

PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University
<http://pested.okstate.edu>



April, 2024

CHEM

- 1 UNWANTED PESTICIDE DISPOSAL IN ALTUS AND SHAWNEE
- 1 APRIL TEST HELP WORKSHOPS
- 2 EPA WARNS FARMWORKERS ABOUT RISKS OF DACTHAL
- 3 EPA RELEASES UPDATED DRAFT RISK ASSESSMENT FOR PESTICIDE MALATHION
- 5 EPA UPDATE ON EXISTING STOCKS PROVISIONS FOR THREE CHLORPYRIFOS PRODUCTS
- 6 BAYER APPLIES FOR NEW DICAMBA LABEL
- 7 ONE IN SEVEN U.S. TRAVELERS HAVE ENCOUNTERED MATTRESSES INFESTED WITH BED BUGS IN THE PAST YEAR
- 9 SHOULD YOU CARE ABOUT WATER CARRIER PH?
- 10 RAPID CROSS-RESISTANCE BRINGING COCKROACHES CLOSER TO INVINCIBILITY
- 11 CEU MEETINGS
- 13 ONLINE CEU LINKS
- 13 ODAFF TEST INFORMATION

UNWANTED PESTICIDE DISPOSALS IN ALTUS AND SHAWNEE

ODAFF has scheduled the next Unwanted Pesticide Disposal Program collection dates for Altus and Shawnee this month. The Disposals will run from 8 a.m. to 1 p.m. rain or shine at both locations.

There is no charge for this program. **Limit is 2,000 pounds per entity.** ONLY PESTICIDES will be taken at the sites (no fertilizer, paint, oil, etc)! If you have any questions, contact Charles Luper (OSU) at 405-744-5808 or Ryan Williams (ODAFF) at 405-522-5993.

**April 22 Jackson County Expo Center,
412 Todd Ln, Altus, OK**

**April 24 Heart of Oklahoma Expo Center
1700 W Independence St, Shawnee, OK**

For more information, please go to
<https://bit.ly/3pF9K2p> (OSU PSEP)

APRIL TEST HELP WORKSHOPS

The Oklahoma State University Pesticide Safety Education Program (PSEP) has will be holding test help workshops April 17 in Oklahoma City and April 18 in Tulsa.

The Oklahoma City workshop will be at the Oklahoma County Extension Center at 2500 N.E. 63rd St. in Oklahoma City. The Tulsa workshop will be at the Tulsa County Extension Office at 4116 E 15th in Tulsa.

Registration cost is \$50 before April 15 for Oklahoma City and \$65 after April 15. Registration cost is \$50 before April 16 for Tulsa and \$65 after April 16. Registration will include a copy of *Applying Pesticides Correctly*. This is the study manual for the core and service technician exams.

To register for this class please go to the Pesticide Safety Education Program (PSEP) website at <http://pested.okstate.edu/html/practical.htm> and click on the register online link. Class information and an agenda is also at that website. Future 2024 workshop dates can be found on the website as well.
(OSU PSEP)

EPA WARNS FARMWORKERS ABOUT RISKS OF DACTHAL

Today, April 1, the U.S. Environmental Protection Agency is announcing its next steps to protect people from the herbicide dimethyl tetrachloroterephthalate (DCPA, or Dacthal). EPA is warning people of the significant health risks to pregnant individuals and their developing babies exposed to DCPA and will be pursuing action to address the serious, permanent, and irreversible health risks associated with the pesticide as quickly as possible. EPA has also issued a letter to AMVAC, the sole manufacturer of DCPA, restating the risks the agency found and stating that due to the serious risks posed by DCPA, the agency is pursuing further action to protect workers and others who could be exposed. EPA is taking this rare step of warning farmworkers about these concerns while it works on actions to protect workers because of the significant risks the agency has identified.

“DCPA exposure represents a serious risk to pregnant workers and their children, so it’s imperative that we warn people about those risks now,” said **Assistant Administrator for the Office of Chemical Safety and Pollution Prevention Michal Freedhoff**. “We’re committed to taking action to protect the health of children, workers, and others who are exposed to DCPA.”

DCPA is an herbicide registered to control weeds in both agricultural and non-agricultural settings, but is primarily used on crops such as broccoli, Brussels sprouts, cabbage and onions.

DCPA is currently undergoing registration review, a process that requires reevaluating registered pesticides every 15 years to ensure they cause no unreasonable adverse effects on human health or the environment. In May 2023, EPA released its assessment on the risks of occupational and residential exposure to products containing DCPA, after the agency reviewed data that it compelled AMVAC to submit, which had been overdue for almost 10 years. The assessment found concerning evidence of health risks associated with DCPA use and application, even when personal protective equipment and engineering controls are used. The most serious risks extend to the developing babies of pregnant individuals. EPA estimates that some pregnant individuals handling DCPA products could be subjected to exposures from four to 20 times greater than what current DCPA product label use instructions indicate is considered safe. EPA is concerned that pregnant women exposed to DCPA could experience changes to fetal thyroid hormone levels, and these changes are generally linked to low birth weight, impaired brain development, decreased IQ, and impaired motor skills later in life.

Also of concern are risks to developing babies of pregnant individuals entering or working in areas where DCPA has already been applied (especially post-application workers involved in tasks such as transplanting, weeding and harvesting). Current product labels specify that entry into treated fields must be restricted for 12 hours after application. However, the evidence indicates that for many crops and tasks, levels of DCPA in the previously treated fields remained at unsafe levels for 25 days or more. EPA also identified potential risks for individuals using golf courses and

athletic fields after DCPA was applied. Spray drift from pesticide application could also put developing babies at risk for pregnant individuals living near areas where DCPA is used.

Since the release of EPA’s 2023 assessment, [AMVAC has proposed several changes](#) to the DCPA registrations, including the recent cancelation of all DCPA products registered for use on turf. Those cancelations eliminate exposures to DCPA from recreational activities on and around turf. However, according to EPA’s analysis, other proposals submitted by AMVAC do not adequately address the serious health risks for people who work with and around DCPA. EPA is therefore preparing to take further action under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as quickly as possible to protect people from the risks of DCPA.

When serious risks are identified, EPA can take action under FIFRA to suspend or cancel a pesticide. These actions are resource-intensive and take time to implement, partly due to the procedural requirements of FIFRA. A cancelation proceeding would take at least several months (if uncontested by the registrant), and potentially several years to accommodate a potential administrative hearing and any subsequent appeal of an order of cancelation (if the registrant contests the action). FIFRA also allows EPA to seek a suspension of a pesticide product while cancelation proceedings are ongoing if the Administrator determines it is necessary to prevent an imminent hazard. An administrative hearing and final order on a suspension proceeding (if the action is contested) would likely take several months to conclude. However, the Administrator may also issue an order of suspension—effective immediately on issuance—if he determines that an emergency exists such that an administrative hearing cannot be held before suspending. Any final order of suspension would remain in effect until cancelation proceedings end. EPA is considering these tools as it moves forward with the DCPA registration review, but in light of the serious risks posed by DCPA, chose to warn the public of them at this time as it continues its work.

Background on EPA’s Review of DCPA

In 2013, the agency issued a Data Call-In (DCI) to AMVAC, requiring it to submit more than 20 studies to support the existing registrations of DCPA. The data required by EPA included a comprehensive study of the effects of DCPA on thyroid development and function in adults and in developing babies before birth. Several of the studies submitted by AMVAC from 2013-2021 were considered insufficient to address the DCI, while the thyroid study and other studies were not submitted at all. In [April 2022](#), EPA issued a Notice of Intent to Suspend the DCPA technical-grade product (used to manufacture end-use products) based on AMVAC’s failure to submit the complete set of required data for almost 10 years, including data on DCPA’s thyroid toxicity. On Aug. 22, 2023, the agency suspended the registration for the DCPA technical-grade product, a rare but necessary step given AMVAC’s delay in providing the data EPA requested nearly a decade before. In November 2023 the suspension was lifted after AMVAC submitted sufficient data. DCPA use on [turf was voluntarily canceled](#) by AMVAC in December 2023, but unacceptable risks from agricultural use remained.

Supporting documents are available in the DCPA registration review docket [EPA-HQ-OPP-2011-0374](#) on the [Regulations.gov](#).

[Read EPA’s Response to AMVAC’s Mitigation Proposal](#)

(EPA, April 1, 2024)

<https://www.epa.gov/pesticides/epa-warns-farmworkers-about-risks-dacthal>

EPA RELEASES UPDATED DRAFT RISK ASSESSMENT FOR PESTICIDE MALATHION

Today, the U.S. Environmental Protection Agency (EPA) released an [updated draft human health risk assessment](#) (HH DRA) for the pesticide malathion. The updated HH DRA amends the 2016 malathion dietary, occupational, and residential risk assessments using updated information and techniques. The updated HH DRA finds no human health risks of concern for malathion when used in accordance with label

instructions. EPA is also proposing several food tolerance changes, based on commodity definition revisions and to harmonize tolerance levels with those of other countries.

Malathion is an organophosphate pesticide that is registered for agricultural and non-agricultural uses, including controlling pests on fruits, vegetables, landscaping plants, and shrubs, as well as for controlling mosquitos. Mosquito-borne diseases, such as those caused by the West Nile and Zika viruses, are among the world's leading causes of illness and death and pose a significant risk to people in the United States. Climate change also increases the risk of human exposure to mosquito-borne diseases, as studies show that warmer temperatures associated with climate change can expand the range and breeding season of mosquitos, as well as accelerate mosquito development, biting rates, and the incubation of the disease within a mosquito. Using pesticides like malathion to control mosquito populations is important to maintaining public health, particularly in densely populated areas in overburdened communities.

The human health risk assessment for malathion includes an assessment of malaoxon, its breakdown product that is formed through metabolism and degradation. Malaoxon is the active form of malathion that is responsible for interacting with the nervous system through inhibition of the acetylcholinesterase (AChE) enzyme. This process is what makes the pesticide effective against insects, but the process can also occur in mammals, including humans, depending on the level of malathion exposure. AChE inhibition has been found to be the most sensitive effect for malathion, and EPA has a long-standing history of using a 10% change in AChE levels as the basis for its organophosphate human health risk assessments.

In the previous 2016 HH DRA for malathion, traditional approaches that rely solely on animal data and default uncertainty factors were used to evaluate exposure to malathion and malaoxon and identified potential risks of concern. The updated malathion HH DRA released today incorporated modernized scientific techniques and new data that provided a more refined assessment compared to traditional approaches and found no human health risks of concern.

- The updated HH DRA: Incorporated a physiologically based pharmacokinetic-pharmacodynamic (PBPK) model to obtain a more realistic estimate of human toxicity associated with AChE inhibition for different age groups and routes of exposure (oral, dermal, and inhalation). A PBPK model simulates how quickly and how much of a chemical enters the body, where it distributes in the body, how it breaks down, and how it eventually exits the body using human-specific data and information.
- Updated the Food Quality Protection Act safety factor (FQPA SF) taking into consideration a weight of evidence analysis (WOE) of developmental neurotoxicity (DNT) potential using chemical-specific data. The FQPA SF is intended to provide a 10X additional margin of safety to account for any additional risk to pregnant women and children in the absence of scientific information demonstrating that no such additional risk exists. EPA concluded there is reliable chemical-specific data to support reducing the FQPA SF from 10X to 1X.
- Incorporated updated dietary, residential, and non-occupational bystander exposure data.
- Utilized updated guidance for evaluating exposures and potential risk from the public health use to control mosquitos.

As noted above, a WOE analysis of DNT potential was used to inform the malathion FQPA SF determination, where all relevant evidence is looked at, taking into consideration the strengths and limitations of each line of evidence. EPA's "[Approach for Evaluating Developmental Neurotoxicity Potential for the Organophosphate Pesticides](#)" outlines the Agency's strategy to assess the DNT potential of organophosphates in women and children. The approach uses three primary lines of evidence—epidemiological studies, animal toxicity studies, and a battery of in vitro assays—to evaluate pesticides on a chemical-by-chemical basis using high quality, chemical-specific data. Using the WOE approach, EPA concluded that a reduction of the FQPA SF to 1X was supported by the evidence. For further information, the WOE analysis can be found in the document entitled "Evaluation of the Developmental Neurotoxicity Potential of

Malathion/Malaoxon to Inform the FQPA Safety Factor.”

This revised assessment covers the human health risks of malathion, while the ecological risks to non-target species will be described in a separate assessment that is expected to be released next month. EPA has completed its Endangered Species Act (ESA) consultations on malathion. Malathion is one of 18 organophosphates currently in registration review, with many scheduled to have decisions between 2024-2026.

The Agency is still assessing the risks, benefits, and alternatives of malathion through the ongoing registration review process. These assessments, as well as the updated HH DRA, will inform the malathion proposed final decision (PFD) and final decision (FD) which are expected to be completed later this year. The PFD may propose risk mitigation to address any risks identified in the human health and/or ecological risk assessments, and the FD will finalize the requirements for any mitigation. A PFD and FD address all aspects of the registration review, as necessary, including considerations under the ESA and for the Endocrine Disruptor Screening Program (EDSP) under the Federal Food, Drug and Cosmetic Act as amended by the FQPA.

For malathion, the Agency is planning to issue a PFD and FD, rather than a Proposed Interim Decision and an Interim Decision, because the Agency has already completed ESA consultation for malathion and addressed the EDSP’s requirements.

The Agency will accept public comment on the updated HH DRA and the ecological DRA at the same time that it accepts public comment on the PFD, later this year. For more information on the registration review of malathion, including the updated HH DRA and supporting documents, please visit the malathion docket on at docket ID [EPA-HQ-OPP-2009-0317](#) on www.regulations.gov.

[Read the Updated Draft Risk Assessment](#)

(EPA, March 1, 2024)
<https://www.epa.gov/pesticides/epa-releases-updated-draft-risk-assessment-pesticide-malathion>

EPA UPDATE ON EXISTING STOCKS PROVISIONS FOR THREE CHLORPYRIFOS PRODUCTS

The U.S. Environmental Protection Agency (EPA) is issuing an update on existing stocks provisions for three chlorpyrifos pesticide products made by the company Adama – Pyrinex Chlorpyrifos Insecticide (EPA Reg. No. 11678-58), Chlorpyrifos 4E AG (alternate brand name Quali-Pro Chlorpyrifos 4E) (EPA Reg. No. 66222-19), and Vulcan (EPA Reg. No. 66222-233).

Chlorpyrifos is an organophosphate insecticide used for a large variety of food uses, including growing soybeans, fruit and nut trees, broccoli, cauliflower, and other row crops, as well as non-food uses. In a final rule issued in August 2021, EPA revoked all tolerances for chlorpyrifos, which establish an amount of chlorpyrifos that is allowed on food. This action stopped the use of the pesticide chlorpyrifos on all food and animal feed. EPA took this action in response to an April 2021 order from the U.S. Court of Appeals for the Ninth Circuit for the Agency to issue—within 60 days—a final rule addressing the use of chlorpyrifos in food or feed crops, without taking public comment or engaging in “further fact-finding.”

On May 4, 2023, EPA granted Adama’s request to cancel food uses and the tobacco use of its three chlorpyrifos products, consistent with EPA’s Cancellation Order for Certain Chlorpyrifos Registrations and Uses that noted that all chlorpyrifos tolerances had been revoked.

In addition, on November 6, 2023, EPA granted Adama’s request to terminate the food processing and food manufacturing site uses on those same three chlorpyrifos products.

On December 28, 2023, the U.S. Court of Appeals for the Eighth Circuit vacated EPA’s August 2021 rule revoking all tolerances. On February 5, 2024, EPA issued a Federal Register notice to amend the Code of Federal Regulations to reflect the court’s reinstatement of those tolerances. At this time, all the chlorpyrifos

tolerances have been reinstated and are currently in effect. Adama has requested amendments to the cancellation orders governing disposition of their existing stocks to allow for sale, distribution, and use.

Existing stocks for the products identified below are those stocks of registered pesticide products that are currently in the United States. These products must have been packaged, labeled, and released for shipment prior to May 4, 2023 (for termination of food uses and tobacco use) and prior to November 6, 2023 (for termination of food processing and food manufacturing uses).

At this time, EPA is amending the existing stocks provisions in the May 4 and November 6 cancellation orders as follows:

- Sale and distribution of existing stocks of Pyrinex Chlorpyrifos Insecticide (EPA Reg. No. 11678-58) is permitted until June 30, 2024.
- Sale and distribution of existing stocks of Chlorpyrifos 4E AG and Quali-Pro Chlorpyrifos 4E (EPA Reg. No. 66222-19) and Vulcan (EPA Reg. Nos. 66222-233) is permitted until April 30, 2025.
- Use of existing stocks of Chlorpyrifos 4E AG, Quali-Pro Chlorpyrifos 4E, and Vulcan on food, food processing sites, and food manufacturing sites must be consistent with the product labeling. Such use is permitted until June 30, 2025.
- Use of existing stocks Chlorpyrifos 4E AG, Quali-Pro Chlorpyrifos 4E, and Vulcan for non-food purposes is permitted until existing stocks are exhausted, as long as such use is in accordance with the labeling.

After these dates, all respective sale, distribution, and use of existing stocks is prohibited, except for sale and distribution for export and for proper disposal.

EPA will continue to update the public as it evaluates and takes any actions related to chlorpyrifos use. For more information, visit EPA's [website](#).

For more information, view the [Federal Register Notice](#)

(EPA, March 14, 2024)

<https://www.epa.gov/pesticides/epa-update-existing-stocks-provisions-three-chlorpyrifos-products>

BAYER APPLIES FOR NEW DICAMBA LABEL

A new chapter in the saga of dicamba herbicides began on Monday, March 11, as Bayer once again initiated the registration process with EPA for its product, XtendiMax, for use in dicamba-tolerant soybeans and cotton in 2025.

The move comes just more than a month after a federal court in Arizona vacated the 2020 registrations of three "over-the-top" dicamba products previously approved by EPA, including XtendiMax, BASF's Engenia and Syngenta's Tavium. The court's action led EPA to issue an existing stocks order for the 2024 season on Feb. 14. This allows use of the herbicides already distributed from the product registrants following application cutoff dates on the herbicides' previously approved labels. The 2020 registrations originally had allowed for labeled use through December 2025.

In a statement sent to DTN, a Bayer spokesperson said "our priority is to have a solution available for growers for the 2025 season.

"At this point, we can share that our submission does include changes compared to previous years," the spokesperson wrote. "We will continue to be actively engaged with the EPA, grower groups and others working toward a solution for 2025 and beyond. We stand fully behind our technology and believe growers should have access to vital tools."

Bayer declined to elaborate further on how its latest XtendiMax registration application varied from previous iterations. However, in a February interview with DTN following EPA's issuance of the existing stocks order, Wes Hays, Bayer vice president of North American soybean product management, said the company had been suggesting farmers move application of its dicamba product earlier in the season to either pre-plant or at-plant.

"There's still farmers that used dicamba over the top in the past few seasons, and they can be very successful with those applications," Hays said. "But we know that you can get really good weed control moving it earlier and then using things like Warrant herbicide, an encapsulated acetochlor, as a residual along with either Roundup or a glufosinate product as a post if they need it."

DTN reached out to EPA, and the federal agency confirmed receipt of Bayer's registration package for XtendiMax for 2025 and beyond. Under the Pesticide Registration Improvement Act, EPA has 21 days after it receives a registration application and fee to conduct an initial screen of the application's contents for completeness and for the applicant to make any necessary corrections. If the contents are not completed within 21 days, EPA may reject the application.

An EPA spokesperson wrote that the registration would not begin work on this action, which will include an initial 30-day public comment period for the notice of receipt of the package, until the end of the 21-day content screen.

Following the initial 21-day content screen, EPA checks to make sure the application is ready for a comprehensive review called the 45/90-day Preliminary Technical Screen. In this screening, EPA determines whether the data and information submitted with the application are adequate and sufficient; consistent with the proposed labeling and any proposed tolerance or tolerance exemption; and sufficient such that a full review could result in the granting of the application.

Once a pesticide product application passes both screening periods, EPA will complete a comprehensive science review. Any data deficiencies or additional information needed to complete the reviews will result in EPA notifying the applicant. The applicant will have 75 days to make corrections or additions to complete the application.

In response to a DTN inquiry about efforts to obtain EPA registration for Tavium, Syngenta provided the following statement:

"Syngenta continues to stand fully behind Tavium for the 2024 growing season. We appreciate EPA's clear and timely guidance in its existing stocks order that allows for Tavium to be available to growers for use this season. We are considering our options to meet the needs of our customers in 2025 and beyond."

BASF, the registrant of Engenia, did not immediately respond to DTN's inquiry.

(Progressive Farmer, March 13, 2024)

<https://www.dtnpf.com/agriculture/web/ag/crops/article/2024/03/12/bayer-submits-xtendimax-registration>

ONE IN SEVEN U.S. TRAVELERS HAVE ENCOUNTERED MATTRESSES INFESTED WITH BED BUGS IN THE PAST YEAR

Waking up to find mysterious bites on your skin or spotting tiny insects in your bed might send shivers down your spine—these could be indicators of a bed bug infestation and one of the last experiences you want to have as a traveler.

These incidents are becoming more common for travelers, with recent [reports](#) of bed bugs at prominent Las Vegas hotels.

To find out how prevalent bed bugs are in paid accommodations, Sleep Doctor surveyed 1,565 Americans who stayed overnight in paid accommodations within the past year. With 14 percent reporting such encounters, these findings shed light on the extent of this issue and how it impacts travelers.

Twenty Percent of Bed Bug Spotters Were Sleeping in a 5-Star Hotel

In the past year, 14 percent of U.S. travelers say they have come across bed bugs. The survey revealed bed bug encounters across various types of accommodations.

The types of accommodations where guests encountered bed bugs in the past year (note: respondents could choose multiple answers) include:

- 1-Star Hotel (9 percent)
- 2-Star Hotel (16 percent)
- 3-Star Hotel (38 percent)
- 4-Star Hotel (30 percent)
- 5-Star Hotel (20 percent)
- Motel (20 percent)
- Bed and breakfast (10 percent)
- Vacation rental (E.g., Airbnb) (19 percent)
- Hostel (4 percent)

Attorney at Law [Christopher Johnston](#) isn't surprised these encounters have occurred across property types.

“The vast majority of bed bug cases have come from the budget properties,” says Johnston. “Although I haven't had a bed bug case from a high-end property in the last year, I know they are out there because bed bugs are challenging to eliminate.”

“When an infestation occurs, most properties do their best to move guests and fumigate the affected floors. This is often easier for a large property, as they have more room to move people. Smaller properties, however, often don't have that luxury which leads some to hold off on fumigation until the slow season. No property sets out to be a bed bug destination, but once they've checked in, they may never leave!”

6 in 10 saw bed bugs in the mattress

The presence of bed bugs became known to guests most commonly by visual identification of the critters (63 percent). Additionally, guests became aware of bed bugs after getting bites or skin reactions (60 percent), finding evidence (e.g., fecal stains, shed skins) on the mattress (49 percent), finding out other guests had reported bed bugs (19 percent), and being informed by staff or management (15 percent).

One in Three Slept In Bed With Bed Bugs Unknowingly

Nearly one-third (32 percent) of travelers didn't realize there were bed bugs until after they had slept in the bed, while 68 percent realized beforehand.

The majority of guests who realized there were bed bugs before sleeping in the bed decided to sleep in new accommodations. However, others stayed in the same accommodations in a different bed and a few resorted to sleeping on the floor. Surprisingly, 21 percent say they did still sleep in the bed.

The majority (66 percent) of guests say they were reimbursed for their troubles.

Dr. Thanu Jey, founder of [MediBrace](#), once encountered bed bugs in a budget New York City hotel.

“My reaction was a mix of frustration and concern for my well-being,” said Jey “The impact on my sleep was significant, as I found myself constantly checking for bugs and feeling uneasy. This experience made me more cautious when choosing accommodations, and I now thoroughly research hotels before booking. It also influenced my packing habits, as I now bring a small flashlight and bed bug spray when I travel.”

Eight in Ten Say The Encounter Affected Their Sleep For Days After

The majority (80 percent) of travelers who encountered bed bugs say it impacted their sleep for days.

Furthermore, 99 percent say the experience had an impact on the way they travel. Now, 73 percent say they will always check for bed bugs, 63 percent will spend more money to stay at nicer accommodations, and 55 percent will avoid certain accommodation companies/chains.

Most (94 percent) are now concerned about encountering bed bugs in future travel.

“It's important to note that the impact of encountering bed bugs extends beyond the initial exposure,” says [Dr. Michael Breus](#), clinical psychologist and sleep medicine expert at Sleep Doctor. “The aftermath of being bitten can linger, with skin irritation and persistent itching prolonging the discomfort. Furthermore, this experience

may serve as a lingering reminder, triggering elevated anxiety not only during travel but also in future circumstances.”

“To manage anxiety, empower yourself with knowledge,” explains Dr. Breus. “Understanding that the situation is temporary and poses no lasting harm can significantly diminish anxiety levels. You can also try engaging in pre-sleep distractions to redirect your focus away from worrisome thoughts. Finally, practices such as meditation, relaxation, or gentle stretching can be enormously helpful in reducing anxiety and helping you get a good night’s sleep.”

The survey was completed on SurveyMonkey in February 2024. In total, 1,565 Americans who stayed overnight in paid accommodations within the past year were surveyed. The sample was census balanced for age, region, and gender (PCT, March 11, 2024)
<https://www.pctonline.com/news/one-in-seven-us-travelers-have-encountered-mattress-infested-with-bed-bugs-in-the-last-year/>

SHOULD YOU CARE ABOUT WATER CARRIER PH?

One of the most common questions I received on the UGA 2024 Weed Science Revival Tour, or county weed meetings, was “Do I need to worry about water carrier pH?”

Best I can tell is that a traveling pH-adjusting salesman’s car broke down somewhere in south Georgia, so he had some extra time to chat it up with farmers in the area.

If you were to ask me to rank the many factors that influence herbicide performance, water carrier pH might (?) be on that list, but definitely not at the top. It has been my experience over the last three-plus decades that timing trumps everything.

Interestingly, when there was a significant difference in weed control between the different water pHs, it was $\leq 8\%$, so not a massive train wreck. Thus, a general rule of thumb is that most herbicides should work well when using water with a pH between 4.5 and 7.5.

Remember that many herbicides such as glyphosate and clethodim are weak acids, so when they are added to a spray tank, the water pH will drop. The same thing happens with ammonium sulfate.

If you are looking for some more information about spray adjuvants, check out the Council of Producers and Distributors of Agrotechnology [Adjuvant Certification Program](#). Adjuvants that have this certification have met 17 benchmark qualifications of a consistent and quality adjuvant.

I began my weed science career way back in 1987. Since then, I have almost never (except for volatility reduction agents with dicamba and AMS with glyphosate) added water conditioning or pH modifying adjuvants to any of my herbicide treatments on a routine basis. But, my water carrier pH values (in 3 different states) have generally been around 6 to 7, so there was really no need.

I have never been formally approached by pH adjuvant purveyors to do any real scientific testing, so maybe I have missed the boat?

Bottomline on water carrier pH, in my opinion, is to regularly have your water tested at the very least once a year. If the pH is too high (>7.5) or too low (<4.5), put something in the tank to fix it. If not, don’t worry about it. Spend more of your brain power trying to figure out a better way to spray on time with the right product and rate!

Wishing you the best of luck in 2024!

As always, good weed hunting!

Prostko is a University of Georgia Extension weed specialist.

(Farm Progress, March 14, 2024)
<https://www.farmprogress.com/weeds/should-you-care-about-water-carrier-ph->

RAPID CROSS-RESISTANCE BRINGING COCKROACHES CLOSER TO INVINCIBILITY

Cockroaches are serious threats to human health. They carry dozens of types of bacteria, such as E. coli and salmonella, that can sicken people. And the saliva, feces and body parts they leave behind may not only trigger allergies and asthma but could cause the condition in some children.

A Purdue University study led by Michael Scharf, professor and O.W. Rollins/Orkin Chair in the Department of Entomology, now finds evidence that German cockroaches (*Blattella germanica* L.) are becoming more difficult to eliminate as they develop cross-resistance to exterminators' best insecticides. The problem is especially prevalent in urban areas and in low-income or federally subsidized housing where resources to effectively combat the pests aren't as available.

"This is a previously unrealized challenge in cockroaches," said Scharf, whose findings were published in the journal *Scientific Reports*. "Cockroaches developing resistance to multiple classes of insecticides at once will make controlling these pests almost impossible with chemicals alone."

Each class of insecticide works in a different way to kill cockroaches. Exterminators will often use insecticides that are a mixture of multiple classes or change classes from treatment to treatment. The hope is that even if a small percentage of cockroaches is resistant to one class, insecticides from other classes will eliminate them.

Scharf and his study co-authors set out to test those methods at multi-unit buildings in Indiana and Illinois over six months. In one treatment, three insecticides from different classes were rotated into use each month for three months and then repeated. In the second, they used a mixture of two insecticides from different classes for six months. In the third, they chose an insecticide to

which cockroaches had low-level starting resistance and used it the entire time.

In each location, cockroaches were captured before the study and lab-tested to determine the most effective insecticides for each treatment, setting up the scientists for the best possible outcomes.

"If you have the ability to test the roaches first and pick an insecticide that has low resistance, that ups the odds," Scharf said. "But even then, we had trouble controlling populations."

Rotating three insecticides, the researchers were able to keep cockroach populations flat over a six-month period, but they could not reduce them. The two-insecticide mixture did not work, and cockroach populations flourished.

In one of the single-insecticide experiments, Scharf and colleagues found that there was little starting resistance to the chosen insecticide, and they were able to all but eliminate the cockroach population. In the other, there was about 10 percent starting resistance. In that experiment, populations grew.

In later lab tests of the remaining cockroaches, Scharf and the team found that cross-resistance likely played a significant role. A certain percentage of cockroaches would be resistant to a particular class of pesticide. Those that survived a treatment and their offspring would be essentially immune to that insecticide going forward. But they also gained resistance to other classes of insecticide, even if they hadn't been exposed to them and had not had previous resistance.

"We would see resistance increase four- or six-fold in just one generation," Scharf said. "We didn't have a clue that something like that could happen this fast."

Female cockroaches have a three-month reproductive cycle during which they can have up to 50 offspring. If even a small percentage of cockroaches is resistant to an insecticide, and those cockroaches gain cross-resistance, a population knocked down by a single treatment could explode again within months.

That's why an integrated pest management approach is critical, Scharf said. He recommends combining chemical treatments with traps, improved sanitation and vacuums that can remove cockroaches.

“Some of these methods are more expensive than using only insecticides, but if those insecticides aren't going to control or eliminate a population, you're just throwing money away,” Scharf said. “Combining several methods will be the most effective way to eliminate cockroaches.”

The U.S. Department of Housing and Urban Development the O.W. Rollins/Orkin endowment in the Purdue Department of Entomology supported this research.

Source: Purdue University

(PCT Online, March 13, 2024)

<https://www.pctonline.com/news/rapid-cross-resistance-cockroaches-purdue/>

CEU Meetings

Please note that some of these meetings are virtual using Zoom or Microsoft Teams. Please contact the meeting host directly if you have any questions.

Date: April 2, 2024

Title: Okfuskee County Spring Pesticide Applicator Event

Location: Contact for Location

Contact: Brice Callahan (918) 623-0641

CEU's:	Category(s):
2	Private
2	1A
2	10

Date: April 4, 2024

Title: Cimarron Ag Conference

Location: Noble County Fairgrounds

Contact: Rick Clovis (918) 762-2735

<https://calendar.okstate.edu/oces/?trumbaEmbed=view%3devent%26eventid%3d173688631>

CEU's:	Category(s):
4	Private
4	1A
2	6
5	10

Date: April 4, 2024

Title: Oklahoma City Farm Show

Effective Sprayer Calibration

Location: Oklahoma City Fairgrounds

Contact: Michael Trammell (405) 273-7683

<https://oklahomacityfarmshow.com/>

CEU's:	Category(s):
1	Private
1	1A
1	10

Date: April 18, 2024

Title: Cotton County Cotton Meeting
Location: Contact for Location
Contact: Kimbreley Davis (580) 875-3136

CEU's:	Category(s):
2	Private
2	1A
2	10

Date: May 10, 2024

Title: Oklahoma State University Southeast Oklahoma Forest Health Workshop
Location: Contact for Location
Contact: Ryan DeSantis (405) 744-5463

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

Date: April 22, 2024

Title: Cotton County Wheat Tour & Educational Program
Location: Contact for Location
Contact: Kimbreley Davis (580) 875-3136

CEU's:	Category(s):
2	Private
2	1A
2	10

Date: June 4, 2024

Title: Oklahoma State University 2024 Cross Timbers Forest & Range Management Field Day
Location: Contact for Location
Contact: Ryan DeSantis (405) 744-5463

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

Date: April 23, 2024

Title: OWGA Kingfisher Area Producer Meeting
Location: Cimarron Electric Cooperative Bldg.
Contact: Tammy Ford-Miller (580) 233-9516

CEU's:	Category(s):
1	Private
1	1A
1	10

Date: October 1, 2024

Title: ENSYSTEX 2024 Workshop
Location: TBA Tulsa OK
Contact: Don Stetler (281) 217-2965
<https://ceuworkshop.com/>

CEU's:	Category(s):
1	7A

Date: May 17, 2024

Title: Grady County Ag. Producers Meeting
Location: Chickasha Contact for Location
Contact: Liberty Galvin (405) 334-7676

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

ODAFF Approved Online CEU Course Links

Online Pest Control Courses

<https://www.onlinepestcontrolcourses.com/>

PestED.com

<https://www.pested.com/>

Certified Training Institute

<https://www.certifiedtraininginstitute.com/>

WSU URBAN IPM AND PESTICIDE SAFETY EDUCATION PROGRAM

<https://pep.wsu.edu/rct/recertonline/>

CEU University

<http://www.ceuschool.org/>

Technical Learning College

<http://www.abctlc.com/>

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/>

Veseris

<http://www.pestweb.com/>

AG CEU Online

<https://agceuonline.com/courses/state/37>

Target Specialty Products Online Training

<https://www.target-specialty.com/training/online-training>

MarKev Training <https://www.markevtraining.com/>

For more information and an updated list of CEU meetings, click on this link:

<http://www.kellysolutions.com/OK/applicators/courses/searchCourseTitle.asp>

ODAFF Test Information

Testing will be done at testing centers in multiple locations around the state by PSI Services LLC.

For more information and instructions, please go to <https://bit.ly/3sF4y0x>.

Reservation must be made in advance at www.psiexams.com/ or call **855-579-4643**

PSI locations.

Oklahoma City 3800 N Classen Blvd, Ste C-20, Oklahoma City, OK 73118

Tulsa 2816 East 51st Street, Suite 101, Tulsa, OK 74105

McAlester 21 East Carl Albert Parkway (US Hwy 270), McAlester, Oklahoma 74501

Woodward 1915 Oklahoma Ave, Suite 3, Woodward, OK 73801

Lawton Great Plains Technology Center, 4500 West Lee Blvd Building 300- RM 308, Lawton, OK 73505

Enid Autry Technology Center, 1201 W. Willow Rd, Enid, OK 73703

Ponca City Pioneer Technology Center, 2101 N Ash, Ponca City, OK 74601

If you have questions on pesticide certification. Please email or call:

Kevin Shelton
405-744-1060 kevin.shelton@okstate.edu or

Charles Luper
405-744-5808 charles.luper@okstate.edu

**Pesticide Safety
Education Program**

