stored or spilled food in the Hard-to-reach and thus *hard to clean areas.*

Norway Rats: *Infestations* are usually due to refuse *mis-management* (dumpster maintenance/issues).

Roof rats: Natural foods and/or refuse as per above (less dependent on humans).

Food Intake:

(school foods)

Mice 2-4 g

N. rats : 1-2.5 oz.

R. rats: 0.5 to 1.5 oz.

OATS &
HONEY

OATS &
HONEY

Without vigilance, numbers can become significant:

762 mice in one restaurant (6 wks)

2, 260 mice in one supermarket (3 wks)

5, 439 in one grocery distribution center (4 wks)

(i.e., consider the urine and fecal allergens associated with such buildups).

“Maintenance” rodent programs

vs

Infestation management and population tracking

(i.e., it’s more complex than putting out a few traps and assuming the building was “treated” for rodents.

When it comes to planning your IPM strategy, there is nothing *ordinary* about any school.

Nor as far as the rodents are concerned are any two *alike*. Each school must be analyzed independently.

"More investigator than applicator"

IPM Basics

Pesticides

Physical & Mechanical Control

Cultural & Sanitation Practices

Education & Communication

School IPM: Key Concepts

- Inspection, monitoring and identification of pests
- Prevention and avoidance through pest exclusion and good sanitation
- Treatments focus on minimum impact on health and the environment.
- Custodians, teachers, students, principals, pest management professionals, and others all have a role

Part II: Implementation of rodent control in schools – a case study.

Claudia Riegel, Ph.D.
City of New Orleans Mosquito & Termite Control Board
(504)658-2440 criegel@nola.gov

Rat, roaches, and flies found at some public-school cafeterias, health report shows – ProjectNOLA.com

The most recent round of health inspections of public-school cafeterias show troubling conditions at some schools, including rat feces, roaches and flies.

By Jessica Williams, The Lens staff writer |

Your kid's public-school cafeteria may not be as clean as you think.

Although the majority of New Orleans' public-school cafeterias have gotten out of recent health inspections with little noted beyond a few run-down kitchen appliances, **36 of 82** public schools in state files were cited as having critical violations of state health code in 2011 and early 2012, records show.

There are 88 public schools in New Orleans. The state health department lists data for 82 schools, sometimes listing one result for facilities that house two or more school sites.

Of the 36 with critical offenses, nine schools were specifically cited for rats or rat feces, live and dead roaches, or flies in the kitchen at the time of inspection. Inspectors also noted rat feces at four schools – one of which received only a non-critical offense – in the comments section of the inspection report, although they chose not to give these schools the official pest-control violations because either updated pest-control documents were on file, appropriate rat bait was set out or pest control visits were scheduled.

http://projectnola.com/component/content/article/86-the-lens/182727-rats-roaches-and-flies-found-at-some-public-school-cafeterias-health-reports-show

Retail Food Inspection Report
Notice of Violations

Complaint____ Pre-opening____ Reinspection____ Routine__X__

Permit Number	E-Code	Type of Establishment		
36-0060705	0000	0000 - No Ecode Association Found		
Name of Establishment		Owner		
A.P. TUREAUD ELEMENTARY		Recovery School District		
Location	City	Zip	Date	Time
2021 PAUGER STREET	NEW ORLEAN	70117	12/14/2010	12:53:56 PM

LAC TITLE 51 PART XXIII

CRITICAL ITEMS: These items relate directly to the protection of the public from foodborne illness. These items MUST BE CORRECTED IMMEDIATELY (see compliance schedule below). Repeat violations may lead to enforcement actions or permit suspension.

Category	Code Reference	Description of Violations
1	1507	Ready to eat, potentially hazardous food prepared on premises and held for more than 24
		hours is not date marked. - Violation was corrected.
8	3501	Rodents are present in the establishment.
		General Comment: rodent dropping found in single service forks and nacho tray boxes.
		discarded

NON - CRITICAL: These items relate to design, sanitation and maintenance of food service operations. These items should be corrected by the next regular inspection or according to the compliance schedule (see below) established by this office.

Category	Code Reference	Description of Violations
15	3505	Openings are not protected against the entry of rodents or insects.
15	3703	Walls/ceilings or attached equipment are not in good repair.
16	501	A valid permit to operate is not posted in a conspicuous location.

Comments:

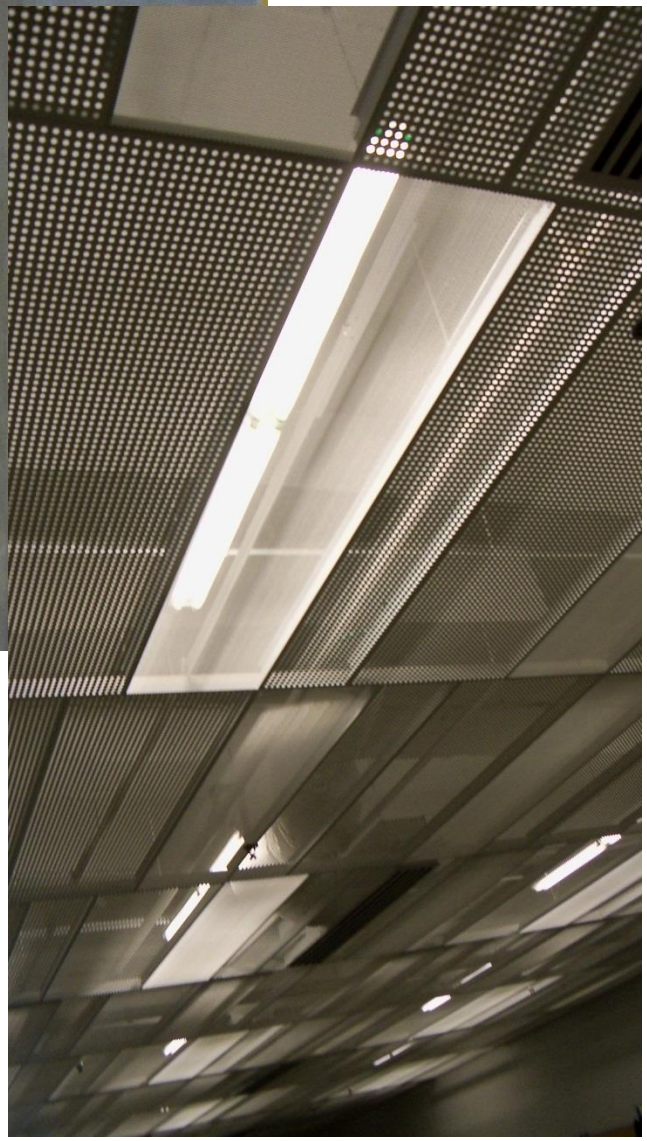
General Observations

Mouse bite in 2011

L.B. LANDRY HIGH SCHOOL

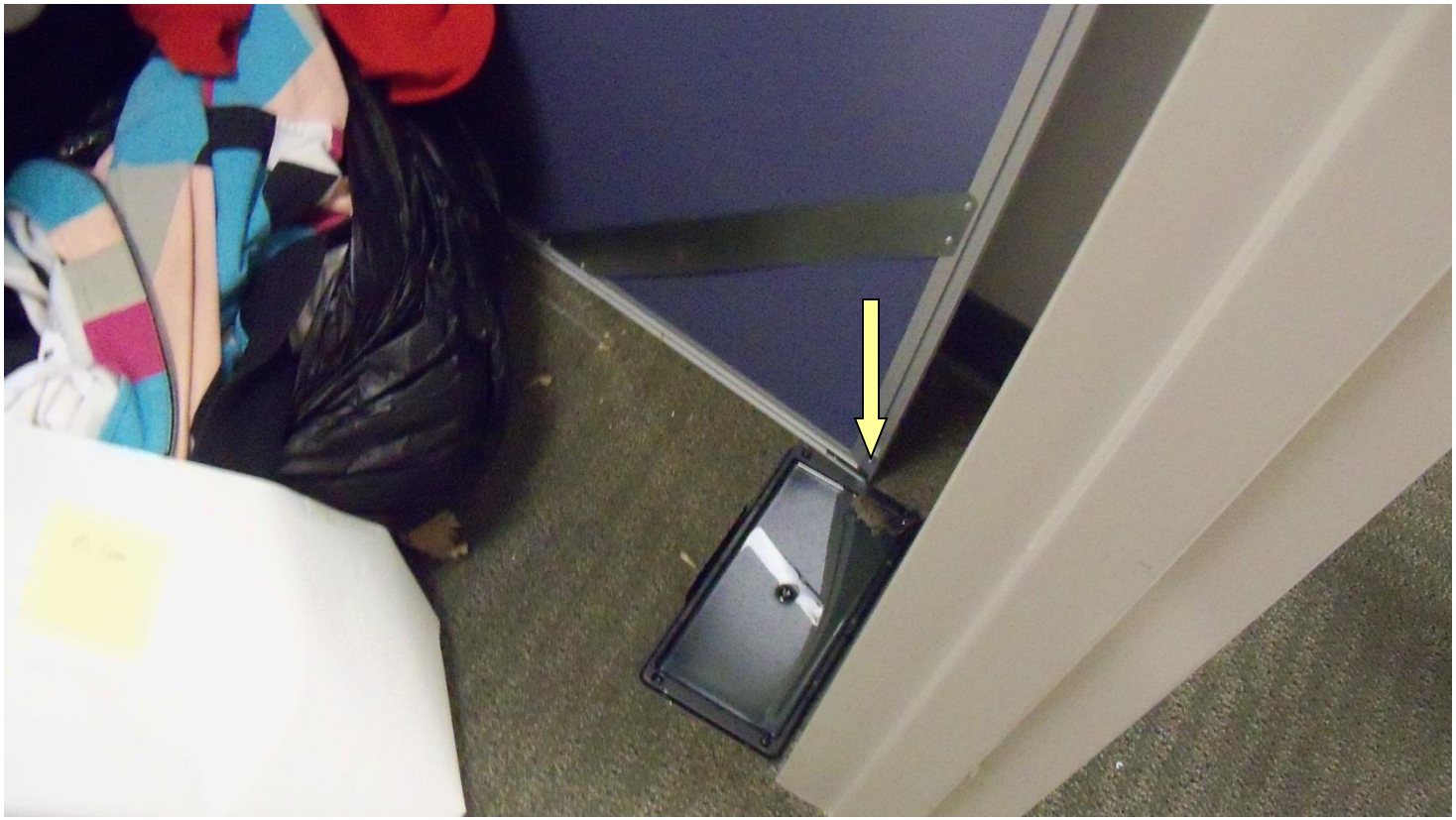
Schools are in a variety of state of repair:

- New (8 or less years)
- Renovated (damaged during hurricane Katrina)
- Schools that were not flooded
- Historic building (50+ years old, many schools 75 - 100 years)



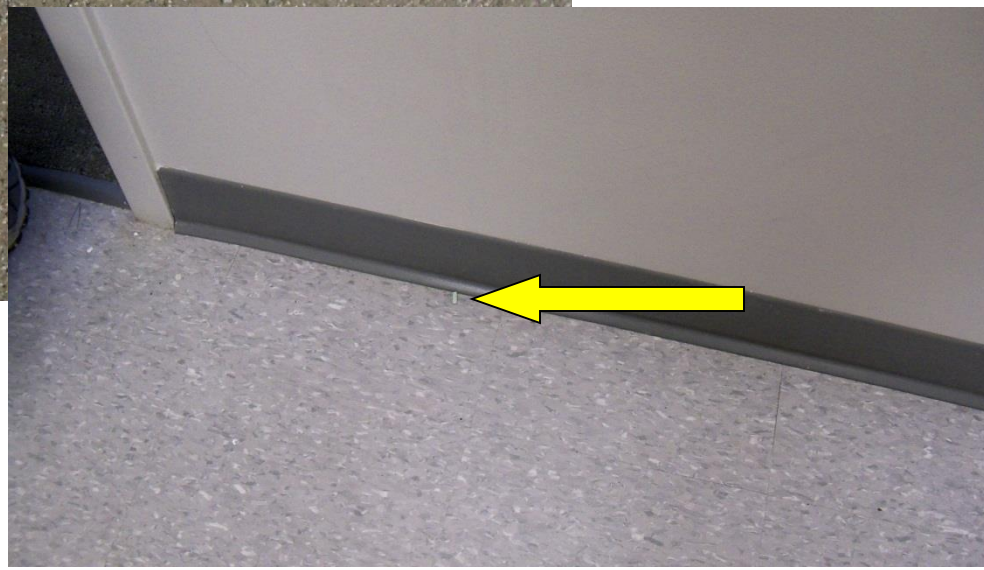
This area was fairly clean and in order; however we did see evidence of mice in the vending machine area and the kitchen. The light features allow for easy inspection, just make sure someone is looking up to catch any potential pest problems in the area.

THE PRINCIPALS OFFICE/AREA



Evidence of dead mice on glue boards – not sure who is placing the glue boards out, need to ensure it's the pest control contractor or a licensed employee. Once a mouse is caught, they should be disposed of immediately.

IMPROPER USE OF A RODENTICIDE!



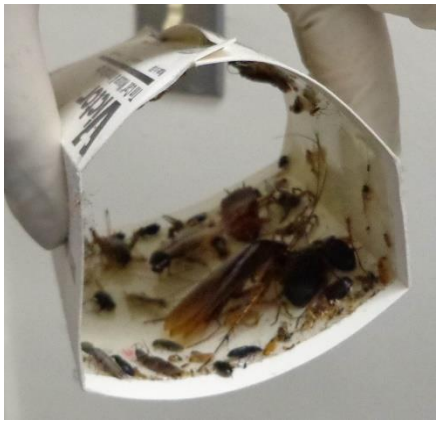

Talon
Rodenticide Bar Pack Mini-Pellets
INDIVIDUAL SALE PROHIBITED BY LAW
For Control of Commensal Rats and House Mice
Second Generation Anticoagulant
Kills Warfarin-Resistant House Mice
Norway rats and house mice normally consume a lethal dose in three nights fe
with first dead rodents appearing four or five days after feeding begins.
Active Ingredient:
Brodifacoum: 3-[3-(4'-bromo-[1,1'-biphenyl]-4-yl)-1,2,3,4-tetra-
hydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one
Other Ingredients:
Total:
KEEP OUT OF REACH OF CHILDREN.
CAUTION
See additional precautionary statements and directions for use
container label. Distribution to and sales in consumer stores, includ
grocery stores, drug stores, hardware stores, and club stores, is prohi
EPA Reg. No. 100-1050 EPA Est. 61282-WI-1
SCP 1050A-L1C 0310 327429
0.88 ounces
(25 grams-bait pack)
(3/32" Mini-Pellets)
Net Weight
NOTICE: Read the entire
for Use and Condition
Limitation of Warranty
on the outer package. B
ing or using this product,
terms are not acceptable, ret
product at once, unopened, a
purchase price will be refunded.
PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals
CAUTION: Harmful if swallowed or absorbed through the skin. Keep away from children, domestic
animals and pets. Do not get in eyes, on skin, or on clothing.
All handlers (including applicators) must wear shoes plus socks, and gloves. Any person who retrieves
carcasses or unused bait following application of this product must wear waterproof gloves.

Mouse bait stations, no date, pellets, improper placement and use.

Summary of observations

School inspected often have several pest issues

- Termites, **rats, mice**, cockroaches (American, German), variety of flies, ants



School may not be in LDAF compliance

- IPM plan not submitted by Aug 1
- IPM plans not available in administration offices
- IPM plans if present are weak

Leadership often not have an understanding about

- The pest control contracts (general pest and termite)
- The role of conducive conditions
- General understanding of pest management
- The importance of managing (controlling) pest infestation
- Implications of not being in compliance

Summary of observations

- **Improper use of rodenticides (lack of understanding)**
- **Poor housekeeping**
- **Food (breakfast) in the classrooms**
- **Lack of payment for pest contracts (pay sometimes)**
- **Bid specifications weak**
- **Lack of interested or low prioritization of pest management issues**
- **Little to no oversight of pest contracts**
- **Limited custodial/maintenance staff at schools**
- **Asthma cases**

Implementing Verifiable School IPM Program in Orleans Parish

Claudia Riegel, Ph.D.

Director, City of New Orleans Mosquito & Termite Control Board

CITY OF NEW ORLEANS

AgriLIFE EXTENSION
Texas A&M System

Janet Hurley

Extension Program Specialist II

Historic

Renovated

New

Deliverables

- **IPM Plan for demonstration schools**
  - Train staff and vendors
  - State law compliance
- **Full pest inspections with a plan for pest-proofing**
- **IPM survey of the staff (teachers, maintenance, administration)**
- **Pest monitoring**
- **Clean-up campaign**
- **Reduce pesticide use**
- **Reduce/eliminate pest problems**
- **Provide bid specifications**

NO JOB IS TOO GREAT FOR INTEGRATED PEST MANAGEMENT!

Severe rodent problems – house mouse and Norway rats

PEST MONITORING FORM

RECORD OF PEST INSPECTION, IDENTIFICATION, MONITORING, AND EVALUATION

LOUISIANA DEPARTMENT OF AGRICULTURE AND FORESTRY
BOB ODOM, COMMISSIONER
CATEGORY 7D

SCHOOL NAME John McDonogh High School

CONTACT PERSON Mr. [redacted]

ADDRESS 2425 Eggleston Ave

TELEPHONE 504- [redacted]

INSPECTION DATE/TIME	AREA INSPECTED*	PEST IDENTIFIED	ACTION TAKEN**	PERSON MAKING INSPECTION
[redacted]	School Buildings	General Pests Rodents	Pesticide Applied Bait Stations performed	[redacted]

* CAFETERIA, PLAYGROUND, ETC.

** CLEANED AREA, CUT GRASS, PESTICIDE APPIED, ETC.

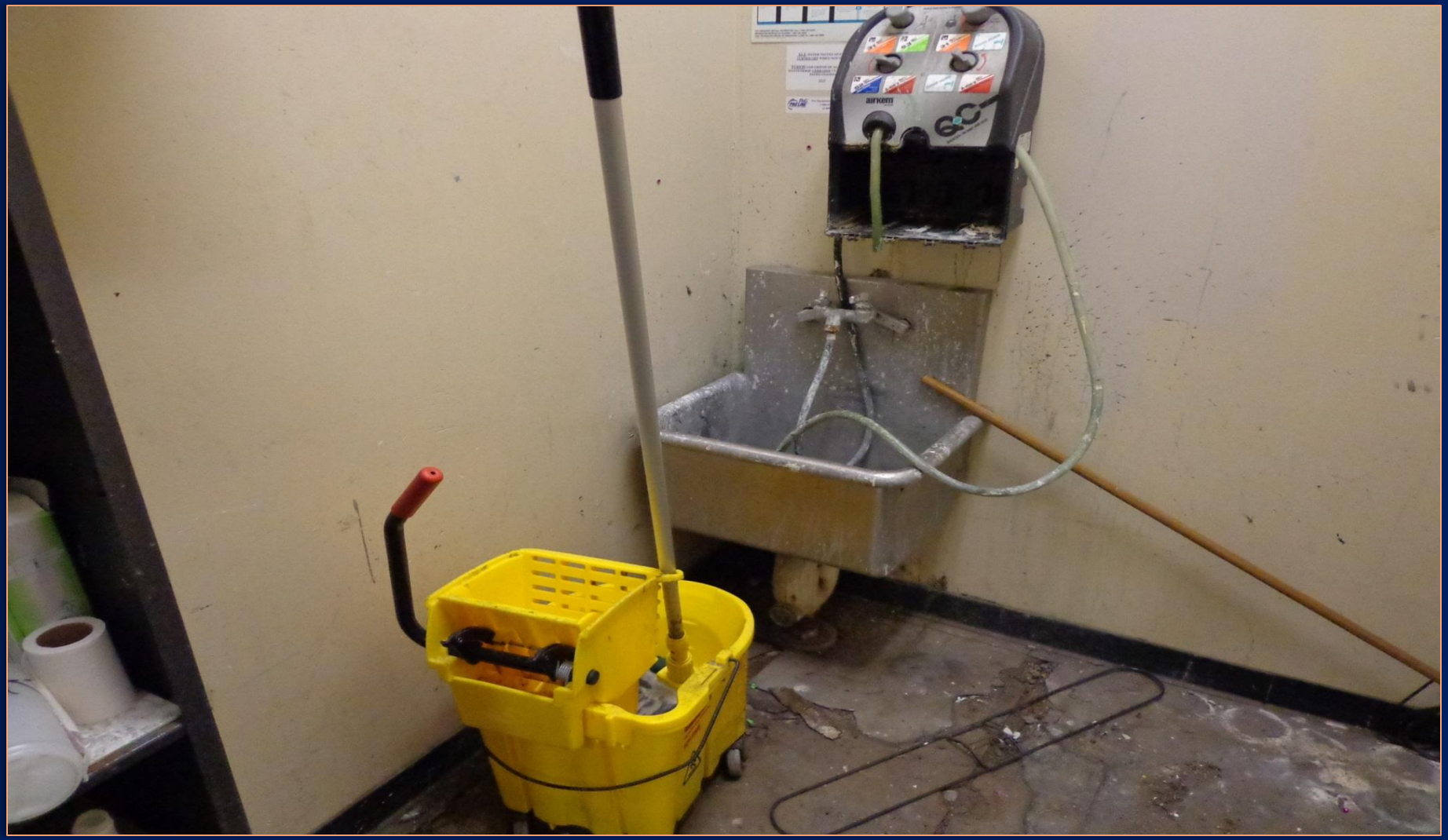
A thorough initial inspection, then inspected quarterly

WINDOWS DAMAGED DURING HURRICANE KATRINA WERE NEVER PROPERLY REPAIRED

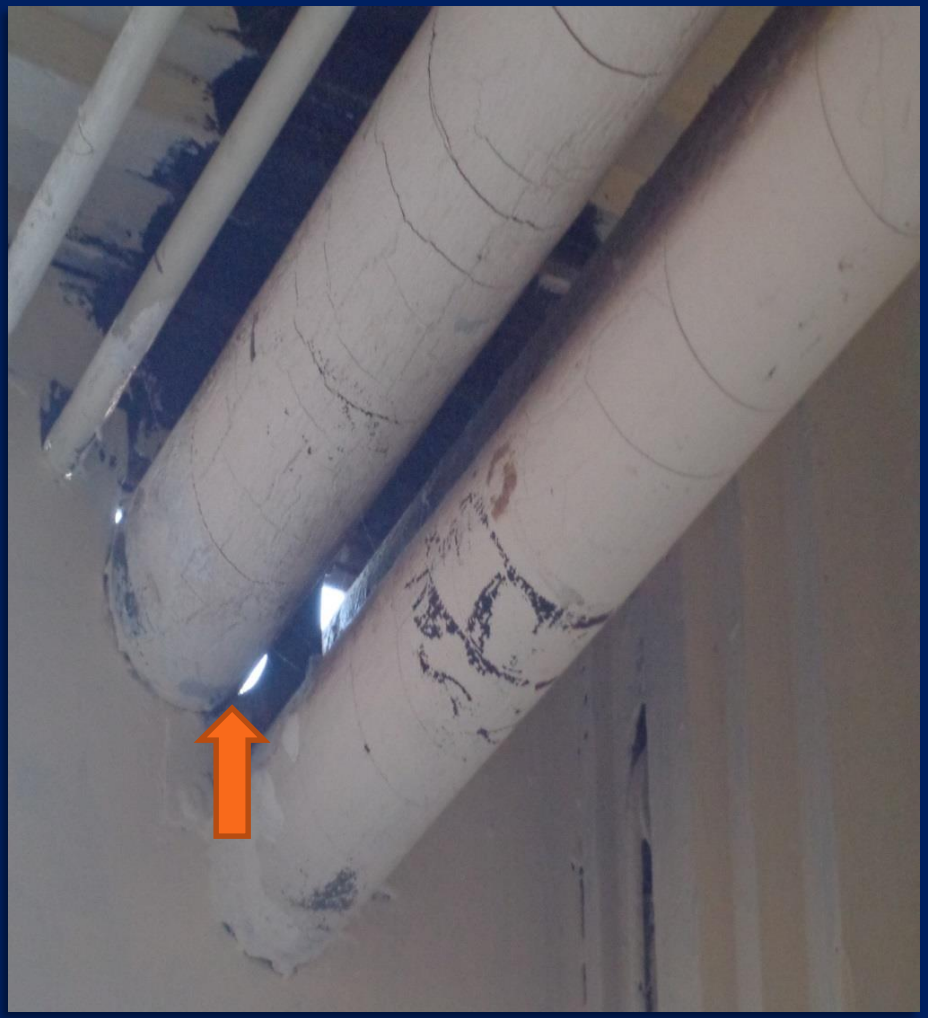
Poor Sanitation

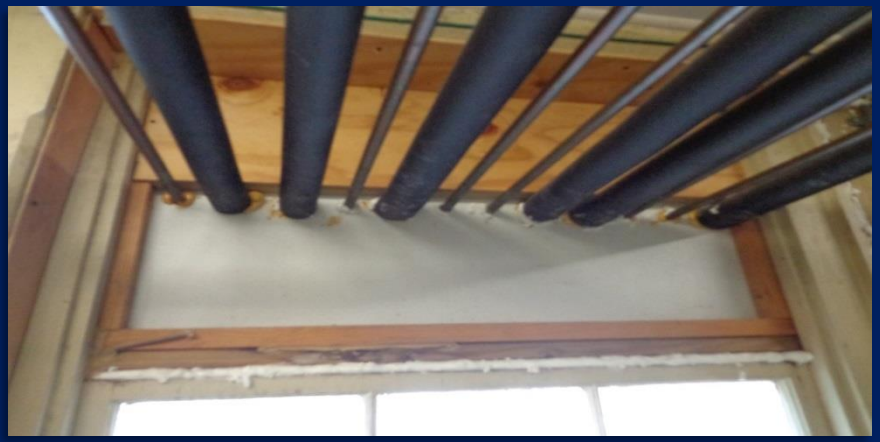
Filthy Drains

IF MOPS AREN'T STORED PROPERLY THEY CAN BE PART OF PEST PROBLEM, THE MOISTURE FROM A MOP CAN BE AN ATTRACTANT FOR NUMEROUS PESTS



PLUMBING AND PIPE ENTRY - IT COULD BECOME A RODENT HIGHWAY





Teachers' Lounge

Rodent activity behind the vending machine

WHEN DOING INITIAL INSPECTION PAY CLOSE ATTENTION TO WATER SOURCES

AVAILABLE WATER AND IMPROPER STORAGE

TRASH CANS NEED TO BE 30 FT. FROM BUILDING WITH THE LIDS CLOSED.

Steps to Success

- Thorough inspection
- Monitoring and identification
- Pest- proofing, exclusion, sanitation, etc.
- Treatment, trapping, etc. if needed
- Monitoring …..

Inspection

A thorough initial inspection, then inspected quarterly

MONITORING STATION FOR PESTS

John McDonogh High School
Monitoring Station Locations

Office

- JM-1 on the left corner when you walk in front office door
- JM-2 Side of computer desk in main office (Ms. Bertrand)
- JM-3 Supply Room
- JM-4 Copy Room
- JM-5 Principal's Office – Closet – Right Hand Corner under his printer- next to hole in floor

Auditorium

- JM-6 Stage front left corner facing seating
- JM-7 Back Room with door locked behind stage

Kitchen

- JM-8 Next to kitchen office computer
- JM-9 Food Storage Room far left corner
- JM-10 Back middle under the sink
- JM-11 Back left corner for the kitchen under the sink
- JM-12 Under the serving line area

Hallway Area

- JM-13 Across from Rm 103 behind a/c vent

2nd floor Teacher's Lounge

- JM-14 Room 203 behind the Coke Machine
- JM-15 behind and under the A/C vent

3rd floor

- JM-16 Janitor's closet under the sink

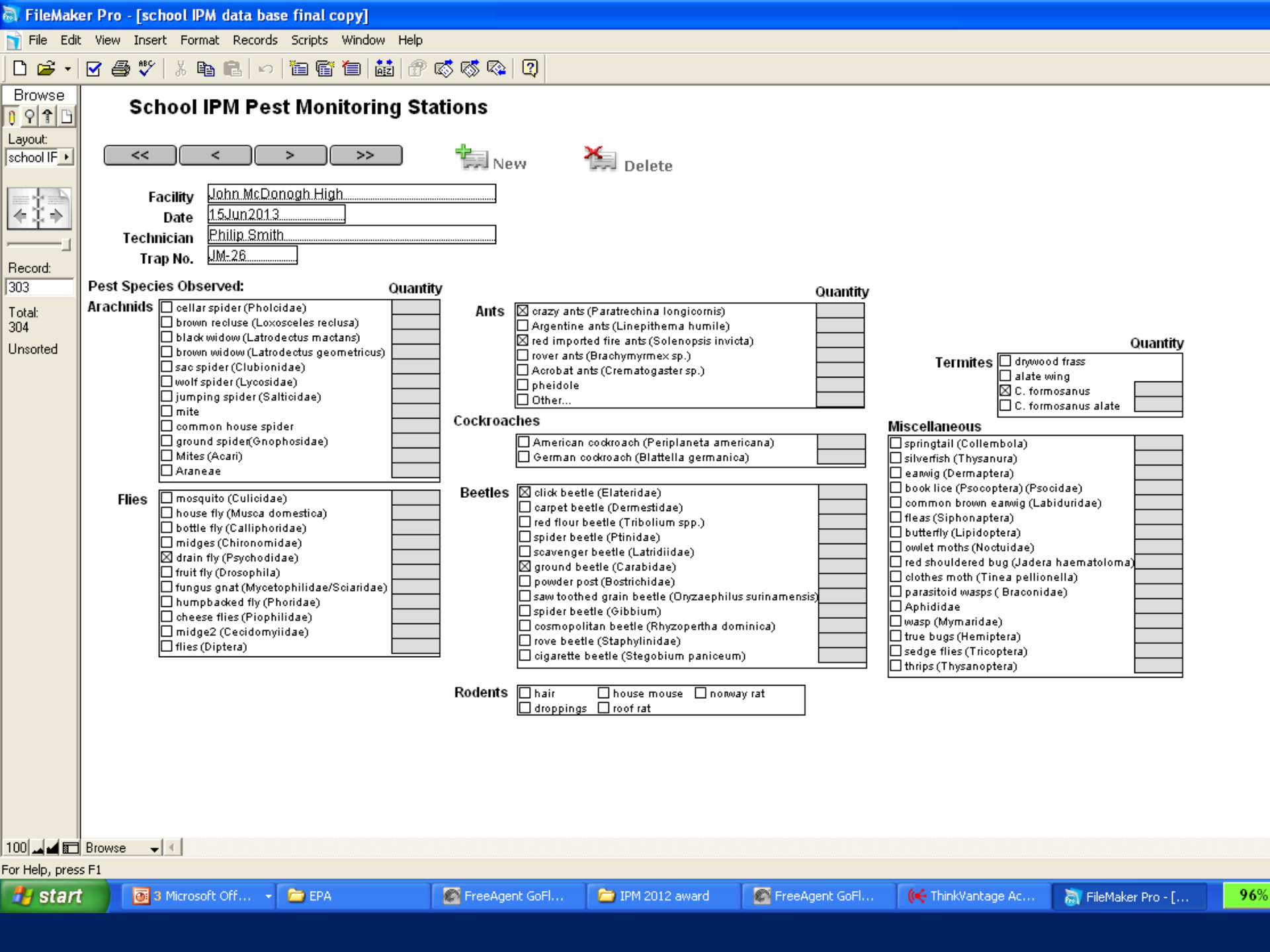
Classroom area 305

- JM-17 Next to A/C vent

Gym

- BOY'S SIDE
- JM-18 open closet across from office left wall
- JM-19 Next to ice machine by hole in the wall
- JM-20 Back room in equipment section by side door
- JM-21 Wash room under the sink, back right corner
- JM-22 Next to open washer in room before football room next to sink
- GIRL'S SIDE
- JM-23 Girls locker room side in custodial closet
- JM-24 Locker room side door by the lockers
- JM-25 Room next door to custodial closet under shelf
- JM-26 Girls Bathroom under sink

PEST IDENTIFICATION IS EXTREMELY IMPORTANT


FileMaker Pro - [school IPM data base final copy]
File Edit View Insert Format Records Scripts Window Help
Browse
Layout:
school IF
Record:
303
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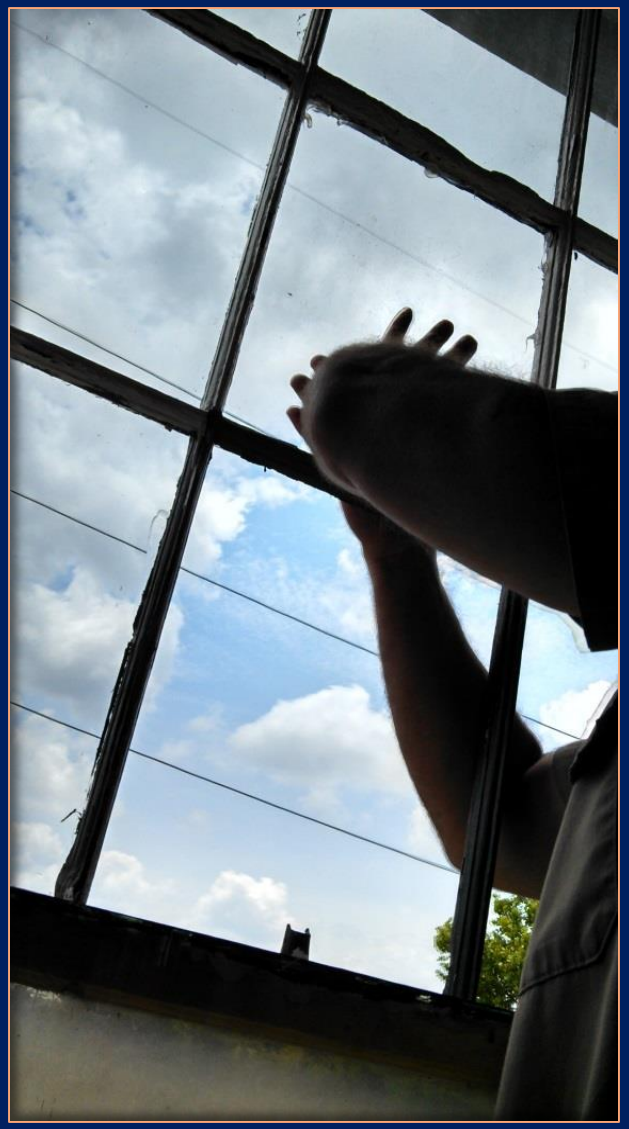
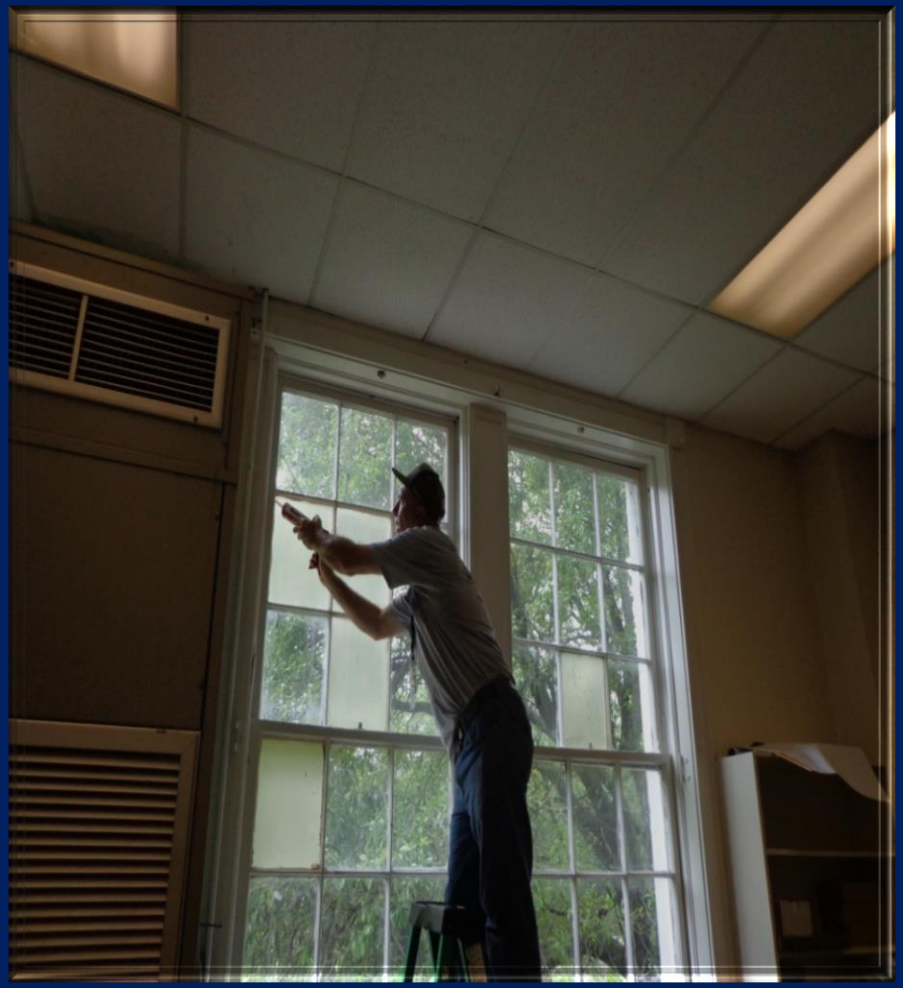
304
Unsorted
School IPM Pest Monitoring Stations
<< < > >>
New
Delete
Facility John McDonogh High
Date 15Jun2013
Technician Philip Smith
Trap No. JM-26
Pest Species Observed:
Quantity
Arachnids
cellar spider (Pholcidae)
brown recluse (Loxosceles reclusa)
black widow (Latrodectus mactans)
brown widow (Latrodectus geometricus)
sac spider (Clubionidae)
wolf spider (Lycosidae)
jumping spider (Salticidae)
mite
common house spider
ground spider(Gnophosidae)
Mites (Acari)
Araneae
Flies
mosquito (Culicidae)
house fly (Musca domestica)
bottle fly (Calliphoridae)
midges (Chironomidae)
drain fly (Psychodidae)
fruit fly (Drosophila)
fungus gnat (Mycetophilidae/Sciaridae)
humpbacked fly (Phoridae)
cheese flies (Piophilidae)
midge2 (Cecidomyiidae)
flies (Diptera)
Ants
crazy ants (Paratrechina longicornis)
Argentine ants (Linepithema humile)
red imported fire ants (Solenopsis invicta)
rover ants (Brachymyrmex sp.)
Acrobat ants (Crematogaster sp.)
pheidole
Other...
Cockroaches
American cockroach (Periplaneta americana)
German cockroach (Blattella germanica)
Beetles
click beetle (Elateridae)
carpet beetle (Dermestidae)
red flour beetle (Tribolium spp.)
spider beetle (Ptinidae)
scavenger beetle (Latridiidae)
ground beetle (Carabidae)
powder post (Bostrichidae)
saw toothed grain beetle (Oryzaephilus surinamensis)
spider beetle (Gibbium)
cosmopolitan beetle (Rhyzopertha dominica)
rove beetle (Staphylinidae)
cigarette beetle (Stegobium paniceum)
Rodents
hair
house mouse
norway rat
droppings
roof rat
Termites
drywood frass
alate wing
C. formosanus
C. formosanus alate
Miscellaneous
springtail (Collembola)
silverfish (Thysanura)
earwig (Dermaptera)
book lice (Psocoptera) (Psocidae)
common brown earwig (Labiduridae)
fleas (Siphonaptera)
butterfly (Lipidoptera)
owlet moths (Noctuidae)
red shouldered bug (Jadera haematoloma)
clothes moth (Tinea pellionella)
parasitoid wasps (Braconidae)
Aphididae
wasp (Mymaridae)
true bugs (Hemiptera)
sedge flies (Tricoptera)
thrips (Thysanoptera)
100 Browse
For Help, press F1
start
3 Microsoft Off...
EPA
FreeAgent GoFl...
IPM 2012 award
FreeAgent GoFl...
ThinkVantage Ac...
FileMaker Pro - [...
96%

NUMEROUS ENTRY POINTS FOR PEST MUST BE CLOSED

Replacing Broken Windows…

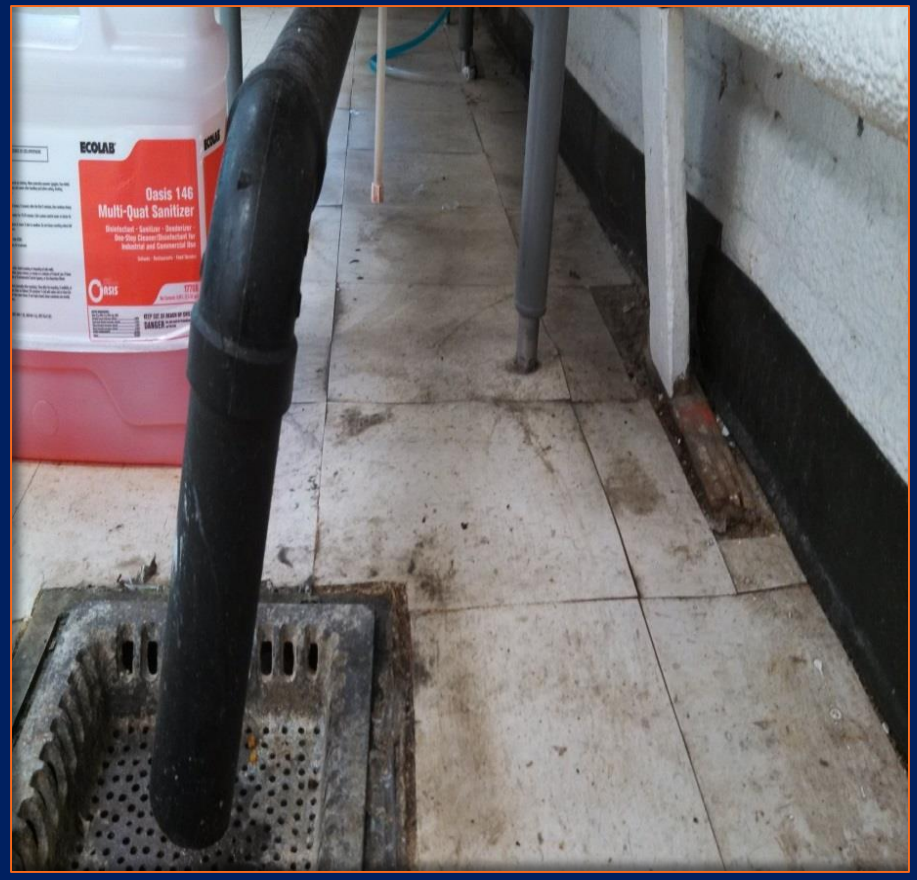


USING CLEAR SEALANT



ALL PIPES NEED TO BE SEALED AT THE ENTRY POINTS

Steel wool mixed with a sealant or concrete



PEST PROOFING BETWEEN THE WALLS WHERE PIPES PENETRATE

THIS PIPE RUNS FROM ROOM TO ROOM, THE ALUMINUM CASING AROUND THE PIPE WAS A RODENT HIGHWAY UNTIL IT WAS SEALED

PEST LOG SHOULD BE PUT UP FOR KITCHEN STAFF

GET TO KNOW THE JANITORS, THEY ARE THERE EVERYDAY AND CAN HELP GIVE YOU AN IDEA OF THE DAILY PEST SIGHTINGS

KICK PLATES AND DOOR SWEEPS PUT ON EXTERIOR DOORS

THIS DOOR IS SO DAMAGED IT GETS A CUSTOM MADE CORNER…

…and custom cut

ON SITE TEMPORARY WOOD SHOP FOR EXCLUSION PROBLEMS

JIG SAW IS A GREAT TOOL FOR EXCLUSION WORK

REMOVE UNNECESSARY STORAGE BINS ON SCHOOL GROUNDS

REMOVING OLD AIR CONDITIONERS …

BOOK STORAGE ORGANIZED AND DISPOSED OF CARDBOARD BOXES

NOMTCB IPM CREW ON THE MOVE…

12/7/2012-10/31/13

Total labor hours at John McDonogh-370.5 Man hours

Inspector @ 46,500/yr = cost of $9,466.28

$4,500 in materials and supplies

Exclusion Day

Team 1-Door Sweeps and Kick plates. (LJ and Princeton)

Two man team to put door sweeps and kick plates on all exterior doors.

Measurements and doors already labeled. (Check with Phil for notes and map.

Tools needed.

Drill.

Tape measure.

Hot-glue gun.

Raw materials-Talk to Phil.

Hack Saw.

Team 2-Check all AG's and add stations at 3 locations. (Barry Lyons)

Locations of rooms where stations are. (Room behind stage, Band Room 357-adjacent room where horns are)

Locations of new stations (Check the rafters behind stage-Timmy found active termites close to the other AG in the same room)

Tools needed.

3-4 new AG stations.

Caulk and Screw Gun.

Water.

Team 3-Organize and Cleanup. (Abby, Daniel)

Cleaning Products, Broom, dust pan,

Check with OC for supplies.

Locations (Rm 108,104,301)

Computer Rm. 154-Exclusion needed in both corners.

Book storage Rm. 301

John McDonogh Exclusion Breakdown

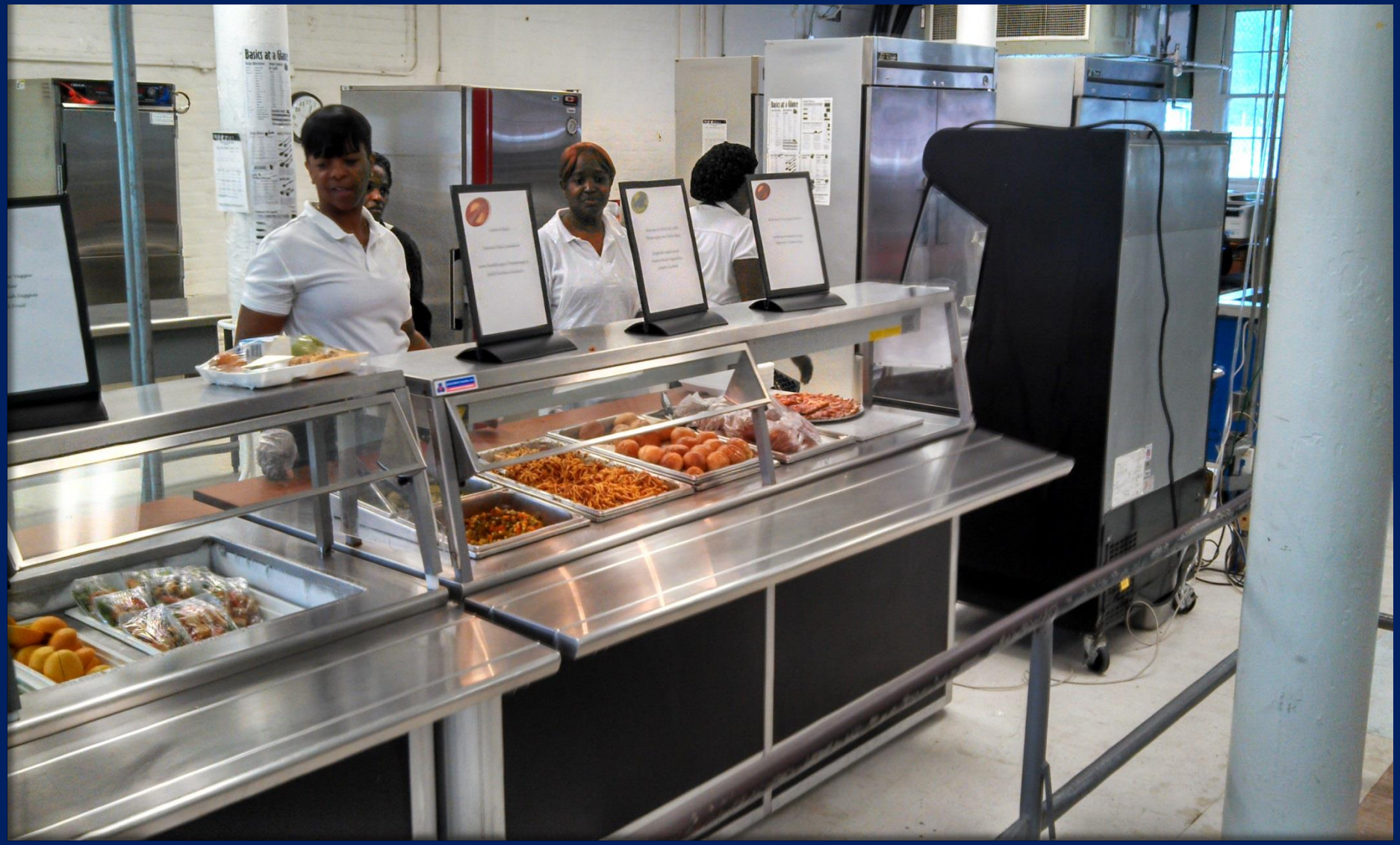
- Windows replaced-112
- Windows repaired (silicon)-204
- Doors repaired and enhanced-(Door Sweeps and Kick Plates)-14
- Holes patched-(Concrete, Termimesh, Steel Wool)-186
- Toilet Removed in Storage Room-1
- Broken Air Conditioners Removed-2
- Window frames repaired-104 (Sealed Window frames with special wood cuts)
- Pantry in kitchen completely sealed (Pest Free)
- Floor repaired above Pantry and behind stage in the Auditorium
- Band Instrument storage location repaired, secured, and returned to a functioning secure location for Band Instruments
- Vacuumed above ceiling tiles with IPM vacuum with HEPA Filter

KEEP THE KITCHEN CLEAN ! ! !

NEW KITCHEN MANAGER DISCUSSES IPM WITH STAFF

KITCHEN PANTRY AFTER PEST PROOFING

THE KITCHEN STAFF BEGIN A NEW SCHOOL YEAR AFTER A DEEP CLEANING OF THE FACILITY



NORWAY RAT-LAST HOLD OUT

TOILET REMOVED

RAT RETURNED FOR A DRINK BUT THE TOILET HAD BEEN REMOVED

Rodent Removal Data John McDonogh (December 2012-November 1 2013)

Month	Day	Location	Rodent Type	Number	Method
December	21	Teachers Lounge	Norway Rat	1	T-Rex snap trap
December	21	Gym JM-21	House Mouse	1	Sticky trap
January	24	Teachers Lounge	House Mouse	2	Snap trap
January	24	Main Office JM-3	House Mouse	1	Sticky trap
January	24	Kitchen JM-10	House Mouse	1	Sticky trap
February	28	Main Office (Bertrand)	House Mouse	2	Snap trap
February	28	Janitor Office (Storage Rm.)	Norway Rat	1	T-Rex snap trap
February	28	Main Office) JM-3	House Mouse	1	Sticky trap
February	28	Auditorium JM-6	House Mouse	1	Sticky trap
February	28	Kitchen JM-9	House Mouse	1	Sticky trap
March	19	Ceiling above IT Room	Norway Rat	1	Live Catch
March	28	Kitchen JM-8	House Mouse	1	Sticky trap
March	28	Gym JM-25	House Mouse	1	Sticky trap
April	4	Principal's office JM-5	House Mouse	1	Sticky trap
April	4	Teacher's Lounge JM-14	House Mouse	1	Sticky trap
April	4	Gym	House Mouse	1	Sticky trap
April	17	Dr. Thompson's office	House Mouse	2	Snap trap
May	11	IT Room	House Mouse	2	Snap trap

Rodent Removal Data John McDonogh (December 2012-November 1 2013)

May	11	Kitchen	House Mouse	1	Snap trap
May	14	Janitor's Office(storage rm)	Norway Rat	1	T-Rex snap trap
May	15	Behind Stage (Auditorium)	Norway Rat	1	Live Catch
May	27	Main Trash Container	Norway Rat	1	T-Rex snap trap
June	5	Ceiling-1st floor hallway	Norway Rat	1	Rodenticide
June	5	Ceiling-1st floor hallway	Juvenile Norway	3	Rodenticide
June	6	Teacher's Lounge	House Mouse	2	Snap Trap
June	6	Kitchen Bathroom	House Mouse	1	Snap Trap
June	14	Teacher's Lounge	House Mouse	1	Sticky Trap
June	17	Kitchen under sink	House Mouse	2	Snap Trap
Exclusion Day, July 9th ★					
July	11	Cafeteria closet	Norway Rat	1	Rodenticide
July	14	Janitor's Office	Norway Rat	1	Removed Toilet
July	25	Principal's Office JM-5	House Mouse	1	Sticky Trap
July	25	Auditorium JM-7	House Mouse	1	Sticky Trap
July	25	Kitchen JM-8	House Mouse	1	Sticky Trap
July	25	Gym JM-20	House Mouse	1	Sticky Trap
July	25	Gym JM-24	House Mouse	1	Sticky Trap
Deep cleaning day, August 17th ★					
August	28	Kitchen Bathroom	House Mouse	1	snap trap

Rodent Removal Data John McDonogh (December 2012-November 1 2013)

May	11	Kitchen	House Mouse	1	Snap trap
May	14	Janitor's Office(storage rm)	Norway Rat	1	T-Rex snap trap
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May	27	Main Trash Container	Norway Rat	1	T-Rex snap trap
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June	14	Teacher's Lounge			
June	17	Kitchen under sink			
Exclusion Day, July 9th ★					
July	11	Cafeteria closet			
July	14	Janitor's Office			
July	25	Principal's Office JM-	House Mouse	1	Sticky Trap
July	25	Auditorium JM-7	House Mouse	1	Sticky Trap
July	25	Kitchen JM-8	House Mouse	1	Sticky Trap
July	25	Gym JM-20	House Mouse	1	Sticky Trap
July	25	Gym JM-24	House Mouse	1	Sticky Trap
Deep cleaning day, August 17th ★					
August	28	Kitchen Bathroom	House Mouse	1	snap trap

Total rodents removed

Norway rats = 12
House mouse = 32

AFTER EIGHT MONTHS OF DILIGENT IPM STRATEGIES CONTROL WAS ACHIEVED

AFTER EIGHT MONTHS OF DILIGENT IPM STRATEGIES CONTROL WAS ACHIEVED

- Building currently under renovation.
- Bioremediation may be necessary

Questions?

For More Information

- visit: www.epa.gov/pestwise
- contact us: school.ipm@epa.gov

844-EPA-SIPM