PESPWire

The Quarterly e-bulletin of EPA's Pesticide Environmental Stewardship Program Summer 2016

EPA Facilitates Nationwide School IPM Promotion

EPA is focused on reducing the unnecessary exposure to pests and pesticides of the more than 53 million children and 6 million adults that spend significant amounts of their time in schools across the nation. Currently, less than half of schools are reducing these risks using the smart, sensible, and sustainable approach to pest control called Integrated Pest Management, or IPM. EPA has been utilizing a variety of avenues to promote the adoption of IPM in schools, including funding over $4 million in grants and creating a Center of Expertise for School IPM to provide IPM resources and education.

EPA Assistant Administrator Jim Jones kicks off the Roundtable

IPM includes simple pest-preventive measures, like sealing cracks and openings, installing door sweeps, fixing water leaks, and refining sanitation practices so that the learning environment is unappealing to pests. Conducting regular inspections, monitoring for pests and pest-conducive conditions, implementing an IPM policy or plan, and providing IPM education for the school community can institutionalize this approach to pest control. Where preventive measures are not sufficient to eliminate pests, the judicious and careful use of pesticides can complete your school's pest control strategy. Check out EPA's School IPM website for more information on getting started on the IPM path.

This year, EPA sought to pave the path towards healthier schools by engaging national organizations with influence in the school community. IPM implementation often starts with a champion – someone to advocate for their school to change its approach to pest management.

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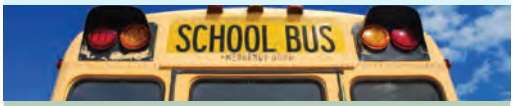

Have Questions on IPM in Schools?

Contact EPA's Center of Expertise for School IPM!

school.ipm@epa.gov
844-EPA-SIPM

Join our school IPM Listserv!

Introducing IPM to the Northeastern Hops Industry

The hops industry in the northeastern United States has been rapidly growing in an effort to keep up with the demand for beverages made with locally sourced products. Integrated pest management (IPM) strategies for hop culture have previously been developed for the northwestern US, but none had existed for the Northeast.


Potato leafhopper nymphs and adults

Hops growers in the Northeast battle several pests, and have particular difficulty with the potato leafhopper and downy mildew. Growers are seeking hop varieties adapted to the region with resistance, tolerance, and/or reduced susceptibility to these key pests. They are also interested in learning more about habitat management to encourage the natural predators of these pests as an alternative to conventional pest control tactics.

With the support of a 2013 EPA grant, the University of Vermont set out to rectify this situation by researching and developing control strategies for downy mildew, potato leafhopper, and weeds. Faculty, staff, and students collaborated with growers to develop and distribute pest identification, lifecycle, and management materials at outreach events and online.

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School IPM - continued from page 1

School IPM Principles of Agreement

Each participating organization signed onto a 'Principles of Agreement' which states that they:

- Understand that children are uniquely vulnerable to environmental hazards due to their developing systems and differential exposures;
- Support efforts to decrease pests and unnecessary pesticide exposure to students and personnel by making sound IPM practices the standard in all schools; and
- Encourage implementation of school IPM policies and practices and will encourage their members to routinely re-evaluate and improve their practices, as needed.

To cultivate more champions throughout the country, EPA sought commitments from national school-related organizations to join EPA in endorsing and promoting the adoption of IPM programs in schools.

The culmination of these activities was a National School IPM Roundtable, held on May 25, 2016 in Washington, DC. The event was led by EPA Assistant Administrator Jim Jones. Twenty organizations signed on to help the Agency in its efforts to reduce the unnecessary exposure of students, teachers, and staff to pests and pesticides. According to Mr. Jones, the ultimate goal for EPA and the Roundtable participants is to "….make IPM practices the standard in all schools over the next three years".

These partnering organizations have the experience, knowledge and reach to help get smart, sensible and sustainable IPM practices adopted in schools across the United States. The Roundtable engaged these organizations in dialogue and included presentations from school administrators and personnel who have led the way in IPM implementation. The presenters shared their challenges and success stories, and sparked discussion on effective ways of starting and supporting IPM programs.

The featured presenters were Seth Miller, Superintendent of Westville (Illinois) School District; Raul Rivas, Director of Facilities and Security at the Metropolitan School District of Pike Township (Indiana); and Ricardo Zubiate, Assistant Director Facilities Services with the Salt Lake City (Utah) School District.

Special guest Dawn Gouge of the University of Arizona shared her experiences in working with schools to implement IPM programs and discussed EPA-funded IPM training (Stop School Pests) and online information repository (iSchoolPestManager).

All of the Roundtable participants expressed agreement that IPM is a science-based approach to pest management that seeks to minimize or eliminate pest problems and unnecessary pesticide use while achieving optimal, cost-effective control of pests. Each participating organization signed onto a 'Principles of Agreement', highlighted above.

EPA remains committed to implementation of school IPM and continues to build on the relationships started at the Roundtable. EPA has offered attendees a variety of options to support their efforts to increase the practice of IPM in schools, including:

- Initiating conversations on the school IPM information they would like to share with their members and how best to disseminate it.
- Participating in their next national meeting by helping develop and provide speakers for a school IPM session or keynote.
- Authoring or co-authoring a school IPM article or blog for their journal/ newsletter.
- Providing school IPM content for their website.
- Hosting or participating in a school IPM-focused webinar for their members.
- Arranging an interview on school IPM with an EPA official or a school administrator/staff.

The Roundtable was an exciting event. We look forward to working directly with the Roundtable participants in the coming months to leverage their support to spread the IPM message throughout their memberships.

Partnering Organizations

- Allergy and Asthma Network
- Agency for Toxic Substances and Disease Registry
- American Academy of Allergy, Asthma and Immunology
- American Academy of Pediatrics
- American Academy of Sanitarians
- American Association of School Administrators
- Asthma and Allergy Foundation of America
- Centers for Disease Control and Prevention, National Center for Environmental Health
- Children's Environmental Health Network
- Healthy Schools Network
- IPM Institute of North America
- National Association of City and County Health Officials
- National Association of School Nurses
- National Association of State School Nurse Consultants
- National Education Association
- National Environmental Health Association
- National Pest Management Association
- National School Boards Association
- National School Plant Management Association
- Public Health Foundation
- U.S. Environmental Protection Agency

IPM in Hops

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Through University of Vermont's efforts, hundreds of hop growers were educated on pest identification and management.

Downy mildew is one of the biggest concerns in northeastern hops. The disease significantly impacts yields and has been found in almost all hop yards. One control method is crowning, or mechanically remove the top of a hop plant in early spring. This strategy removes the mildew that has overwintered in the crown. The university conducted research into the optimal timing for this crowning. Plants crowned the earliest had significantly higher yields than those crowned later or not crowned. Early crowning allowed plants to extend their growing season by at least 20 days by removing the first mildew infection.

Potato leafhopper is an understudied pest of hops. Varieties have not been selectively bred to physically or chemically decrease their feeding. Potato leafhopper infestation triggers the plant to shut down photosynthesis resulting in stunted growth. As the leafhopper is a migratory pest dependent on storm currents for their long-range movement, it is difficult to predict its appearance date and longevity in a specific location each season. The University of Vermont sought to close this knowledge gap by conducting field and greenhouse studies on the impact of potato leafhopper on eight hop varieties. The impact of potato leafhopper feeding on net photosynthesis and gas exchange (transpiration) were measured for each variety. In addition, the number of lupulin glands were counted for each variety. Lupulin glands are the tiny yellow sacs found at the base of the petals of the hop cone. They contain the acids and oils that are so useful to brewers in adding hop character to beer.

Damage caused by potato leafhoppers

Researchers measured a significantly higher number of lupulin glands in varieties with the lowest leafhopper counts, indicating these glands might serve as a type of plant defense. Through this project, the University of Vermont was able to determine which hop varieties had a combination of the highest tolerance to leafhopper injury, high yields, and favorable brewing qualities.

Researchers also turned their eyes towards alternative methods for managing weeds, a significant issue for hop growers in the Northeast. Of 40 growers surveyed, 96% reported that weeds are reducing their hop yields. Cultural weed management practices were of high interest to growers, as many were certified organic producers and/or not certified pesticide applicators. In addition, there are few herbicides registered for use in hops.

The weed management techniques explored included steam, tillage, herbicides (approved for organic production), and bark mulch. Field surveys found the most abundant weed species to be creeping charlie (*Glechoma hederacea*), dandelion (*Taraxacum officinale*), foxtail (*Setaria glauca*), and quack grass (*Elytrigia repens*). Steam-weeded treatments had significantly higher weed biomass than herbicide, shallow tillage, and mulch. Mulch and organic herbicide treatments had significantly lower weed pressure and higher yields.

Natural enemies and insecticide applications impact pest populations. Natural enemies are present to varying degrees in Northeast hop yards and, once established, can help stabilize pest populations. Insecticides may have the opposite effect as some kill natural enemies and increase the risk of a two-spotted spider mite and potato leafhopper outbreaks. Field scouting to monitor pest and the judicious use of insecticides can allow natural enemies to increase and minimize/stabilize pest pressures.

The ratio of pests to natural enemies was tracked over a three-year period. In the first year, the use of broad-spectrum insecticides to control potato leafhopper increased the pest to natural enemy ratio. In subsequent years, insecticides were not applied, and the pest to natural enemy ratio declined significantly. Higher numbers of natural enemies resulted in adequate pests control and eliminated the need for insecticides over the final two years of the project.

A notable success from this project involves one of the largest hop yards in New England. Extension specialists at the University of Vermont worked closely with this grower, teaching scouting techniques, pest identification, and IPM tactics. The grower's involvement in the project has taught them to select insecticides that more selective toward the pest and less impactful on beneficials. The grower is now working with the university to build an integrated pest management program that includes habitat management, regular scouting for pests and beneficial arthropods, augmentation with key beneficial arthropods, and targeted insecticide applications.

Research results and education were delivered through outreach events (field days, workshops, and conferences) and written materials (blogs, bulletins, and reports) to more than 1,500 stakeholders over the project period. Stakeholders were introduced to crowning to control downy mildew, hop varieties with tolerance to potato leafhopper, and alternate forms of weed control that have all improved yield and reduced reliance on chemical inputs. Grower surveys determined that nearly 70% of respondents had introduced IPM tactics into their repertoire as a direct result of the University of Vermont's educational efforts through this project.

To learn more, please visit the Univeristy of Vermont's Hops Project page.

Applying IPM to Bed Bugs in Affordable Housing

Uncovering the Keys to Success

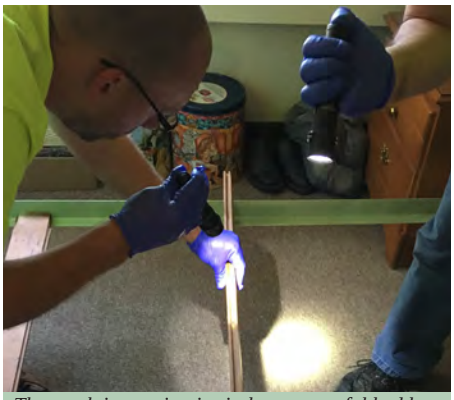
Susannah Reese
StopPests in Housing Project Manager

Creating a workable integrated pest management (IPM) plan for multifamily housing is a challenge that goes beyond finding effective tools for managing the pests themselves. There's no one-size-fits-all approach. Each property has different characteristics that make it unique. The building conditions and construction materials, maintenance and sanitation procedures, staff, residents, contracts, management and, of course, the pests themselves can all impact pest control efforts. Despite the differences there is one common thread in successful pest control programs across all properties: adopting a proactive, rather than reactive, approach.

StopPests in Housing **Helps Affordable Housing Providers Transition to IPM**

StopPests in Housing, at the Northeastern IPM Center at Cornell University, is a grant project funded by an interagency agreement between USDA'S National Institute of Food and Agriculture (NIFA) and the U.S. Department of Housing and Urban Development (HUD) Office of Lead Hazard Control and Healthy Homes. The goal of the project is to provide IPM resources and training to government subsidized housing sites to improve pest control and conditions for residents and staff. IPM control tactics can reduce the need for pesticide applications, while reducing pest populations and associated allergens.

In short, the *StopPests* program aims to aims to improve health by encouraging housing staff, residents and the pest control contractors to act as an IPM team to reduce pest introductions and pest-friendly conditions, and use best management practices to control pests.



Thorough inspection is vital to successful bed bug control.

Photo: Susannah Reese

Affordable housing and low-income communities have been hit hard by the bed bug (*Cimex lectularius*) resurgence over the last decade or so. Managing and eliminating these pests is challenging and expensive for management and residents of multifamily properties across the country. Bed bugs are well adapted to human environments, which make them especially difficult to eliminate. Combine that with a general lack of information and resources, growing chemical resistance, transient populations and under-reported infestations and you have a "perfect storm" situation.

Unlike other pests, we cannot apply the basic premise of IPM - remove the pest's food and shelter – to bed bugs. We are their food and they thrive in the cracks and crevices of our homes and furniture. The good news is, we are showing real progress in housing sites where a proactive approach is taken. We have seen a reduction in the frequency and severity of infestations and a reduction in chemical use as multiple tactics are employed.

In a chemical-only approach, it is not unusual to see some apartments treated every two weeks for up to 6 months without elimination! An IPM approach, including non-chemical controls like vacuums and laundering, can make homes safer, healthier and more comfortable for residents.

The following are a few examples of housing sites that have had some success and a bit about how they achieved it.

Philadelphia, Pennsylvania

A Philadelphia section-8 housing site that worked with *StopPests* provides an excellent example of a proactive approach to bed bug management. Megan, a regional property manager, began implementing an IPM policy for managing bed bugs in November 2015 after her staff went through the *IPM in Multifamily Housing* training with *StopPests*. In one building where she focused much of her effort, they saw over a 50% reduction in bed bug infestations. In July 2015, they were treating 31 units in a 322-unit building for bed bug infestations, by July 2016, only 14 units were being treated. Megan attributes their progress to aggressively inspecting, monitoring and addressing the education needs of her residents.

Following the IPM training, she revamped her bed bug protocols and service agreements, and is considering having her maintenance staff obtain pesticide applicator licenses. Megan facilitated the purchase of a portable heat chamber to treat furniture, wheelchairs and other hard to treat items. She recognized that it was cost prohibitive for her residents to replace these items. This alternative to disposal was a less burdensome option for the tenants. She continues to hold resident education programs but has been challenged by finding resources for non-English speaking residents. In a recent communication, Megan said it took "lots of hands-on blood, sweat and tears" to make progress but it has been worthwhile because in the long-run they will be spending less time on managing infestations.

Dion Lerman of *StopPests* said of Megan: "She has been the model client. She was committed to the StopPests process from the start, and used every part to gain value and improve services to her senior tenants." It's evident having a proactive and knowledgeable manager is necessary. Megan admitted that progress at one buildings under her care has been less remarkable.

When she met with the staff at this building, she discovered they were not following the checklist she designed to address bed bugs and they had returned to the "call the exterminator" approach. She's now meeting weekly with staff of this building to keep them on track with applying her IPM policy to bed bugs and all pests.

Lesson Learned:

- ***Aggressively inspect, monitor and educate residents; and,***
- ***Update service contracts to reflect IPM methods and best practices for bed bug control.***

Southern Illinois

Bed bugs can come into a building on discarded furniture that is brought inside.

Photo: Philip Coles

A small county housing authority in rural Illinois had a notable success in stopping the spread of bed bugs in one of their 107-unit high-rise apartment buildings. They attribute this success mainly to one action. In 2014, this building had 20 units with active bed bug infestations. Although caught off-guard by the quick spread, the director and staff made an effort to find out how they could improve their pest control efforts. They were happy with their pest control service contractor but were not making progress in containing the spread of bed bugs through the building.

The director of the housing authority took the initiative to contact *StopPests in Housing* and start talking to neighboring housing authorities to find out how others were managing the recent influx of bed bugs in their part of the state.

He discovered the heating system pipes were a perfect conduit for bed bugs and other insect pests to travel through the walls to neighboring apartments. Maintenance staff then put in days of work sealing every unit in the building. This has significantly reduced the number of infested units.

Based on their July 2016 building-wide inspection, they have two units with low-level bed bug infestations. While a thorough pest control technician and resident/staff education effort have played a role in their success, the director and head of maintenance maintain that the exclusion efforts had the biggest impact on their bed bug management success.

This backs up recent research by Drs. Richard Cooper and Changlu Wang at Rutgers University. Through their research, we now know even when a food source is present, bed bugs are highly likely to disperse beyond the bedroom and couch to surrounding rooms, neighboring apartments, and even across the hall (Cooper et al, 2015).

This case in Illinois is a perfect example of the importance of addressing wall voids and dispersal habits of bed bugs. Treating each infestation as an isolated occurrence is not an adequate response to addressing pests building-wide.

Lessons Learned:

- ***Bed bugs travel among units; and,***
- ***Exclusion works!***

Appleton, Wisconsin

The Appleton (Wisconsin) Housing Authority is another prime example of a successful pest control program. In April 2015, they began working with *StopPests in Housing* and hired a part-time staff member specifically to coordinate their IPM efforts. Kris has since been hired as the full-time Services Coordinator but continues to lead the housing authority's IPM efforts. Working with *StopPests* consultant Mike Swoyer, Kris took the training and resources and ran with them.

Kris remembers that when she was hired, a 159-unit building had active bed bug infestations in approximately 25% of the apartments. A current building-wide inspection revealed just two minor bed bug infestations. Kris attributes this success to a number of factors but maintains resident education efforts contributed greatly to their progress. Kris started with a triage approach but has since been able to slightly scale back efforts once they saw a significant reduction in bed bug infestations.

Kris began her IPM approach by holding monthly meetings with residents to discuss their role in pest management and other timely issues. This opened up the lines of communication with residents.

She emphasized the need for a team approach to addressing bed bugs; it's not an isolated issue but one that impacts the entire building if they don't report their pests to management. Kris, like many other housing staff we work with, believes one of the most important messages for residents is to not dispose of infested furniture without first destroying it, and not to pick up furniture left on the curb or in/around dumpsters.

Additionally, Kris employed a canine scent detection team, independent of the company she uses to treat the bed bug infestations. She began by having the entire building checked every three months. Now that they feel they have a handle on the bed bug infestations, they will be decreasing the number of canine inspections per year.

Kris also used another important IPM tactic. Focus on the most difficult cases first and spend necessary time and effort getting these units under control. Each case had to be addressed individually. She decided to use a heat treatment for severe cases and chemical treatment for less severe infestations.

This is another basic tenant of an IPM approach – scale the response to the level of infestation. Other things Kris implemented in her IPM efforts included sealing between apartments, purchasing mattress encasements for all residents, helping with furniture replacement, and implementing a housekeeping inspection process that identifies pest signs and pest-conducive conditions.

Appleton Housing Authority's success in this building is a good example of how devoting a lot of effort and resources to managing pests can pay off with less infestations and cooperative residents in the long-run. As Kris said, "we're going to pay on the front end or the back end." Kris' efforts will bring cost savings in the long-term now that the materials are purchased and the policies are in place.

Bed Bug Sniffing Dog
Photo: Bed Bug Busters

Lessons Learned:

- ***Educate residents;***
- ***Concentrate on "focus units" first; and,***
- ***There is a role for canine detection not affiliated with pest control firm.***

Islip, New York

Another example of a housing authority that did a tremendous job addressing bed bug infestations is the Islip Housing Authority on Long Island, NY. This case highlights the often intense work needed to manage the more severe cases which can continue to re-infest housing sites if they are not brought under control. Once the high level infestations are brought under control, effort can then be put towards monitoring and inspections. Monitoring and inspection will prevent an introduction from becoming severe, expensive, and difficult to manage.

When an infestation at this Long Island site went unreported and unnoticed, it became severe and difficult to treat. The apartment was so badly infested it had to be completely renovated. Bed bugs were even discovered under the vinyl flooring, which had to be torn up and replaced. They decided, due to the severity of the infestation, to use heat treatment. Each time the apartment was heat-treated, they made sure the resident had a change of clothes and a loaner wheelchair while her own wheelchair stayed in the apartment for treatment. They believed they had thought of everything but, without fail, a few weeks after each treatment the tenant would complain the bed bugs had returned.

Finally, it was discovered the resident's wig, which she wore as she left the apartment before it was treated, was the source of each re-infestation. Going above and beyond for this resident, management even replaced her wig. Although this level of involvement is difficult for larger housing authorities, it does highlight the need for an individual response and problem solving for each case.

Currently, the Islip Housing Authority hires a canine team not affiliated with their pest control contractor to inspect their 360 units twice a year. Two of the last inspections resulted in zero "hits" and the third resulted in finding one bed bug, which was likely an introduction, not an infestation.

In addition to being diligent in inspections and thorough in treatments, the director of the housing authority reports they continue to share key messages with residents through consistent newsletter reminders. Staff at this site also believe they managed much of the pest introductions with messages to residents to avoid bringing furniture from dumpsters or the street into their homes. He says his staff stay vigilant and look for signs of infestations every time they are entering units. Their proactive management approach is summed up by the director with this quote: "It has taken a total buy-in by everyone. Now, even when a minor [infestation] is found, it is no big deal. We get it handled ASAP, 45 days of monitoring, couple of treatments over that time and it will likely be gone without huge inconvenience or issue."

Lesson Learned:

- ***Leave no stone unturned when inspecting for bed bugs.***

Proactive Monitoring and Inspection: The Keys to Successful Control

These housing sites and their management of bed bugs illustrate the importance of proactive pest control. We know from a recent study led by Dr. Richard Cooper at Rutgers University that we cannot rely on residents to report bed bug infestations. In fact, out of 358 units, 55 were found to be infested, but management was not aware of 71% of the infestations in those 55 units (Cooper et al., 2015). Researchers installed interceptor monitors in the apartments and visually inspected when interceptor traps did not reveal bed bug presence. Waiting for residents to report a bed bug infestation is reactive pest control, not to mention unreliable. Significant portions of people don't react to bites or don't report infestations for various reasons. Inspection and monitoring are vital to keeping bed bug infestations from reaching severe, hard-to-treat levels. Once a proactive approach is developed including regular inspections, monitoring, exclusion and educational efforts, we can expect to see results.

Remaining Challenges

Challenges still remain in bed bug control in multifamily affordable housing. For many housing sites, the costs and time commitment are prohibitive. For example, buying mattress and box spring encasements for all residents may be possible when working with a few hundred residents but in larger cities, with sites housing thousands of residents, it becomes more difficult.

Another factor that is difficult in larger housing authorities is the personal communication between staff and residents and the flexibility of providing assistance on a case-by-case basis when a resident is unable to perform their role in pest control. When you have elderly, disabled, low-literacy or non-English speaking residents, it becomes even more challenging to involve the tenant in the process and vital for staff to step in and have the resources and time to assist.

We often see reactive pest control which only responds with pest control measures when pests are reported. Proactive inspections 2-4 times a year in conjunction with monitoring are important to gain and maintain control. It's also arguable that having a written policy on bed bugs and IPM in general can help maintain practices regardless of staff turnover. Finally, having buy-in from management and housing directors is vital. Many of the decisions and protocols need to be approved, adopted, and enforced by the housing authority or property management company to really take hold and become the norm.

It's known that failure to address any pest problem aggressively early on only makes the infestation likely to grow, spread and become more difficult to control. While we've come to accept complete elimination of bed bugs may not be realistic in many situations due to constant re-introductions, these stories do build the case for significantly reducing numbers and severity of infestation levels with proactive management

For further information on IPM in multifamily housing or to learn more about *StopPests in Housing* visit stoppests.org

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EPA Engages School Nurses at National Conference

Engaging school nurses about school IPM

EPA's Center of Expertise for School IPM, EPA Region 5 (Chicago, IL), and Improving Kids Environments (IKE) partnered to host an information booth at the National Association of School Nurses' (NASN) Conference on June 30th and July 1st. NASN is one of over 20 national organizations to endorse Integrated Pest Management (IPM) as the preferred means of managing pests in schools.

EPA participated in the event because of the important role nurses play in pest and pesticide issues within schools. Nurses are the environmental health specialists in their schools whose efforts support the academic success of the students under their care.

Discussions with the conference attendees were lively and focused on bed bugs, head lice, fleas, and indoor air quality (IAQ). The EPA/IKE team distributed over 7,000 informational pieces on bed bugs, school IPM, IAQ, and EPA's Safer Choice program. Vials of live bed bugs provided by Rutgers University drew in attendees and sparked conversation. EPA debuted three fliers on bed bug management for school nurses, school staff and the parents of students.

EPA's Marcia Anderson lead a session entitled, Assisting School Nurses in Developing a Bed Bug Action Plan, which provided continuing education credit for the 100+ attendees. Because school nurses are frequently called upon to develop protocols and communication materials for responding to bed bug incidents in their schools/districts, the presentation provided information to prepare them for these tasks. Protocols to follow when bed bugs are identified and the steps to take to deal with the difficult bed bug situations that students and their families face were covered in depth. Attendees were provided several helpful resources, including the Monroe County Community School Corporations' bed bug plan, to aid them in their bed bug preparations.

We were excited to be able to meet and speak with so many school nurses who can now take the IPM message back to their districts and advocate for its implementation.

EPA's new flier on bed bugs for school nurses

Maine School District Creating a Healthier Learning Environment

Marcia Anderson, Ph.D.
EPA Center of Expertise for School IPM

Oxford Hills School District in South Paris, Maine, has had an Integrated Pest Management (IPM) program since it became a state requirement in 2003. Nelson Baillargeon, Director of Facilities and IPM Coordinator, indicated that preventative pesticide applications ended as soon as their IPM program was instituted in an effort to create a healthier environment for their students, teachers, and staff.

IPM is a common-sense approach to pest control because practical strategies are used to reduce sources of food, water and harborage that pest needs to survive. It is also sustainable because the emphasis is on pest prevention which consistently reduces unnecessary exposure to pests and pesticides. The school district contracts with two pest management firms that provide IPM-based services. One company manages the 11 schools and 20 buildings, while the other maintains all the fields.

Mr. Baillargeon's IPM team is his maintenance crew. As they perform their quarterly inspections and daily monitoring, they keep detailed records of pest sightings and record all subsequent actions in a log book. The team conducts preventative maintenance, such as sealing holes where pests may find their way into buildings. They also install and maintain door sweeps to exclude rodents and cockroaches.

These sweeps not only keep out pests drawn to the warm school air in search of shelter from the cold Maine climate, they reduce energy losses under doors.

Occasionally, the staff find and seal holes in the eves to keep out hornets before they become a larger problem. The athletic fields are monitored and tested to ensure the proper timing and quantities of fertilizer or pesticide applications.

Pests do occur sporadically and, when they do, the IPM coordinator speaks with the teachers. They have all agreed not to apply pesticides in their buildings and to explore IPM-based ways to control pests.

Teachers have bought in to this approach. They have learned that IPM is smart, because it creates a healthier learning environment by reducing pests as well as the unnecessary exposure of students to pests and pesticides. Exposure to pests, such as mice and cockroaches, can trigger asthma attacks, the #1 cause of school absences. They realize that solving problems without pesticides, when possible, or stemming problems before they occur, is in everyone's best interest. The district has had no problem with buy-in; especially with IPM being the law in Maine schools!

The worst recurring pest problems in the Oxford Hills School District are sugar ants, hornets, and yellow jackets. To remedy the problems, everyone, including teachers, look for the pest food sources and points of entry.

Yellow jackets and wasps are sometimes found inside the schools' ceilings. Mr. Baillargeon's team dons their bee suits and vacuums out the invaders.

Sometimes a hornet gets into a classroom and lights on the teacher's desk. The teacher often screams, "Spray it!" in panic.

Mr. Baillargeon explains, that legally he cannot just spray it. But, he has been known to provide many a teacher a tried and true IPM tool – a fly swatter. And he tells them that the next time it lights on their desk - kill it.

Recently, one of the elementary schools had digger bees in the ground near the playground. Digger bees are docile and only active for a short time above ground. Kathy Murray from the Maine Department of Agriculture, Conservation and Forestry, identified the bees and advised the school on a plan of action. The facilities staff placed caution tape around the area and a sign that read, Caution Ahead: Bees At Work. The students were able to observe them, have a great ecology lesson, and, a few weeks later, watch as the bees disappeared from view.

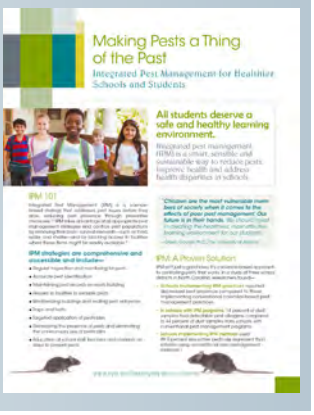
Photo: Nelson Baillargeon

Mr. Baillargeon said that one of the great benefits of the district's IPM program is that both students and staff take home what they learn about IPM practices at school. Although they may not know the name "IPM", they are replicating many of the procedures in their own homes.

Nelson Baillargeon is Director of Facilities and IPM Coordinator with the Oxford Hills School District in South Paris, Maine. The district has 3,420 students served by one comprehensive high school, one adult education center, one middle school, and eight elementary schools in 10 buildings.

EPA News in Brief

EPA Releases New Documents on the Health Benefits of School IPM



EPA's Center of Expertise for School IPM has released two new documents which highlight the health benefits afforded to students, teachers, and staff by IPM. The document Preventing Pests for Healthier Schools: The Health Case for Integrated Pest Management provides a synopsis of the research supporting IPM as a proven method for creating healthier school environments. The fact sheet titled Making Pests a Thing of the Past: Integrated Pest Management for Healthier Schools and Students concisely conveys the basics of IPM, its science-based approach, and how pest control via IPM makes for a healthier school environment.

The release of the documents was timed with the recognition of National Healthy Schools Day. For more information on school IPM, visit www.epa.gov/managing-pests-schools

EPA Registers Two New Biopesticides

California Redscale

Photo: Dennis Navea, ControlBest, Bugwood.org

On April 22, EPA registered a new biochemical active ingredient known commonly as California red scale (CRS) pheromone. The new biopesticide is a synthetically produced pheromone that is identical to the naturally occurring pheromone produced by female California red scale to attract males for mating. The new biopesticide will be applied via passive dispensers hung in the upper canopy of citrus trees, and will disrupt the normal mating cycle by misdirecting males during their small window of reproduction. At the request of California officials, who were in desperate need of a new tool to combat CRS in citrus orchards, EPA expedited the registration of the new pheromone. CRS infestations have been historically treated with conventional pesticides. However, the pest has been developing resistance to many of these treatments, hastening the need for alternatives. As a biopesticide, CRS pheromone provides a particularly attractive option - it has a nontoxic mode of action, biodegrades rapidly, and poses significantly lower risks than its conventional alternatives. Additional information can be found at www.regulations.gov in Docket # EPA-HQ-OPP-2016-0095.

On June 9, EPA approved a new active ingredient (hexanoic acid) and registered one non-food use product containing hexanoic acid as a mosquito lure. This product attracts *Aedes aegypti* (yellow fever mosquito) and *Aedes albopictus* (Asian tiger mosquito). The lure can be used in any mosquito trap and the registrant is seeking to distribute the product in Puerto Rico during the 2016 mosquito season.

Upcoming Events

Back to School IPM Webinar
Presented by the EPA Center of Expertise for School IPM
August 17, 2016

Association of Structural Pest Control Regulatory Officials Annual Conference
August 22-26, 2016
Santa Fe, NM

International Congress of Entomology
September 25-30, 2016
Orlando, FL

National Pest Managment Association's PestWorld 2016
October 18-21, 2016
Seattle, WA

4th International Conference on Sustainable Environment and Agriculture
October 26-28, 2016
San Francisco, CA

Global Summit of Pest Management Services
April 2-4, 2017
New York, NY

National Pest Management Association's PestWorld 2017
October 24-27, 2017
Baltimore, MD