

Rat Control, An Issue for Food Establishments, Residents and Municipalities

Don Rivard of
Rivard's Resources: IPM
*An Environmental/Pest
Management Consulting Firm*

Background

- ▶ 1966–70 USAF, Engr. Entomologist
- ▶ 1970–73 UMass/Amherst
- ▶ 1973–94 Waltham Services (Chemical)
 - ❖ 91–92 President, NEPMA
 - ❖ 1994 Grad Cert., Environ. Mgmt./Bentley U.
- ▶ 1994–Present, **Rivard's Resources: IPM**
 - 1995–2001 NEPMA, Executive Director
 - 2001 “IPM Registry” a credentialing program

Grants & Projects

- ▶ Healthy Public Housing Initiative with
 - Harvard, Tufts & BU Schools of Public Health
- ▶ Healthy Homes – BPHC
- ▶ Healthy Pest-Free Housing Initiative
- ▶ National Center for Healthy Housing
- ▶ Mouse Allergen & Allergy Intervention Trials (MAAIT) with Johns Hopkins, Columbia & Harvard Universities

Our Experience

Major Rodent Projects:

- ▶ City of Boston – Rat Control
- ▶ Harbor Island – Rat Control
- ▶ Central Artery/Tunnel – Rodent Control
 - ❖ Advisor
 - ❖ 1st two contracts
- ▶ Faneuil Hall Market Place

Rodents

- ▶ What they are
- ▶ What they eat
- ▶ Where they live
- ▶ How to think like a rodent
- ▶ Prevention and control

Also known as...
ratones y ratas

A few types of rodents

- ▶ Mice
- ▶ Rats
- ▶ Squirrels
- ▶ Chipmunks
- ▶ Woodchucks

What is a rodent?

Rodents are gnawing animals.

- ▶ Rodents gnaw to wear down their teeth and get where they want to go
- ▶ Make babies...lots and fast!
- ▶ Travel the same paths nightly, staying close to walls



Rodent gnawing

- ▶ Start fires by chewing on wires
- ▶ Can cut anything softer than steel
- ▶ Incisors grow constantly
- ▶ Rodents need to gnaw



Rats and Mice ID and Biology

Rodents are gnawing animals...

Rats	Mice
Travel 100 yds.	Live in 10 sq. feet
Drinks readily	Usually from food
Timid	Curious
Need half inch opening to enter	Need one quarter inch opening to enter

Mice are NOT small rats !!

Why Are They Pests?

Ants

Bats

Bedbugs

Bees and
wasp

Beetles

Birds

Caterpillars

Centipede
scorpions
spiders

Chigger
mites

Cockroaches

Fleas

Flies

- **Rats and mice carry many diseases and damage food & property by gnawing...**

- **Many fires are started by chewed wiring**

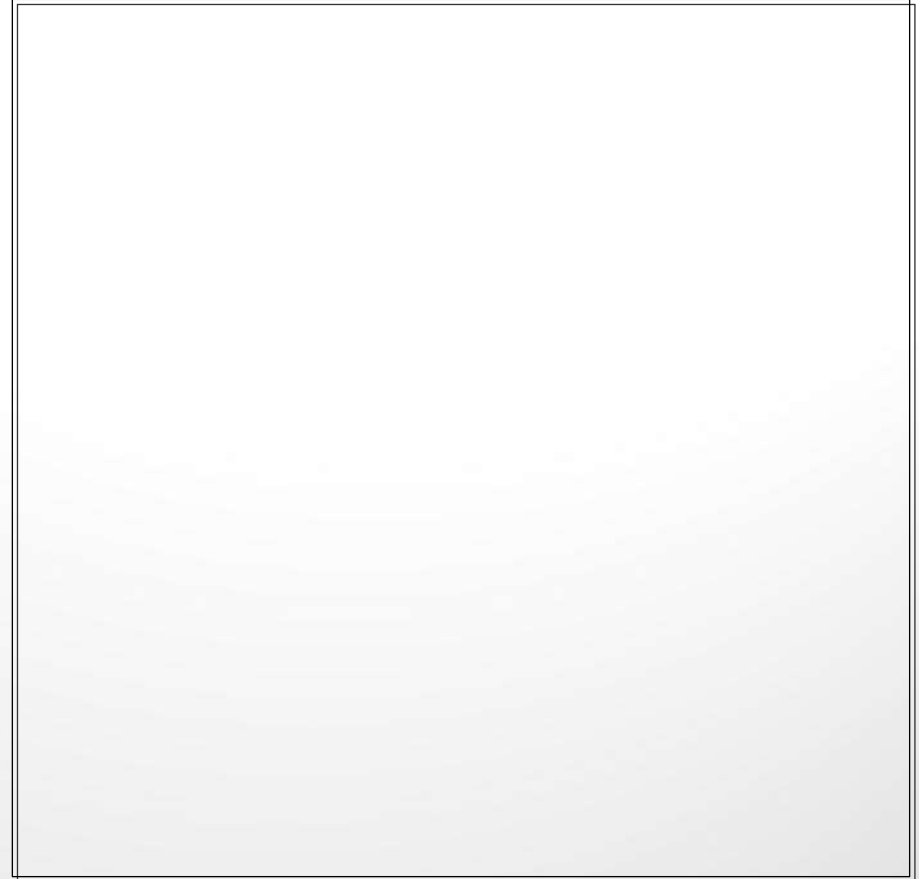
Rodents are health hazards

- ▶ Carry infectious diseases
- ▶ May cause asthma attacks in people who are sensitive to them
- ▶ Bite
- ▶ Damage food and property
- ▶ Can attract other pests
- ▶ Repulsive



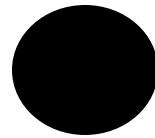
Rats

- ▶ Will travel 150 feet from their nest
- ▶ Usually live outside in burrows and come inside when there is food and water



Rats

- ▶ Need ½-inch opening to enter



Inches

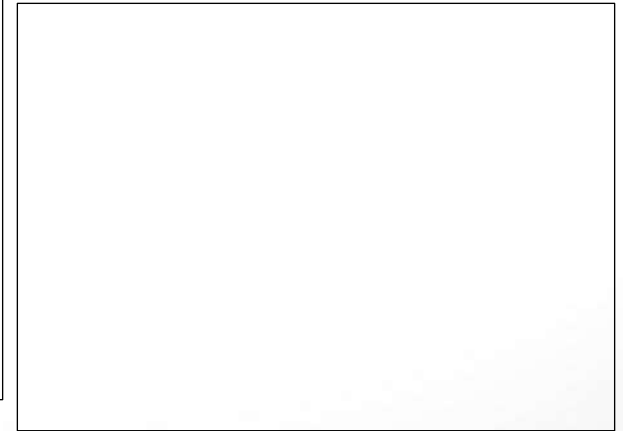
- ▶ Very smart, cautious, and afraid of new things
- ▶ Need water every day

Signs of Rats

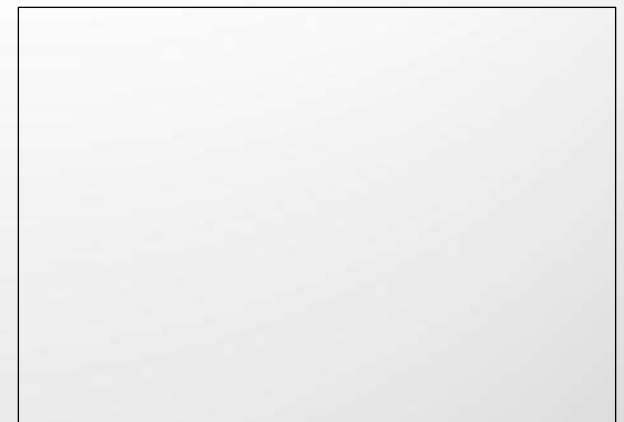
- ▶ Sightings
- ▶ Noise
- ▶ Droppings
- ▶ Nests
- ▶ Gnaw marks
- ▶ Holes and rub marks
- ▶ Rat burrows
- ▶ Indicator pests

Pests associated with rodents

Found near
dead animals
or trash



Found near
grain stored
in the walls



What rats eat

Any
guesses?

What rats eat

Rats are omnivorous!

- ▶ Meats & Fish
- ▶ Fruits & Veggies,
 - especially apples, potatoes
- ▶ Grains & Beans
- ▶ Cheeses, chocolate & candy

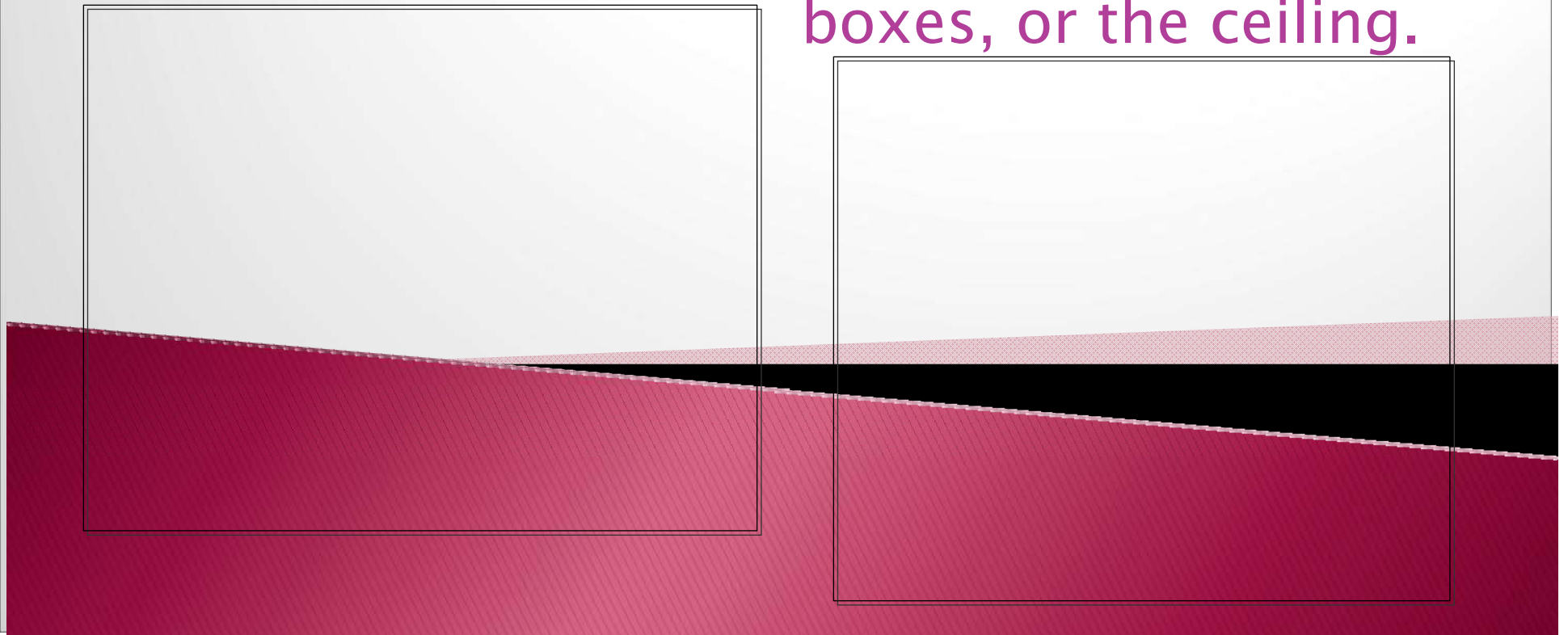
What rodents drink

- ▶ Rats drink water – lots of it
- ▶ Mice can get the water they need from their food

Where rodents live

Rats: Burrow outside, but will come in if the place is hospitable.

Mice: Nest in walls, stored fabric, cars, boxes, or the ceiling.



Typical Local Housing Code

- ▶ All structures shall be kept free from insect and rodent infestation.
- ▶ All structures in which insects or rodents are found shall be promptly managed by approved processes that will not be injurious to human health.
- ▶ Proper precautions shall be taken to prevent reinfestation.

You must comply with local housing codes AND HUD's standards.

Got rats? Now what?

- ▶ There is not one answer.
- ▶ First find out:
 - Rat or mouse?
 - How many?
 - Where?
- ▶ Then use solutions that provide:
 - Most effective prevention and control
 - Compatibility with people, pets, and other control measures

Everyone must be involved!

Document all observations

One IPM log in each site,
neighborhood, situation, etc.

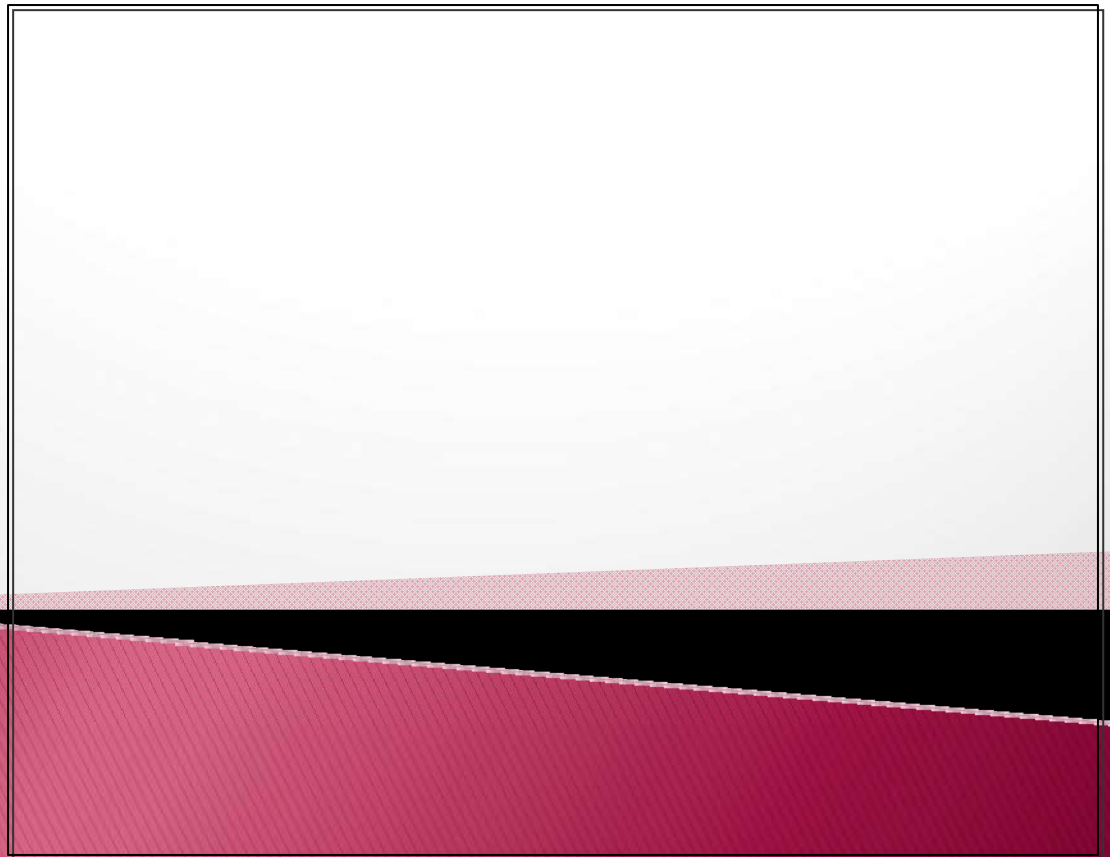
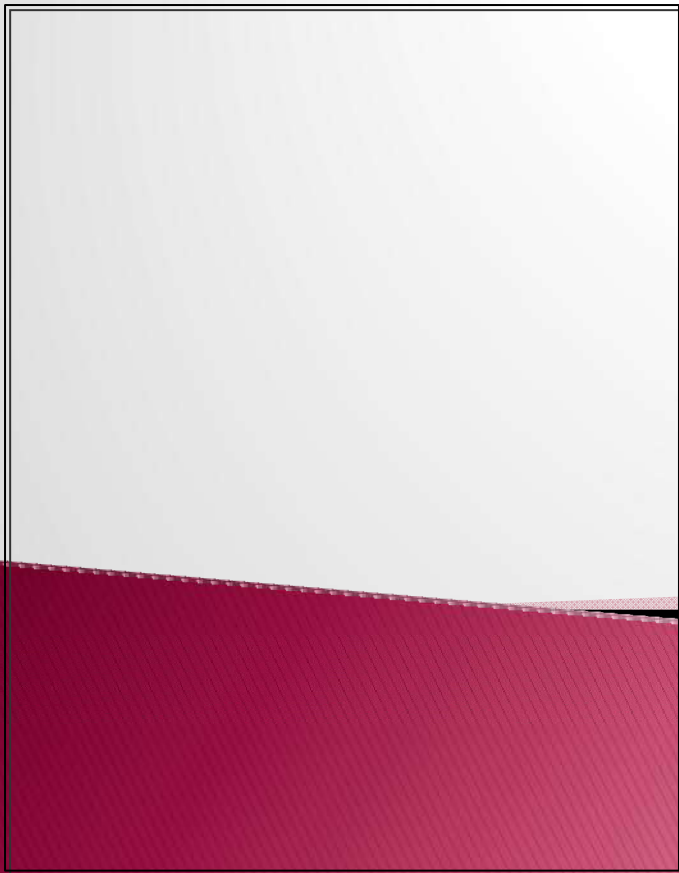
Record:

- ▶ The date
- ▶ detailed facts & observations
- ▶ action taken
- ▶ Follow-up needed/taken

Make sure action is taken promptly.

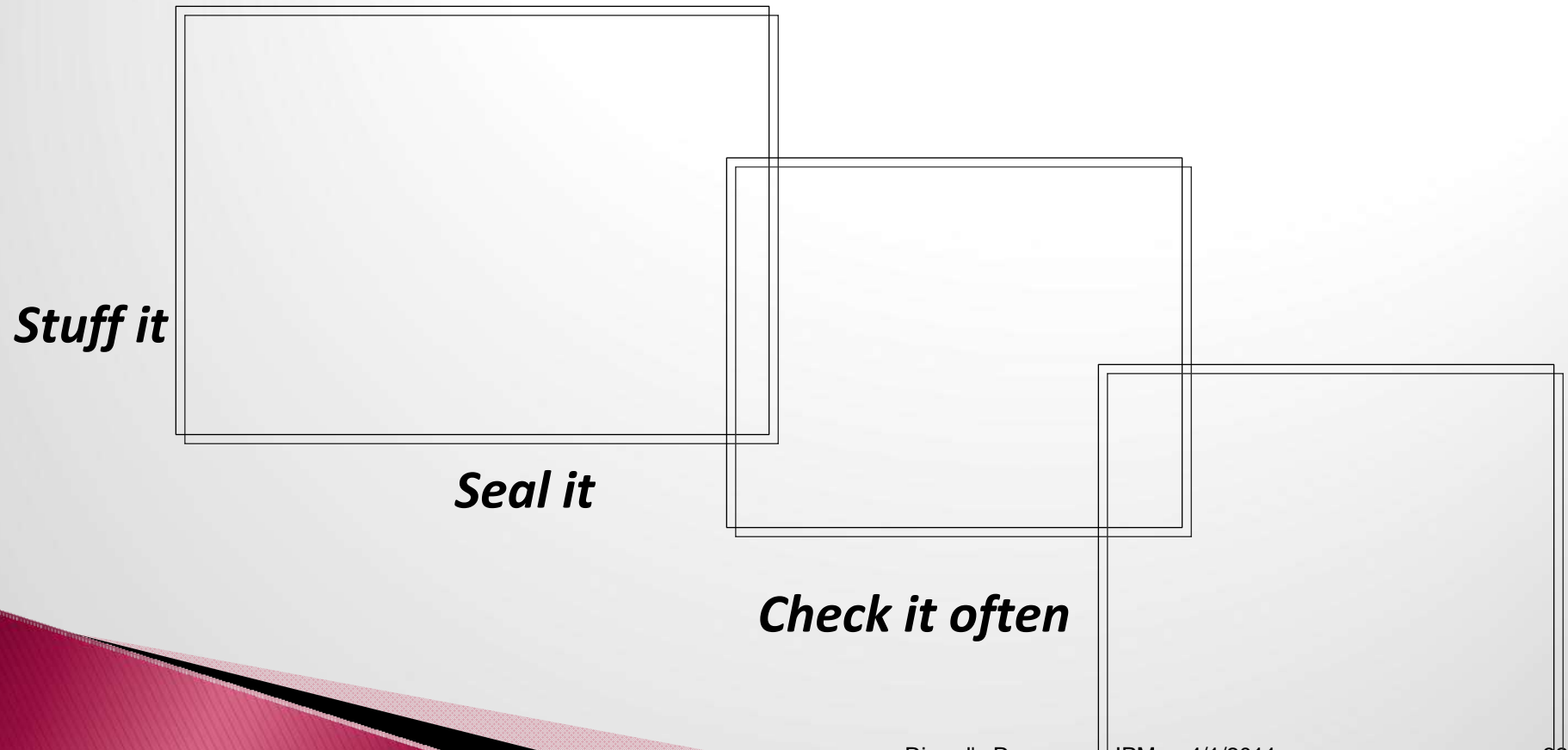
Prevention and control: Sanitation

Eliminate harborage, food, and water



Prevention and control: Exclusion

- ▶ ¼ inch or more could let in a mouse
- ▶ ½ inch or more could let in a rat



Prevention and control: Traps

- ▶ Effective and reusable
- ▶ More ARE better!
- ▶ Check often
- ▶ *Placement is key!*



Trap jumped from the wall when it snapped.

Placement is key!

Against the wall, where rodents travel (edge of trap must not touch the wall)

Prevention and control: Targeted chemical use

The label is the law!

- ▶ All rodenticide labels require *“tamper-resistant stations or placement inaccessible to children, pest and domestic wildlife”*.

**An open tamper-proof
bait station**



EPA PR Notice 83-5

Eight “Tamper-Proof” Criteria

- ▶ Lockable
- ▶ Securable
- ▶ Anchorable
- ▶ Not an “attractive nuisance”
- ▶ Appropriate Entrances (size)
- ▶ Internal baffles
- ▶ Weather-resistant
- ▶ Displays Precautionary Statement

Rodent Baits – Anticoagulants

1st Generation:

- ▶ Warfarin
(Decon[®])
- ▶ Diphacinone*
- ▶ Chlorophacinone
*Dust formulation
- ▶ Pival
 - Liquid formulation

Characteristics:

- ▶ Repeated doses
- ▶ 5 – 10 days or more
- ▶ Developed during WWII
- ▶ Genetic resistance in some locations
- ▶ Antidote Vitamin H₁

Rodent Baits – Anticoagulants

2nd Generation:

- ▶ Brodifacoum (Talon[®], Final[®])
- ▶ Bromadiolone (Contrac[®], Maki[®])
- ▶ Difethialone (Generation[®])

Characteristics:

- ▶ Single dose or more
- ▶ 4 – 8 days
- ▶ Kills warfarin-resistant rodents
- ▶ Introduced in the 1970's
- ▶ Antidote Vitamin H₁

Rodent Baits – *Non-Anticoagulants*

▶ Bromethlin

(Fastrac[®],
Vengeance[®])

- Single dose
- Tissue edema

▶ Cholecalciferol

(Quintox[®])

- 1–3 feedings
- Hardening of the arteries

▶ Zinc Phosphide (ZP)

- Single Dose
- Kills quickly (6–10 hrs.)
- Bait shyness
- Pellets & Dust formulations

Rodent Bait *Formulation*

Conventional:

- ▶ Meal
- ▶ Whole Grain
- ▶ Seed
- ▶ Pellet
- ▶ Wax Block

Non–

conventional:

- ▶ Liquid
- ▶ Dust (aka tracking powder)

Don's 2 Cents for Cities & Towns

Dumpsters & Compactors

- ▶ Require “licensing” of each box
- ▶ IF Owners & Phone
- ▶ Inspect frequently for quality assurance
- ▶ Charge appropriate fee

Demolition & New Construction

- ▶ Require rodent plan
- ▶ Prior to & during construction
- ▶ Check periodically for performance
- ▶ Charge appropriate fee

Contemporary Reference

“RATS: OBSERVATIONS ON THE HISTORY & HABITAT OF THE CITY’S MOST UNWANTED INHABITANTS”

by ROBERT SULLIVAN, 2004

Contemporary Reference

“Vertebrate Pest Handbook”

By AUSTIN M. FRISHMAN,
PhD 1999

Reference Materials

Reference Materials



Integrated Pest Management Kit For Building Managers

HOW TO IMPLEMENT AN INTEGRATED PEST MANAGEMENT
PROGRAM IN YOUR BUILDING(S)



MASSACHUSETTS DEPARTMENT OF FOOD AND AGRICULTURE
PESTICIDE BUREAU