

View this newsletter as a [PDF](#).

Rodents: Get Them Out of Your School, House and Yard

There are many species of rodents, including ground squirrels, rock squirrels, chipmunks, muskrats, beavers, prairie dogs, gophers, packrats, roof rats and a variety of different mice. Of all the rodents, rats and mice are arguably the most successful mammals on Earth. In natural environments native rodents play an important role in the health of the environment, and are a major source of food for many predators and scavengers, including hawks, fox, bobcats, coyotes, snakes and even wolves. A list of Sonoran Desert species can be found at https://www.desertmuseum.org/books/nhsd_muridae.php.

However, some rodents become pests when they infest buildings, threaten public health, and destroy property. The house mouse is one of the most troublesome and economically important rodents in the United States. They feed on and damage food, as well as contaminate food with droppings and urine. They cause structural damage to buildings by building nests and gnawing; they chew on furniture and electrical wires. In addition, house mice can spread disease transmitting pathogens or parasites to humans and pets, including the bacterium *Salmonella* causing salmonellosis (food poisoning), ringworm, mites, tapeworm and ticks. They generate allergens, which are asthma triggers and should not be tolerated inside homes and schools. Effective, low hazard options to eliminate these pest mice are available and have been presented in previous newsletter. Here we address the use of rodenticides.



Rodenticides around children – only with the greatest of care, when absolutely necessary, and when all else fails!

Understanding baits

Baits are designed to be attractive food resources and may include fish oil, molasses or peanut butter which may be highly attractive to children, non-targets and pets. They may be non-toxic (used to monitor rodent activity) or they may contain a toxin that proves deadly to the rodent when a sufficient amount is consumed. **There**

have been significant changes in rodenticide regulations to reduce rodenticide hazards to wildlife, pets and children. Manufacturers are now required to produce over-the-counter





products that are sold as ready-to-use, disposable bait stations. Agricultural producers and professional pest management professionals have access to a wider array of rodenticide options, including restricted use pesticides in a variety of forms.

Anticoagulant rodenticides

Anticoagulants cause blood-thinning in almost all warm-blooded animals. These products stop the normal blood clotting process. They are a relatively humane toxicant that causes little in the way of pain and suffering. The rodenticides are slow acting and animals may continue to be active for up to a week before dying. The animal dies of internal bleeding. Until recently there were two types of anticoagulants available: a first-generation type required multiple doses to cause the death of the animal and a second-generation type may be fatal after only one feeding. Additionally, second generation anticoagulants are not easily excreted from the body, and they can be stored in the liver. Due to the higher relative risk, the second-generation anticoagulants are no longer allowed for sale to the general public. Consumers are now able to purchase only prepackaged, ready-to-use bait stations containing the first-generation anticoagulants (e.g. warfarin, chlorophacinone, or diphacinone) or non-anticoagulants (e.g. bromethalin or cholecalciferol).

Other rodenticides

There are several non-anticoagulant toxicants used in rodenticides. In general they pose higher relative risks to non-target organisms and are less suitable for use around children (some are prohibited on school grounds).

There are restrictions on zinc phosphide, aluminum phosphide and magnesium phosphide based products. They are NOT permitted for use on school grounds (there is an allowance for athletic fields under some circumstances). Following ingestion, zinc phosphide reacts with the gastric acid in the stomach. The result is phosphine gas that causes damage to the small blood vessels, red blood cells, and blood vessels in the kidneys, liver, and lungs. Sadly, **multiple child fatalities have occurred due to accidents and misuse.**

Rodenticides have historically ranked second in the number of human exposures to pesticides each year compared with the three other major categories of pesticides (American Association of Poison Control Centers).

There is generally a better way – challenge yourself to find one!

There are many steps and strategies you can take before resorting to rodenticide baits, especially around children. See the following resources for more information.

Read more information about IPM of the house mouse in schools:

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38106/em9062.pdf>

See the videos in this three-part series “IPM for Mice – Exclusion, Sanitation, Trapping”:

<http://www.sustainableplaces.org/general-ipm/mouse-control-exclusion>

<http://www.sustainableplaces.org/general-ipm/ipm-for-mice-sanitation>

<http://www.sustainableplaces.org/general-ipm/ipm-for-mice-trapping>

House mouse: http://cals.arizona.edu/urbanipm/pest_press/2004/dec.pdf

Mice: http://cals.arizona.edu/urbanipm/pest_press/2004/feb.pdf

Rats and Mice: <http://warnell.forestry.uga.edu/service/library/index.php3?docID=420>

Rodenticides: <http://npic.orst.edu/factsheets/rodenticides.html>

Wyoming IPM Standard Operating Procedure (SOP) for Mice in Schools and Other Facilities

The University of Wyoming has a new mouse control bulletin for Wyoming authored by J. F. Connett, A. V. Latchininsky and S. P. Schell:

http://www.wyoextension.org/publications/Search_Details.php?pubid=1870

Using integrated pest management in and around schools and other facilities can lead to more effective mouse control and provide a safer environment for occupants. The steps to IPM are easy to follow, and repeatable for all pests. In general, IPM is an ongoing activity. This bulletin describes deer mice that may carry hantavirus and explains the primary elements of mouse control in facilities. Templates are also included for data sheets, notices, and handouts for occupants.

For more information, please read: <http://www.wyoextension.org/agpubs/pubs/B1259.pdf>

Bed Bug Battle – We Want to Hear From You

Anyone can get bed bugs! Bed bugs can cause anxiety, bite reactions, and financial hardship. The University of Arizona Community IPM Program and several partnering research institutions are working to battle the bed bug resurgence in the United States. Researchers hope to determine the real impact and social cost of bed bugs, the risks to individuals and society, as well as the significant causes of infestations.

We need your help. We hope you will complete an online bed bug survey. This survey asks brief questions on how bed bugs affect your life, how bed bugs cause people stress, and what people do when trying to get rid of them. This voluntary survey should take about 10 minutes of your time. The survey is available in English and Spanish. There is no compensation available for your participation. Your answers are anonymous and you will be contributing to information that will help us battle the pesky parasites.

Who should take this survey? We would like to hear from people who currently live with bed bugs, people who have dealt with them in the past, and people lucky enough not to have experienced living with bed bugs at all. Your answer to the first question will direct you to

questions specifically designed for you. We are dedicated to helping community members who need it most, and sharing your experience will be extremely helpful to develop strategies to reduce the bed bug problems.

English version of Bed Bug survey: <http://www.surveymonkey.com/s/DGLQS52>

Spanish version of Bed Bug survey: <https://es.surveymonkey.com/s/F5NZXJK>

IAQ Master Class Webinar Series

As part of EPA's ongoing effort to continue the momentum to create healthy schools indoor environments in all our nation's schools, they are pleased to announce the launching of our new **IAQ Master Class Webinar Series**.

At the June 2014 SHIELD Summit, the SHIELD Network began work on designing ten 1-hour technical core-competency web-based training intended to build the capacity of school district staff across the country to start, improve, or sustain an IAQ management program.

The webinars will feature technical experts, industry leaders and model school districts from the SHIELD Network. CEU's are pending and certificates of completion will provide to all who complete the post training evaluation. The live broadcasts will be recorded and made available for on-demand viewing on the EPA website.

Mark your calendar to join 10-Part IAQ Master Class Technical Webinar Series. See schedule below.

Webinar Topic	Webinar Date
Creating Healthy Indoor Environments in Schools: The Knowledge Network and Actions You Need	On-Demand Link Coming Soon (Recorded April 30, 2014)
Making the Case	12/11/14
HVAC Systems	1/22/15
Moisture and Mold	2/12/15
Energy Efficiency and IAQ	3/12/15
Integrated Pest Management	4/16/15
Asthma Management	5/07/15
Cleaning and Maintenance	6/04/15
Materials Selection	7/16/15
Source Control	8/06/15

Upcoming Webinars and Events

Attend Free Sessions of the [Green Strides Webinar Series](#). View archived webinars [here](#).

The [Green Strides Webinar Series](#) provides school communities the tools to reduce their schools' environmental impact and costs; improve health and wellness; and teach effective environmental literacy, including STEM, green careers, and civic engagement.

December 10, 2014, 1:00-2:30 p.m. Eastern / 1:00-12:30 p.m. Arizona: [Portfolio Manager® Web Services: February 2015 Schema Changes \(EPA\)](#)

December 11, 2014, 1:00-2:30 p.m. Eastern / 1:00-12:30 p.m. Arizona: [Portfolio Manager Office Hours, Focus Topic: Benchmarking Mixed Use Properties \(EPA\)](#)

December 11, 2014, 1:00-2:30 p.m. Eastern / 1:00-12:30 p.m. Arizona: [Making the Case for Environmental Health, Academic Performance and High-Performing Facilities \(EPA\)](#)

School IPM Webinar Series: EPA's Center of Expertise for School IPM will host a series of webinars in the coming months on pest management topics of special interest to the school community. These monthly webinars feature presentations from experts in the field. Find information about these webinars: <http://www.epa.gov/pestwise/events/sipm-webinars.html>

December 16, 2014, 2:00-3:00 p.m. Eastern / 12:00-1:00 p.m. Arizona: [Bed Bugs in Schools](#)

January 27, 2015, 12:00-1:00 p.m. Eastern / 10:00-12:00 p.m. Arizona: [Keeping Rodents Out of Your School](#)

February 24, 2015, 2:00-3:00 p.m. Eastern / 12:00-1:00 p.m. Arizona: [Dealing with Nuisance Birds Around Schools](#)

For more information about the EPA Schools program, visit: <http://www.epa.gov/schools/>

For more information about the Community IPM, visit: <http://www.extension.org/pages/23359/urban-integrated-pest-management-community-page>



For more information about School IPM in Arizona, visit: <http://cals.arizona.edu/apmc/westernschoolIPM.html>

Shujuan (Lucy) Li, Newsletter Editor and Assistant in Extension. Email: lisj@cals.arizona.edu

Dawn H. Gouge, Public Health IPM Expert. Email: dhgouge@cals.arizona.edu

Shaku Nair, Assistant in Extension. Email: nairs@email.arizona.edu

Al Fournier, IPM Assessment. Email: fournier@cals.arizona.edu

Ursula Schuch, Landscape Horticulture. Email: ukschuch@ag.arizona.edu

Kai Umeda, Extension Agent, Turf. Email: kumeda@cals.arizona.edu; <http://turf.arizona.edu>

Dave Kopec, Turf Specialist. Email: dkopec@ag.arizona.edu

Paul Baker, Urban Entomologist. Email: pbaker@ag.arizona.edu

Acknowledgements

This material is based upon work that is supported in part by the National Institute of Food and Agriculture, U.S. Department of Agriculture (USDA NIFA). Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture. Additional support is provided by the U.S. Environmental Protection Agency (EPA) and the University of Arizona – Arizona Pest Management Center (APMC).



United States
Department of
Agriculture

National Institute
of Food and
Agriculture