



Ants, Mice, Bed Bugs and Other Critters: *Solutions to Common and Challenging Pests*

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School Environmental Health and Safety



Protecting our Future is YOUR Responsibility

Inside Your Schools

- Asthma is the primary cause of missed school days, over 13 million/year
- Pests and chemicals can trigger asthma and cause other long-term health problems.
- Pollution indoors is 3-5x higher than outdoors



Some Sources of Indoor Pollution

- Mice
- Cockroaches
- Dust Mites
- Pesticides
- Cleaning products
- Lab and art chemicals

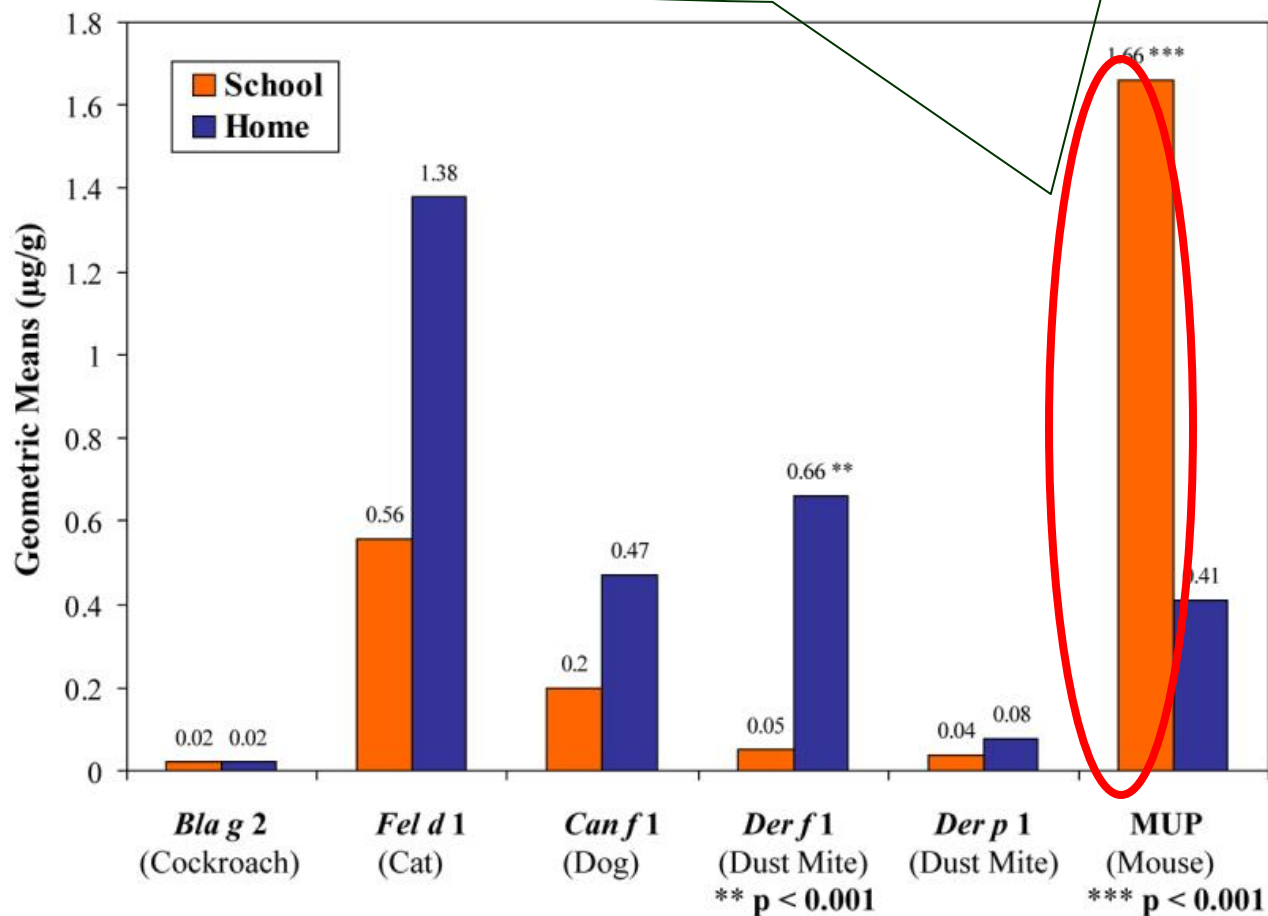
Pests and Asthma

- Mice, cockroaches, and dust mites are asthma triggers.
- Academic performance is lower in schools with higher asthma rates.



Pests and Asthma

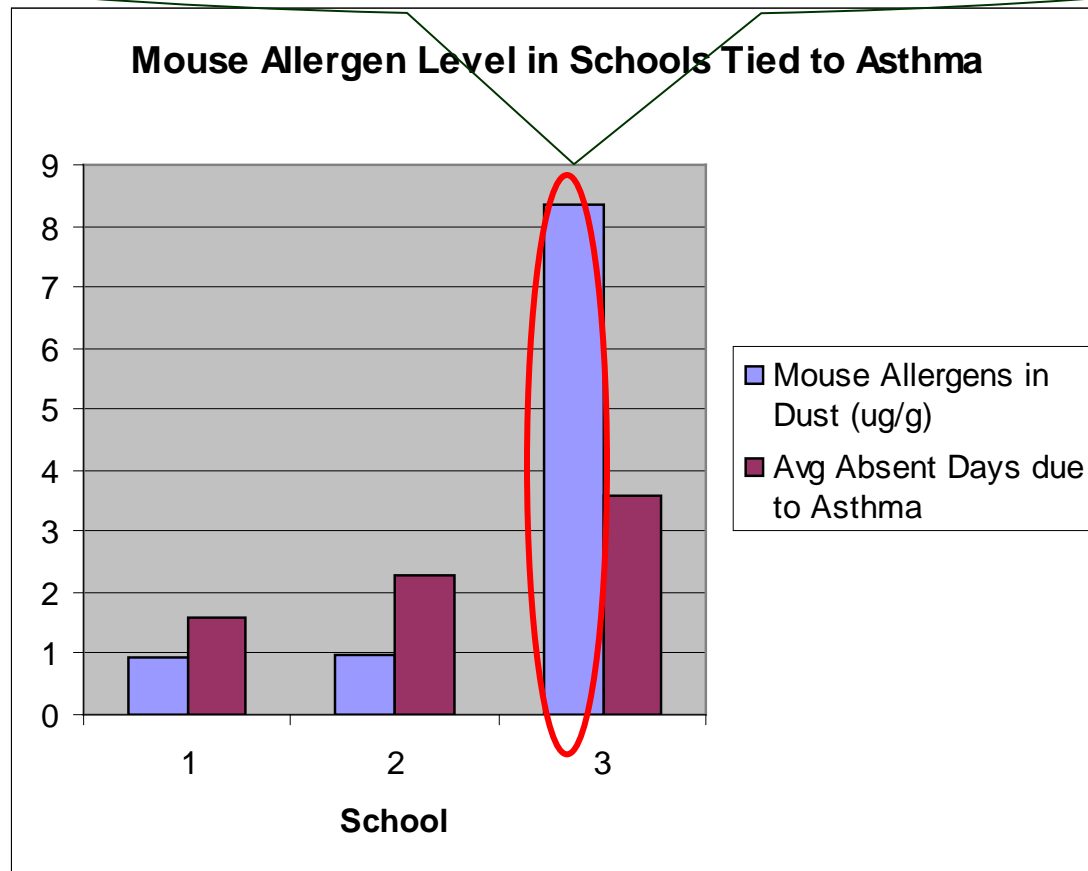
Average concentrations of mouse allergens are 4-5x higher in schools than in homes of children with asthma**



** Permaul, et al. 2012. Pediatr Allergy Immunol. 2012. Allergens in Urban Schools and Homes of Children with Asthma.

Pests, Asthma, and Absenteeism

Schools with more mouse allergens have more student absenteeism due to asthma



* Sheehan et. al. 2009. Ann. Allergy Asthma Immunol vol 102. Mouse Allergens in Urban Elementary Schools and Homes of Children with Asthma





Keep Schools Rodent-free

- House mouse urine triggers asthma
- Deer mouse feces carries hantavirus (hemorrhagic fever).
- Rats: carry diseases. Bite humans. Chew wires.

House
Mouse



Deer Mouse

Norway Rat



Integrated Pest Management (IPM) = Best Management Practice

- ✓ Pest-proof building & grounds with good sanitation and maintenance
- ✓ Establish system of regular pest monitoring, reporting, records, communication.
- ✓ Use combinations of pest prevention and control for permanent solutions
- ✓ Review and evaluate continuously



IPM: Only effective when everyone is involved, not just the 'bug guy'!

Sports Staff:
scheduling, turf
protection

Contracted
pest
professional

**Business
Manager:**
contracts,
budgeting

**Students
&
Teachers:**
education,
sanitation,
monitoring

Custodians:
Sanitation,
monitoring,
pest
reporting



Maintenance Staff:
pest exclusion &
monitoring

Office Staff:
communication,
records, scheduling

Kitchen Staff:
pest prevention
& monitoring

Custodians **MUST** take an Active Role!

- Communicate and Cooperate:
 - Pest monitoring and record-keeping
 - Pest removal,
 - **Sanitation** is key to pest prevention
- **90-100% of IPM is done by school staff even if you have contracted pest control service.**
- A Healthy Indoor School Environment is up to **YOU!**



Excellent Cleaning is Essential

- Keep equipment well maintained
- Use microfiber dust cloths, dry and wet mop heads.
- All surfaces scrupulously clean
- Inspect regularly



Work with Principal, Teaching Staff and Custodial Director/Staff to Keep Classrooms Food-free, Dust-free and Clutter-free



Inspect Thoroughly and Often

- Use flashlight, checklist and clipboard
- Look under, around, over equipment
- Focus where pests find food, water, hiding places
- Look for food, spills, soda cans, garbage, clutter, droppings, unfilled crevices, gaps, moisture



Find, Report and Seal Pest Entryways



Install and maintain door-sweeps to keep mice and insects out



Install and Monitor Mouse Traps in Kitchen, Food Storage, Inside Doorways



Kitchens

All food prep and eating surfaces (including in classrooms) must be cleaned and dried daily. No standing water.

Hang mats to allow floors to dry



Look UNDER equipment for waste, spills, dirt. Keep kitchens and cafeterias very clean.

Wheeled Equipment Makes it Easier to Clean Thoroughly and Monitor Pests



Organize Pantry to Allow Pest Monitoring and Prevention



- Promptly inspect, unpack, discard cardboard boxes
- Store food in pest-proof containers, up off floor
- Inspect and clean floors and shelving regularly.
- Wire shelving preferred
- Install and monitor mouse and insect traps



IPM for Rodent control includes:

- Inspect under/behind equipment & furniture, cupboards & cabinets, kitchens, break rooms, classrooms.
- Seal gaps under/around doors, eaves, utility penetrations.
- Floors and corners scrupulously clean
- Keep food in pest-proof containers
- Set and check traps when needed
- Keep records

Cockroaches

German Cockroach



American
Cockroach



Inspect under & in
appliances & electronic
equipment, under floor
mats, around dishwashers

Prevent and Monitor for Roaches

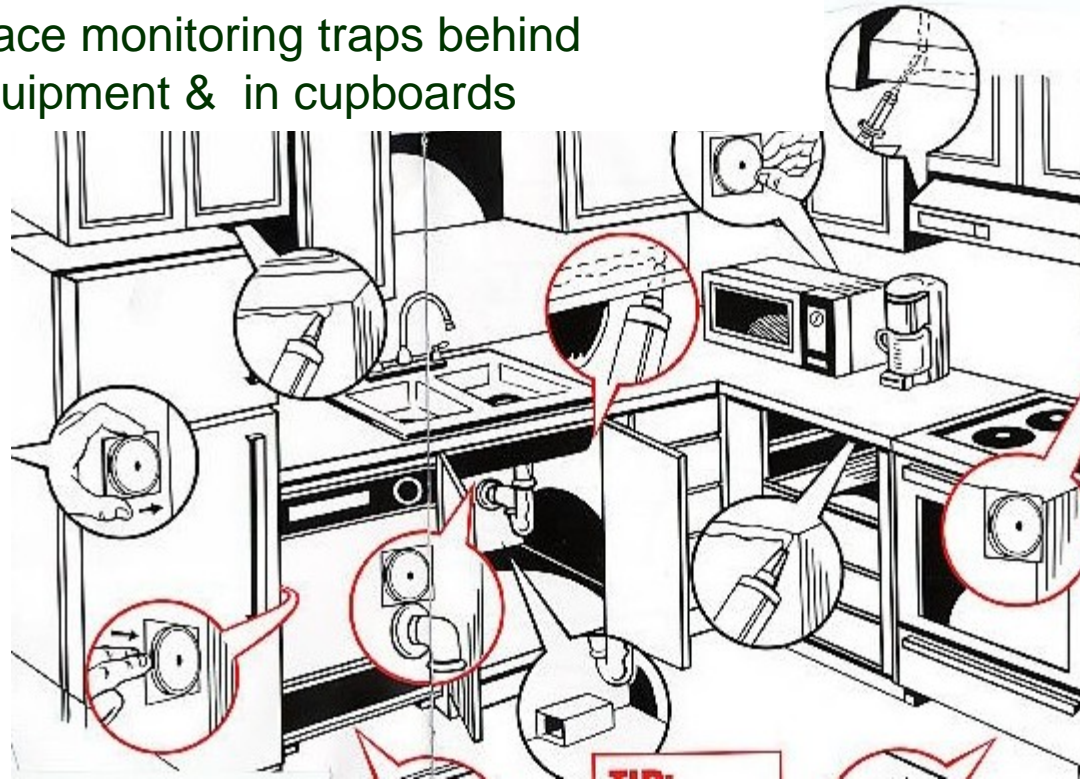


Seal gaps with silicone sealant to eliminate potential hiding places

Place, check & replace sticky traps regularly



Place monitoring traps behind equipment & in cupboards



Clean Floor Drains Regularly

Flies and Roaches Live in Dirty Drains!

Use:

- Enzyme cleaners eat the gunk
- Long-handled brush to clean inside drain
- Flush with hot water



Drain Fly



Classroom Rugs, Furniture and Floors

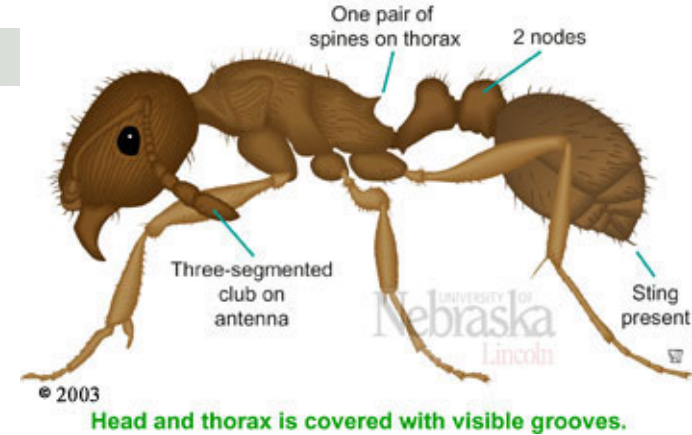
Limit upholstered furniture.
Limit rugs or establish cleaning protocols for them

Provide space to separate children's belongings to prevent pest spread



Ants

Pavement ant



- Identify the species by contacting
 - Cooperative Extension Office or
 - Your pest control service



Email close-up photo to Extension office for ID



Ant Management

Vacuum up 1 tablespoon of cornstarch along with ants



Clean up spills, crumbs and food



Wipe up ants and their invisible trails with soapy water.



Rinse and recycle beverage bottles promptly.

Ant Management

- Follow ants to find entryways
- Seal cracks/crevices & entry points
- Licensed pesticide applicator may apply pesticide bait or bait station in areas inaccessible to children.
- Avoid sprays and granular pesticide applications.





Building Exterior

- Shrubs, grass, bark mulch at least 1 ft away
- Limbs 6 ft away
- No water intrusion, standing water, broken/missing screens, clogged downspouts, etc

Inspect Building Exterior Regularly

Check for:

- Wasp nests
- Unscreened vents
- Gaps around utility penetrations
- Water damage
- Damaged/disconnected gutters and downspouts
- Poor drainage
- Damaged/missing window screens
- Bird roosting



Stinging Insects

- Inspect eaves, playgrounds, sheds, etc, 2x/mo May-Oct.
- Destroy wasp nests if location poses risk of stings
- Seal openings on buildings & playgrounds **before** warm weather or after nest destroyed
- Control food, beverages, trash outdoors that attract wasps and bees.



Waste Management

Lid should fit tight



Dumpsters 50' from doors

- Place, don't toss, bags into dumpster
- Containers clean, closed, 50' away from buildings.

Bed Bugs



- Work with nurse to educate family
- Provide bins or ziplock bags to isolate infested items
- Put infested items in clothes dryer (30 mins, hi heat)
- Guidelines available



Maine Center for Disease Control and Prevention and Maine Department of Education

Bed Bugs and Schools



image provided by U.S. Center for Disease Control and Prevention



image provided by University of Sydney Department of Medical Entomology

What are bed bugs?

Bed bugs are small, brownish, flattened insects that feed on the blood of people while they sleep. Although the bite does not hurt at the time, it may develop into an itchy welt similar to a mosquito bite. Bed bugs do not transmit disease, but they can cause significant itchiness, anxiety, and sleeplessness. Bed bug infestations are also very difficult and expensive to control.

Usually, bed bugs will hide during the day and only come out to feed during the night. Unlike head lice, they do not live on a person. However, they can hitchhike from one place to another in backpacks, clothing, luggage, books and other items.

Pesticide Use is Restricted in Schools. Most States Prohibit Unlicensed Use of Pesticides

- Mouse poison
- Ant bait (including 'cups' and 'traps')
- Weed killers
- Organic and natural pesticides

- Know the pesticide laws in your state.
- Know your school's chemical-use policies.
- Don't allow unauthorized chemical use!

These are Pesticides, too

- Ant 'Traps'/Cups
- Weed and Feed Lawn Granules
- RoundUP weed killer
- Poison-freetm brand wasp spray
- Organic Bug Sprays
- Bleach and Disinfectants



Use Disinfectants Selectively. Only Where Needed

Select Environmentally Preferable Disinfectants

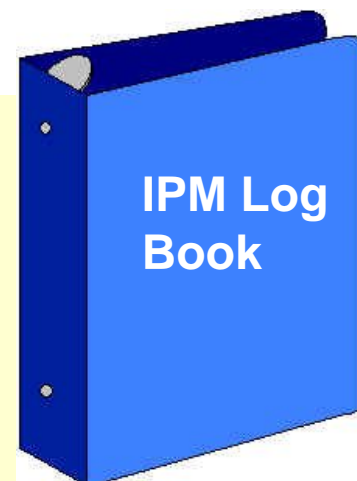
- Activated hydrogen peroxide products



Avoid bleach.
Highly caustic.
Severe eye hazard, skin and lung irritant



IPM Record-keeping



- **Pest Sighting Log**
(who, what, where, when)
- **Inspection Reports**
- **Trap Captures**
- **IPM Actions Taken**
(what was done?) **and Results** (was the problem solved?)
- **Pesticide Labels**

Pest Sighting Log

Facility: Middle School Date: 9/4/04 Time: 6:30 am
 Person Monitoring: Custodian

Area	Pest Problem Found	Conditions	Recommendations
Kitchen	Small ants	Sugar on Counter	Clean area better
Food Storage	Mouse droppings	Hole around pipe	seal hole and put out traps
Kitchen	Flies	Dumpster too close to kitchen door	Clean dumpster and move it away from door
Entry way	Yellowjackets	Nest in eaves above door	Check area regularly over the summer and remove first signs of a nest
Boys Bathroom	Small flies	Floor drains dirty	Scrub floor drains and flush with enzyme cleaner

Key Elements for Success

- **Establish a written IPM Plan**
- **Collaborate and Communicate with** administrators, custodial/maintenance staff, teachers, students, contractors, community.
- **Provide Good Training for staff.**
- **No unauthorized pesticide use.**
- **Regularly Inspect and Monitor for Pests and Pest Prevention Needs**
- **Keep Records and Track Complaints**
- **When Pest Control is Needed: Select least-risk IPM solutions.**
- **Recognize and Reward** staff, classrooms for job well done



Maine School IPM Program

ME Department of Agriculture, Conservation and Forestry

- Templates
- Training
- Tools
- Guidelines
- Newsletter
- Consultation
- Pest Identification

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The screenshot shows a Windows Internet Explorer browser window displaying the website www.maine.gov/schoolipm. The browser's address bar and title bar are visible at the top. The website's header includes the Maine.gov logo and navigation links for Agencies, Online Services, and Help. Below the header is a banner with the text "Maine School IPM Program" and several images: a bookshelf, a classroom scene, a green caterpillar, and a child holding a mask. A navigation menu on the left lists various resources under the heading "SCHOOL IPM":

- What is School IPM?
- Tools, Templates and Tips
- Maine School IPM Manuals
- Got Pests?
- Workshops
- Newsletters
- Web Resources
- Contact Us

The main content area features a large photograph of a school building with a clock tower. Below the photo is the text: "School IPM: Dedicated to reducing risks of pests and pesticides in Maine Schools". The browser's status bar at the bottom indicates "Done" and "Trusted sites".

More Resources



- University of Vermont School IPM:
<http://pss.uvm.edu/pd/schoolipm/>
- NH Partners for Healthy School Environments:
<http://www.nhhealthyschoolenvironments.org/>



Additional IPM Resources



■ EPA (www.epa.gov)


- Healthy SEAT (downloadable school environmental management program)
- IPM (www.epa.gov/pesticides/ipm)
- Indoor air quality (www.epa.gov/iaq)

■ NE IPM Center (neipmc.org)

- Searchable IPM resource database
- IPM Checklists, Forms, Templates for Environmental Management System

■ Informed Green Solutions

www.informedgreensolutions.org

 School IPM Tool Kit Custodial and Building Maintenance Staff Checklist	
Name:	Instruction 1. Read the information on this sheet. 2. Check the appropriate "Yes" or "No" boxes. 3. Write any items needing attention (usually indicated by a "No" response) in the places provided at the end of each section and check the "Need help" box above. Record date and initials to show when problems have been corrected. 4. Return completed checklist to the IPM coordinator; keep a copy for your records.
Room/Area:	
School:	
Date Completed:	
Signature:	