OKLAHOMA COOPERATIVE EXTENSION SERVICE

PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University
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OKLAHOMA CITY HAS A NEW TESTING LOCATION FOR 2015.

ODAFF has made a location change for the Oklahoma City testing location in 2015 due to the Oklahoma County Extension office moving to a new location.

The new Oklahoma City testing location will now be located at the Agriculture Resource Center building on the campus of OSU-OKC. The address for the new testing location is now 400 N Portland Ave. Room 196 ARC.

Please be aware that seating will be more limited at this location.

Also be aware that the Oklahoma County Extension will eventually be moving in the first part of 2015 to a new location on NE 63rd Street. OSU PSEP will make applicators aware when the move occurs so they can still take advantage of the services provided at the Oklahoma County Extension Office.

EPA REGISTERS NEW INSECTICIDE ALTERNATIVE TO NEONICOTINOIDS, SAFER FOR BEES

The EPA is registering a new insecticide, flupyradifurone, which is safer for bees. It is expected to be an alternative to more toxic products including certain pyrethroid, neonicotinoid, organophosphate and avermectin insecticides.

As an insecticide, flupyradifurone is unusual in that laboratory-based studies indicate that the compound is practically non-toxic to adult honeybees. Studies show no adverse effect on overall bee colony performance or overwintering ability when compared to untreated colonies.

EPA's decision meets the rigorous Food Quality Protection Act standard of "reasonable certainty of no harm" to human health. On the basis of protective and conservative human health and ecological risk assessments for the uses of the pesticide, EPA confirmed the safety of the use for the public, agricultural workers and wildlife. EPA coordinated its evaluation with our counterparts in Canada and Australia.

This decision was one of the first to incorporate newly-required bee studies and involved evaluating the largest number of bee-related studies ever for the registration of a new chemical. EPA reviewed 437 studies including 38 different tests on bees to analyze the potential exposure and effects of flupyradifurone. These included evaluation of the sublethal effects of pesticides on all life stages of bees, as well as effects on colony health in field studies. The field studies examined pollinator-attractive crops while bees were actively foraging after the crops had been treated through various application methods (seed, soil and foliar) to demonstrate very high exposure.

Flupyradifurone is registered for a large number of crops such as citrus, cotton, potatoes and many others to protect against piercing and sucking insects such as aphids, whiteflies, thrips, and pysllids, all of which have become increasingly resistant to other pesticides and are difficult to control. The registration of flupyradifurone will provide growers across the U.S. with a new pest resistance management tool that presents an effective countermeasure to resistance development. No residential uses have been proposed.

More information on this regulatory action can be found at www.regulations.gov, Docket ID: EPA-HQ-OPP-2013-0226-0044.

(EPA January 21, 2015)
http://www.epa.gov/oppfead1/cb/csb_page/updates/2015/alt-neonicotinoids.html

EPA PROPOSES FRAMEWORK TO PREVENT CORN ROOTWORM RESISTANCE

Today, EPA is seeking public comment on a proposed framework intended to delay the corn rootworm pest becoming resistant to corn genetically engineered to produce Bt pesticides. The Agency is open to suggestions for alternative approaches that would achieve this objective. The proposed framework includes requirements on the manufacturers of Bt corn including:
In areas at risk of corn rootworm resistance, require crop rotation; use of corn varieties containing more than one Bt toxin; or other Integrated Pest Management (IPM) strategies and stewardship for corn rootworm.
Develop and implement a strategy to better detect and address areas of resistance as they emerge.
Use different and improved scientific tests and sampling requirements to study the problem and more reliably ensure that resistance to the Bt corn toxin is identified.

These measures and others are designed to significantly delay corn rootworms from developing resistance to Bt pesticides genetically engineered into corn (a plant-incorporated protectant or PIP). The proposed framework would change the way farmers use Bt corn, in order to slow the development of resistance. Our goal is to prolong the durability and effectiveness of these plants to control the corn rootworm pest.

Use of PIP crops is one of the safest methods of insect control. If used properly, they greatly reduce the need for conventional pesticides and the risks they may present to human health and the environment. For these methods to continue to be available long into the future, it is essential that they remain effective. They must be managed properly to prevent insects from developing resistance to the natural proteins being expressed. EPA is committed to maintaining effective oversight of these products to preserve their substantial benefits to agriculture and the environment.

We are concerned about the corn rootworm's development of resistance to Bt corn PIPs. Recent reports have documented corn rootworm resistance to two Bt traits, Cry3Bb1 and mCry3A, in the U.S. Corn Belt. To obtain expert guidance on the best way to address these concerns, the Agency convened a Federal Insecticide, Fungicide, and Rodenticide Act Scientific Advisory Panel (FIFRA SAP) meeting in December 2013. The panel evaluated EPA's current resistance monitoring strategy for the corn rootworm and made recommendations for improvement. These proposed enhancements are consistent with the Science Advisory Panel's (SAP) guidance.

We are seeking input from all stakeholders, including corn growers, non-governmental organizations, industry, academia, and the general public, on this proposal. Stakeholders are encouraged to offer input on specific SAP recommendations, including alternative approaches or counter proposals to address corn rootworm resistance management issues raised by the panel.

EPA's proposed framework is available under docket number EPA-HQ-OPP-2014-0805 at www.regulations.gov. Comments and suggestions for alternative approaches are due by March 16, 2015.

EPA's docket for general information on insect resistance management can be found under docket number, EPA-HQ-OPP-2011-0922. (EPA January 28, 2015)
http://www.epa.gov/oppfead1/cb/csb_page/updates/2015/corn-rootworm-news.html

EPA ANNOUNCES VOLUNTARY CANCELLATION OF CERTAIN METHOMYL USES

The U.S. Environmental Protection Agency (EPA) and the manufacturers of the insecticide methomyl have agreed to cancel some uses and limit use on certain crops to reduce risks to drinking water.

From 1995 to 2013, exposure from food to carbamates, which includes methomyl, has fallen by approximately 70 percent. Today's action is a continuation of EPA's efforts to reduce carbamate use, thereby protecting people's health, especially the health of children who may be more sensitive to pesticides.

EPA found drinking water risks during the periodic evaluation of methomyl and negotiated with the manufacturers to voluntarily cancel certain uses. Voluntary cancellation is the quickest way to eliminate risk.

While Florida and California were the areas of greatest concern for risks from methomyl in drinking water, the following measures will be implemented nationwide:

· canceling the use on barley, oats and rye;

· limiting its use on wheat to Idaho, Oregon, and Washington;

· reducing the number of applications to corn, celery, and head and leaf lettuce; and,

· reducing the number of applications and the seasonal maximum application rate for peppers.

These measures are currently being phased in, ensuring timely implementation of the changes for several crops.

EPA and the manufacturers reached agreement to stop making and selling some fly bait products and to add information to the label that clarifies the approved uses. EPA believes that these changes will reduce the illegal use of methomyl fly bait products which can kill wildlife, an issue that was reported to EPA by a number of states.

First registered 1968 and then reregistered in 1998, methomyl is restricted and must only be used by certified and trained applicators and has no residential uses. The only non-agriculture use of methomyl is in fly bait.

EPA will continue the registration review process for methomyl. The next step in that process is the release of the methomyl draft risk assessment in 2016. In Nov. 2014, EPA asked for public comments on the requests to voluntarily cancel the uses of methomyl on barley, oat and rye. No comments were received. The nationwide agricultural mitigation measures can be viewed in the risk mitigation decision document available at EPA-HQ-OPP-2010-0751 at www.regulations.gov .

Learn more about methomyl: http://www2.epa.gov/ingredients-used-pesticide-products/methomyl

(EPA, January 29, 2015)

http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceeac8525735900400c27/d2eccc5646af82d685257ddc0062b6df!OpenDocument

US GROUPS CHALLENGE EPA ON PESTICIDE DRIFT

The US EPA "acted arbitrarily" when it denied a **petition** calling for new regulations intended to protect children from pesticide drift and should be forced to revisit the issue, according to a legal brief filed by environmentalists last month. The green groups are challenging the EPA's response to a petition they filed in October 2009 that alleged that the Agency failed to safeguard children from pesticide drift in violation of the Food Quality Protection Act (FQPA).

The 1996 statute required the EPA to set standards by 2006 to protect children from aggregate exposures to pesticides. While the Agency has taken several actions to further protect children from pesticides under the FQPA, notably banning use of some chemicals in the home and on lawns, it has yet to impose rules to protect children from drift.

The petition -- led by Pesticide Action Network and United Farm -- called on the EPA to conduct pesticide-specific drift assessments for all pesticides with the potential to drift, and to impose measures necessary to protect children from harmful drift exposures. It also urged the EPA to immediately impose interim no-spray buffer zones for drift-prone pesticides, including organophosphates and N-methyl carbamates, around schools, rural homes, parks, daycare facilities and other areas where children congregate.

Last March, the EPA **denied the petition**, saying that its current approach for addressing and regulating pesticide drift is working and does not warrant revisions. Although the EPA acknowledged that it "shares the concerns expressed by the petitioners" about the risks from pesticide drift and volatilisation to children, the Agency said that it believes that the ongoing "registration review programme already in place is a timely, efficient and effective way to assess and take action on these risks".

The Agency's response did not sit well with the petitioners, who filed **an appeal in May** with the US 9th Circuit Court of Appeals. The petition for review seeks an order compelling the EPA to immediately implement the requested spray buffers to protect children's homes, schools, daycares and play areas while it is completing the revised risk assessments.

Blind Eye

In its **filing** last month with the appellate court, the EPA argued that the appeal was baseless and should be rejected by the court. The Agency says that its decision to deny the request to immediately establish no-spray buffers "constitutes both a scientific … and a policy judgment" as to how it should employ "its limited resources".

But in their response brief, the petitioners contend that the Agency "acted as if there was a blank slate without regard to its past findings, its past failures, and its ongoing legal obligations".

The petitioners note that the EPA has "found for decades" that pesticide drift poses serious dangers to children near areas where pesticides are applied. The Agency has also has acknowledged that it failed to "consider and guard" against adverse health impacts from pesticide drift when it re-registered old pesticides under its 2006 statutory authority, the environmental groups argue in their December 17th court filing.

But the EPA is now asking the court to "turn a blind eye" on that record, according to the petitioners. The Agency did not evaluate the potential impact of its earlier failure and "whether and to what extent additional action may be necessary to protect kids from drift on an interim basis," the brief states. The petitioners reiterate their plea that the court force the Agency to quickly respond to their petition and to impose the requested buffer zones in the interim.

Oral arguments in the case have not yet been scheduled. (Pesticide & Chemical Policy/AGROW, January 6, 2015)

INDUSTRY UPSET WITH US EPA NEONIC REPORT

The pesticide industry and US grower groups have blasted a recent US EPA report that questioned the benefits of treating soybean seeds with neonicotinoid insecticides. They argue that the Agency's analysis is incomplete and ill-advised.

The EPA Office of Pesticide Programs' biological and economics analysis division (BEAD) released the report in October, concluding that farmers "gain little or no increase in soybean yields" from neonicotinoid seed treatments compared with using no insect control at all. The report, which is part of the EPA's ongoing registration review of neonicotinoids, has added to lingering controversy over the role the insecticides may be playing in dramatic declines of US honeybees and other pollinators.

But soybean growers, farm groups and academics, as well as pesticide and seed treatment manufacturers, have hit back at the EPA, challenging the validity of the assessment and calling on the Agency not to use its analysis to justify new restrictions on neonicotinoids.

The report mischaracterizes the importance of neonicotinoid seed treatments to soybean farmers, American Soybean Association president Wade Cowan wrote in comments submitted to the Agency. "Actual experience from soybean farmers leads us to disagree with the [report]," Mr Cowan wrote. Roughly a third of US soybean farmers use neonicotinoid seed treatments. Mr Cowan says that those who do find the treatment an effective tool to combat insects in the soil and to protect seedlings. Using seed treatments can also reduce or eliminate the need to apply additional pesticides after soybean seedlings have emerged from the ground, he notes.

The "bottom line", according to Mr Cowan, is that "soybean producers use neonicotinoid seed treatments where they are needed and effective, and don't use them where they are not. That approach to the use of crop protection products should be rewarded, not penalized."

CropLife America (CLA) and the American Seed Treatment Association (ASTA) called the report's conclusions "incorrect and damaging" and questioned the EPA's decision to publish its analysis. "We feel the publication of this report has needlessly cast uncertainty over products with demonstrated benefits," the industry groups say in a joint comment. The groups say that the EPA seems to have ignored an array of studies that show benefits from seed treatments, particularly a meta-analysis of soybean yield data from 23 states from 2001-13 that found a yield advantage of 2.8% for soybeans using neonicotinoid seed treatments relative to untreated seed.

The CLA and the ASTA add that the Agency failed to contact their member companies regarding available benefits data on soybeans. Releasing a benefits assessment for a "single use" before the EPA has completed its final risk assessment for neonicotinoids "compromises registration review" and is inconsistent with Agency procedures, according to the CLA and the ASTA.

The industry groups also suggest that the EPA may be caving to pressure on the pollinator issue. "Inviting public comment on a portion of the review on a single crop is highly unusual and appears to be motivated by external pressure regarding neonicotinoid insecticides," according to the CLA and the ASTA.

The Iowa Farm Bureau Federation echoed that worry. "We are concerned the report may result in unjustified restrictions on the use of neonicotinoid seed treatments," the farm bureau says. "The [BEAD report] lacks the necessary data to justify any change in the use of otherwise EPA-approved neonicotinoid seed treatments."

Environmental groups argue otherwise and have launched an effort to convince the EPA to follow the EU's lead and suspend use of neonicotinoids. A mass mailing sent to the Agency by thousands of individuals, organized by Friends of the Earth and the Sierra Club, says that the report adds to "a growing body of science" that justifies the immediate suspension of registrations of neonicotinoids for agricultural uses, including seed treatments. (Pesticide & Chemical Policy/AGROW, January 30, 2015)

GMO MOSQUITOES MAY BE RELEASED IN FLORIDA

The FDA is considering whether to approve the experimental use of genetically modified mosquitoes in the Florida Keys to help stop the spread of dengue fever and other diseases, NPR reports. Mosquito control officials in the region say they hope to get approval to begin releasing the insects in the Keys as soon as this spring.

After years of spraying, local health officials say, A. aegypti mosquitoes in the Keys have developed a resistance to most chemical pesticides. Now, the Mosquito Control District wants to become the first in the U.S. to try something new: genetically modified mosquitoes. The strain of insects was developed more than a decade ago by a British company, Oxitec.

NPR also reported that residents say they're concerned by how a bioengineered mosquito may affect them and the environment. Patty Crimmins, a resident of Key West, says her concerns go beyond mosquitoes. "We're not particularly thrilled with genetically modified anything," she says.

Oxitec's Nimmo says that since A. Aegypti mosquitoes are nonnative, removing them would actually be an environmental plus. He says the bioengineered mosquitoes don't live long after they're released. "And then," he says, "the offspring will die. We've shown that after trials where we stop releasing, [this strain of mosquito] doesn't last very long in the environment. So, we've got a very self-limiting, safe, species-specific technology."

(PCT Online January 29,2015)
http://www.pctonline.com/GMO-mosquitoes-Florida.aspx

US EPA SEEKS DISMISSAL OF CHLORPYRIFOS SUIT

The US EPA has called on the 9th Circuit Court of Appeals to dismiss the bid by a coalition of US environmentalist advocacy groups to force it to ban the insecticide, chlorpyrifos. The coalition, including Pesticide Action Network North America and the Natural Resources Defense Council, filed suit in September last year seeking a ban on chlorpyrifos and a revocation of all food tolerances for the insecticide. That was their third bid to force the Agency to ban the insecticide after filing a lawsuit in 2010 over its failure to respond to a 2007 petition seeking a ban.

The Agency argues that it has addressed the majority of the "complex scientific issues" raised in the petition and "has been diligently working" on the remaining issues while balancing statutory obligations and resource limitations. "[The] EPA's thorough consideration of these issues will inform its ultimate decision whether to leave in place the tolerances for chlorpyrifos or cancel chlorpyrifos registrations, and a full record will facilitate any subsequent judicial review of these decisions," the Agency argued in a brief filed last month.

The EPA also filed a status report with the court on January 7th touting the release of the revised human health risk assessment, suggesting that it showed more progress on addressing the petition. The Agency added that depending on the comments and final revisions to the human health risk assessment, it would "either issue a proposed rule to revoke tolerances in early 2015 or a final denial order in mid-2015".

The EPA is considering the imposition of further restrictions on chlorpyrifos following a revised human health risk assessment as part of the registration review program. (Pesticide & Chemical Policy/AGROW, January 15, 2015)

CHICAGO TOPS ORKIN'S LIST OF 'BED BUG CITIES' FOR 2014

Chicago tops the 2014 Bed Bug Cities List for the third year in a row. The list, released by Orkin, ranks the cities by the number of bed bug treatments Orkin performed from January to December 2014. Bed bugs were in the news throughout 2014 in the Windy City, with reports of the blood-sucking insects on public transit and inside several downtown office buildings, as well as in police headquarters, a fire station, school, library and movie theater.

"Bed bugs are a serious issue across the country, and they're very difficult to control," said Orkin Entomologist and Technical Services Director Ron Harrison, Ph.D. "Bed bugs are not limited to any level of cleanliness or income, which means they

can be found in any home or hotel. They're great hitchhikers, and people often bring them inside on their clothes or in their luggage."

Seven cities made double-digit jumps on Orkin's Bed Bug Cities List compared to 2013, including Omaha, Neb. (+16), Lexington, Ky. (+16), Sacramento, Calif. (+14), Grand Rapids, Mich. (+13), Buffalo, N.Y. (+12), Charleston, W.Va. (+11) and Louisville, Ky. (+10). Several cities also dropped significantly in the past year, including Syracuse, N.Y., San Diego, Miami, Greenville, S.C. and Atlanta. Four cities made the Bed Bug Cities List for the first time including Myrtle Beach, S.C., St. Louis, Bowling Green, Ky. and Ft. Wayne, Ind.

1. Chicago
2. Detroit (+2)
3. Columbus, Ohio
4. Los Angeles (-2)
5. Cleveland – Akron – Canton, Ohio (+1)
6. Dallas – Ft. Worth (+7)
7. Cincinnati (-2)
8. Denver (+1)
9. Richmond – Petersburg, Va. (+2)
10. Dayton, Ohio (-3)
11. Indianapolis (-1)
12. Houston (+4)
13. Seattle – Tacoma (+5)
14. Washington, District of Columbia – Hagerstown, Md. (-6)
15. Milwaukee (+6)
16. San Francisco – Oakland – San Jose (+3)
17. Raleigh – Durham – Fayetteville, N.C. (-5)
18. New York (-1)
19. Charleston – Huntington, W.Va. (+11)
20. Grand Rapids – Kalamazoo – Battle Creek, Mich. (+13)
21. Omaha, Neb. (+16)
22. Louisville, Ky. (+10)
23. Nashville, Tenn.
24. Lexington, Ky. (+16)
25. Atlanta (-10)
26. Buffalo, N.Y. (+12)
27. Sacramento – Stockton – Modesto, Calif. (+14)
28. Syracuse, N.Y. (-14)
29. Boston – Manchester (-9)
30. Charlotte, N.C. (-5)
31. Baltimore (-4)
32. Phoenix – Prescott (-4)
33. Miami – Ft. Lauderdale (-11)
34. Knoxville, Tenn. (-3)
35. Cedar Rapids – Waterloo – Dubuque, Iowa (-6)
36. Minneapolis – St. Paul (+8)
37. Hartford – New Haven, Conn. (+3)
38. Champaign – Springfield – Decatur, Ill. (-3)
39. San Diego (-13)
40. Lincoln – Hastings – Kearney, Neb. (-1)
41. Kansas City, Mo. (+9)
42. Honolulu (+3)
43. Albany – Schenectady – Troy, N.Y.
44. Colorado Springs – Pueblo, Colo. (-2)
45. Myrtle Beach – Florence, S.C.
46. St. Louis
47. Greenville – Spartanburg, S.C. – Asheville, N.C. (-11)
48. Bowling Green, Ky.
49. Ft. Wayne, Ind.
50. Toledo, Ohio (-4)

Bed bugs are in every region of the country, and Orkin has treated for bed bugs in all 50 states. Rollins, Orkin's parent company, saw an 18 percent increase in bed bug revenue in 2014. The problem is growing nationwide as well. According to an annual report on the pest control industry, Americans spent $446 million to get rid of bed bugs in 2013, the latest data available, compared to $70 million in 2004 (PCT Online, January 21, 2015) http://www.pctonline.com/Chicago-bed-bug-city2014.aspx

US LEGAL CONTROVERSY REVS UP OVER DOW'S ENLIST DUO

Environmentalists have asked the US 9th Circuit Court of Appeals to temporarily block commercialization of Dow AgroSciences' Enlist Duo (2,4-D choline + glyphosate) herbicide, until their legal challenge to the US EPA's approval of the product has been heard. The request was filed with the Court last month by the Natural Resources Defense Council (NRDC), one of seven

environmentalist and farm groups challenging the EPA's registration of the product.

The EPA approved Enlist Duoin October, allowing use in six Midwestern states. It is intended for use on new genetically modified maize and soybean lines that Dow has developed with tolerance to both herbicides. Dow, along with US farm groups, says that the new crops are needed to help combat growing weed resistances to glyphosate and other widely-used herbicides.

But environmentalist groups argue that the EPA has run afoul of federal pesticide law and the Endangered Species Act. In October, the Center for Food Safety (CFS), Beyond Pesticides, the National Family Farm Coalition and three other environmentalist groups filed suit against the EPA, arguing that the approval violated the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Endangered Species Act (ESA).

The NRDC's complaint contends that the Agency failed to consider the impacts of increased glyphosate use on monarch butterflies and did not fully analyse the potential human health effects from the 2,4-D component of the pesticide. Both cases have been consolidated before the 9th Circuit.

The NRDC argues that it is likely to succeed on the merits of its challenge and says that the protracted nature of the ongoing litigation warrants a stay on the registration. "Absent a stay, Enlist Duo will be available for purchase and use pending review," the NRDC explains in its December 18thmotion.

Dow is keen to see the product available this year, but the NRDC says that the company's concerns have little relevance. "Granting a stay would simply preserve the status quo, as Enlist Duo has yet to enter the market," the group argues. "To the extent Dow asserts an interest in marketing Enlist Duo as soon as possible, this private interest is purely financial and carries less weight because of its temporary nature."

Allowing farmers to purchase and use the pesticide while the case is pending "will cause irreparable harm to monarchs and vulnerable human populations", the environmentalist group concludes. "The balance of harms strongly favors a stay, which would advance the public interest."

The EPA and Dow, which has been allowed to intervene in the case, are scheduled to file their responses to the NRDC's motion by January 23rd.

Venue dispute

The Court is also considering a disagreement among the parties on the appropriate venue for the case. Dow filed a motion on December 15th arguing that the consolidated case belonged with the US Court of Appeals for the District of Columbia Circuit, while the plaintiffs are keen to see the dispute resolved by the 9th Circuit. The NRDC originally filed its petition with the US Court of Appeals for the DC Circuit, before re-filing with the 9th Circuit where the CFS-led petition was also filed.

Dow contends that the petitions "represent an attempt to manipulate the rules governing judicial review of agency action". The company notes that multiple petitions related to the same federal action are usually submitted to the Judicial Panel on Multidistrict Litigation (JPML), which uses a lottery to determine which court gets the case.

By filing two petitions in this Court on behalf of seven distinct entities, the petitioners have attempted "to circumvent the lottery system established by Congress to govern this very situation", Dow explains. "They have sought to dictate the outcome of the lottery by filing jointly in a single circuit in which venue manifestly is not proper for all of them." The controversy has "nothing to do with the [9th] Circuit", Dow argues, noting that it involves the decision of a federal agency in Washington DC to register a herbicide for use in six Midwestern states.

The EPA's administrative record, which the Agency says may exceed 36,000 documents, is also located in DC, Dow says. "This kind of massive, record-based challenge to administrative action is the bread-and-butter of the DC Circuit," the company argues.

Dow also notes that two of the petitioners -- Beyond Pesticides and the National Family Farm Coalition -- lack a presence in any of the western states that comprise the 9th Circuit and four of the seven petitioners have their national headquarters in Washington, DC. The company says that the 9th Circuit has no need to send the issue to the JPML because it has the authority to resolve the matter by "simply transferring the petitions to the DC Circuit". The court has not set a schedule for ruling on Dow's request.

(Pesticide & Chemical Policy/AGROW, January 8, 2015)

Charismatic Minifauna BED BUGS WON'T GIVE YOU CHAGAS DISEASE (PROBABLY)

Nobody likes bed bugs, but one thing we could always say was "at least they don't transmit any human diseases!" That's still true, although some research published this week is causing some concern.

A new paper in The American Journal of Tropical Medicine and Hygiene reported that bed bugs might be able to host and transmit Chagas Disease, a chronic heart disease caused by the blood parasite Trypanosoma cruzi. That sounds scary, but the experts I talked to all agree no one should panic.

A lot of alarming things can be found in bed bugs; over 45 different potential human disease agents are known, including bacteria, viruses (Hepatitis B), worms, and protozoans (like the trypanosomes in the new paper). So far, none of them are transmitted to humans by bed bugs. This new research doesn't change that.

Here's a run-down of the new research, and what you need to know.

Chagas Disease: the Poop Connection.
In areas where Chagas Disease occurs, you get infected when a kissing bug with the parasite in its gut first bites you, and then poops into the wound it makes. Seriously.

Kissing bugs are a relative of bed bugs, and they both feed the same way — they stick a beaky straw into your skin and slurp up your blood. Kissing bugs poop after they feed, and if the bug is infected, it releases the parasite onto your skin.

Breaks in the skin (like the one the bug just made to drink your blood) or mucus membranes allow the Chagas parasite easy access to your blood. "Kissing bugs" get their name from their habit of biting near the lips and eyes, which are mucus membranes.

Scratching makes it more likely that you get the disease, because you create an opening in the skin and then rub the feces into the wound. Insult, meet injury.

To recap: the bug bites you on the face; then poops on your face; and then you scratch the wound (on your face? Did I mention it's on your face?) and infect yourself.

But Wait, There's More
How do these kissing bugs get infected in the first place? They feed on small mammals and pick up the Chagas parasite. There is another source of Chagas disease infection in kissing bugs: coprophagy. Literally: poop-eating.

Baby kissing bugs don't have an important bacterial symbiont they need in their gut to help them digest food and create essential vitamins. They fill up with the bacteria by eating their parent's feces. Or the feces of any other adult kissing bug. If the adult insects also happen to be infected with the Chagas disease parasite, then the young kissing bugs pick that up as well.

The Proof is in the Pooping
In the laboratory, Chagas parasites will live in a wide variety of insects, including bed bugs. But unless the infected insects also poop out the parasite into a wound, transmission of the disease is unlikely. That's what the new research was designed to test.

Bed bugs are guilty of a lot of things, but they are not poop eaters. They feed exclusively on blood, so that is the only way for a bed bug to pick up the Chagas parasite. The researchers were able to

successfully infect bed bugs with the Chagas parasite by feeding them on infected mice. They also demonstrated that if you collected bed bug feces and rubbed them into scraped areas of mouse skin, they could infect the mice with Chagas disease.

Lastly, the researchers also measured how long it took for bed bugs to poop after a blood meal, and found the Time-to-pooping by kissing bugs and bed bugs were similar.

Dr. Michael Levy, an author on the new study, summed it this way: "We knew that [bed bugs] probably could transmit the parasite. After our work we know they really can transmit it. We don't know if they are transmitting it." In other words, they have demonstrated a potential way for the disease to be transmitted, but it's not yet a reality outside the laboratory.

Since I'm at the Entomological Society of America Annual Meeting this week, I'm conveniently surrounded by bed bug experts. I tracked down Dr. Zach Adelman, who is giving a presentation on bed bugs and infectious disease transmission, and asked him about the new paper. We talked about "vector competence," a term that describes how well an insect can acquire, maintain, and then transmit an infectious disease.

Thankfully, bed bugs seem to be incompetent disease vectors. "Should we be frightened? The infection rates of [kissing bugs] are very high even in the absence of an infected host because of their coprophagy. That's why kissing bugs are such great vectors; they maintain high levels of infection for long periods of time without any human involvement," said Adelman. "But bed bugs don't do that. They only feed on blood. So what are the Chagas infection rates of bed bugs going to be? My guess is the prevalence will be very low."

David Lilly, University of Sydney, suggested that while the new study was really interesting, the infection risk for humans by bed bugs was probably low, based on his knowledge of bed bug behavior. "I feed bed bugs all the time… They don't hang around on the host after feeding, so the chances of bed bugs defecating on skin are low."

The bed bugs in this photo could walk onto his hand, but they don't. They are staying safe on their piece of paper and just reaching over, in kind of a John Travolta/Saturday Night Fever posture. Bed bugs eat and run, which means a Chagas-infected bed bug would be unlikely to poop on a human.

In some of the more unusual conversations I've had with scientists, the odds of actually being pooped on by a bed bug are a point of contention. While entomologists I talked to here at the meeting felt the chances were low, Levy disagrees, saying "bed bugs are dangerous poopers."

We Need More Basic Ecology

One thing all the scientists agreed on was we need more basic ecological research to understand what happens in nature, and what the actual level of threat is for bed bugs and Chagas. We can do a lot of things in the laboratory, but that doesn't always translate to the external world.

Levy said "Bed bugs do not cause Chagas disease, they can only carry it. If you have bed bugs in your house you are not at risk of infection unless the disease is already present… There is much we don't know about the behavior and ecology of both the Chagas parasite and bed bugs—perhaps there is some detail about the two that we are yet to uncover that will prove them incompatible, and that the threat is empty."

To further understand the relationship and assess if infection is a real fear, he hopes to collect bed bugs in the houses of individuals with Chagas disease in Peru, to and see if they are indeed picking up the parasite.

So, remain calm. Levy also said, and I agree: "Cities and health agencies need to start to treat bed bugs as a public health issue rather than simply a pest." You are far more likely to be injured by misusing pesticides to try to exterminate bed bugs, or trying to kill them with fire. If you live in an area where you are concerned about Chagas (only 6 human cases have been found in the US so far), here's some tips on keeping kissing bugs out of your house. (Wired November 18,2014) http://www.wired.com/2014/11/bed-bugs-wont-give-chagas-disease-probably/

In-State and Neighboring State CEU Meetings

Date: February 12, 2015
Title: IFC 2015 Technical Conference
Location: Kansas City MO
Contact: Deborah Murphy (913) 397-1185
Course #: OK-14-166
www.fisaconsulting.com

CEU's:	Category(s):
4	7A
2	7C
2	10

Date: February 17, 2015
Title: Sanders Dumas CEU
Location: Dumas TX
Contact: Robbie Cartrite (806) 290-4884
Course #: OK-15-001

CEU's:	Category(s):
4	1A

Date: February 26, 2015
Title: Univar 2015 Annual CEU Training
Location: Clarion Broken Arrow OK
Contact: Deb Chambers (918) 630-3322
Course #: OK-15-
www.vannetus.com

CEU's:	Category(s):
1	3A
4	7A
1	7B
6	10

Date: February 26, 2015
Title: Operation Safe Fly-In
Location: El Reno OK
Contact: Sandy Wells (405) 341-3548
Course #: OK-15-020

CEU's:	Category(s):
2	A
2	10

Date: March 3-4, 2015
Title: OKVMA 2015 Spring Conference
Location: Reed Center Midwest City OK
Contact: Kathy Markham (918) 256-9302
Course #: OK-15-016
www.okvma.com

CEU's:	Category(s):
4	A
4	3A
6	5
6	6
6	10

Date: March 10, 2015
Title: Pest Management in the Food Industry
Location: Little Rock AR
Contact: Deborah Murphy (913) 397-1185
Course #: OK-14-163
www.fisaconsulting.com

CEU's:	Category(s):
4	7A
2	7C
2	10

Date: March 10, 2015
Title: 2015 SW Lawn Care Management Workshop
Location: Stephens Co. Fairgrounds Duncan OK
Contact: Max Gallaway (580) 255-0510
Course #: OK-15-019

CEU's:	Category(s):
3	3A
2	6
3	10

ODAFF Approved Online CEU Course Links

Technical Learning College
http://www.abctlc.com/

Green Applicator Training
http://www.greenapplicator.com/training.asp

All Star Pro Training
www.allstarce.com

Wood Destroying Organism Inspection Course
www.nachi.org/wdocourse.htm

CTN Educational Services Inc
http://ctnedu.com/oklahoma_applicator_enroll.html

Pest Network
http://www.pestnetwork.com/

Univar USA
http://www.pestweb.com/

Southwest Farm Press Spray Drift Mgmt
http://www.pentonag.com/nationalsdm

SW Farm Press Weed Resistance Mgmt in Cotton
http://www.pentonag.com/CottonWRM

Western Farm Press ABC's of MRLs
http://www.pentonag.com/mrl

Western Farm Press Biopesticides Effective Use in Pest Management Programs
http://www.pentonag.com/biopesticides

Western Farm Press Principles & Efficient Chemigation
http://www.pentonag.com/Valmont

For more information and an updated list of CEU meetings, click on this link:
http://www.state.ok.us/~okag/cps-ceuhome.htm

ODAFF Test Information

Pesticide applicator test sessions dates and locations for February/March 2015 are as follows:

February			March	
2	McAlester		2	Atoka
5	Enid		3	Goodwell
12	Tulsa		10	Hobart
13	OKC		12	Tulsa
20	OKC		13	OKC
26	Tulsa		26	Tulsa
			27	OKC

Altus: SW Research & Extension Center 16721 US HWY 283

Atoka: KIAMICHI TECH CENTER 1301 W Liberty Rd, Seminar Center

Enid: Garfield County Extension Office, 316 E. Oxford.

Goodwell: Okla. Panhandle Research & Extension Center, Rt. 1 Box 86M

Hobart: Kiowa County Extension Center Courthouse Annex, 302 N. Lincoln

Lawton: Great Plains Coliseum, 920 S. Sheridan Road.

McAlester: Kiamichi Tech Center on Highway 270 W of HWY 69

OKC: OSU OKC Room ARC 196, 400 N. Portland. (New Location)

Tulsa: NE Campus of Tulsa Community College, (Apache & Harvard) Large Auditorium

Pesticide Safety Education Program