

PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University

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RENEW CERTIFICATIONS BY DECEMBER 31.

Recertification for applicators in categories 1a Ag Plant, 15 Aerial, 7b Structural, 10 Demonstration and Research and 16 Private Applicator must be completed by December 31, 2023. This is to make sure applicators will have valid certifications on January 1, 2024.

Applicators that have reached the required Continuing Education Units (CEUs) must complete certification by paying the \$50 recertification fee before December 31, 2023 to continue their certification.

Applicators that chose to not recertify by CEUs must re-test in their category by taking the exam before December 31, 2023 to continue their certification into the next cycle.

Testing must be done at a PSI test center. More information and links to sign up for testing can be found here. <https://extension.okstate.edu/programs/pesticide-safety-education/odaff-pesticide-applicator-testing-procedure/> (OSU PSEP November 1, 2023)

EPA REQUESTS COMMENT ON MODERNIZING PESTICIDE LABEL SYSTEM TO IMPROVE SAFETY AND ACCESSIBILITY

The U.S. Environmental Protection agency is requesting feedback on its plan to adopt digital pesticide labels that will make labeling information clearer, more consistent, and more accessible to users. The Agency is specifically requesting feedback on the proposed organization of digital labels and the proposed phases of developing these labels.

EPA's plan for digital labels covers the creation of both a structured label—which would provide a framework for consistently placing and ordering label information—and a digital label, which would organize the label information as electronic data. Currently, the pesticide product label registration process is mostly manual. The EPA staff reads through long, detailed label submissions to pull out specific information, like application rate, to enter into the EPA's Pesticide Product and Label System. This has led to time-consuming reviews and high cost to registrants and regulators. Further, the increasing complexity of pesticide labels and lack of standardized label format and language can create challenges for pesticide users and the public seeking information about which products to use and how to use them. The easier it is for users to find and understand label information, the better they can follow instructions to protect their safety and health and their environment.

Moving from traditional labels to digital labels and providing a database of accepted label language would make submitting label content simpler and more consistent for all pesticide registrants and would improve the Agency's ability to review and access submissions efficiently.

EPA is requesting public comment on all aspects of structured digital labels, including:

- anticipated benefits
- risks and challenges

- key information fields (such as pesticide use site, formulation, and maximum application rate), and
- potential phases of adoption.

The whitepaper will be open for 120 days for comment at www.regulations.gov on docket [EPA-HQ-OPP-2023-0562](https://www.epa.gov/pesticides/epa-requests-comment-modernizing-pesticide-label-system-improve-safety-and-accessibility). (EPA, November 15, 2023) <https://www.epa.gov/pesticides/epa-requests-comment-modernizing-pesticide-label-system-improve-safety-and-accessibility>

EPA PUBLISHES NEW WEBPAGE TO ANSWER FREQUENTLY ASKED QUESTIONS ON THE EPA/FDA WHITEPAPER ON MODERNIZING OVERSIGHT OF PRODUCTS FOR ANIMALS REGULATED AS PESTICIDES OR NEW ANIMAL DRUGS

The U.S. Environmental Protection Agency (EPA) and the U.S. Food and Drug Administration (FDA) are publishing [new web content](#) to provide an overview of the topics raised during the public comment period and to answer frequently asked questions about EPA and FDA's whitepaper, [“A Modern Approach to EPA and FDA Product Oversight.”](#)

In February 2023, EPA and FDA released a whitepaper describing approaches for updating the agencies' oversight of various animal products regulated as either pesticides or new animal drugs. It describes challenges with the way EPA and FDA currently regulate these products and highlights the potential benefits of a modernized approach for oversight, particularly the transfer of product oversight for topically administered flea and tick products from EPA to FDA. Any change to regulatory jurisdiction, however, has not been formally

proposed or finalized by the agencies. Rather, through the whitepaper, the agencies sought public input on whether to potentially transfer oversight of these products and, if so, how best to do so.

EPA and FDA opened a 60-day public comment period on Feb. 23, 2023. The agencies received over 18,000 comments from environmental organizations, veterinarians, industry, pet and livestock owners, and other members of the public. In addition to the comment period, the agencies also collected stakeholder feedback during a public meeting on March 22, 2023. All comments received during the comment period and the public meeting, are posted in docket [EPA-HQ-OPP-2023-0103](#).

In reviewing the comments, EPA and FDA identified common questions from stakeholders, such as:

- How do EPA and FDA currently regulate products and review animal safety and incident data?
- How could EPA and FDA coordinate more closely on animal health, environmental, and efficacy considerations for these products?
- If products are transferred to FDA, how would products—particularly those used to protect livestock and honeybees—move from EPA to FDA? What would it cost for product manufacturers, how could it impact consumer access to products, and what would the FDA approval process look like?

EPA and FDA also identified some general comments and concerns from stakeholders, including:

- Support for an approach that would enhance animal safety for products used on pets, such as flea and tick products applied to cats and dogs.
- Recognition that FDA has a more robust regulatory infrastructure for regulating products used on or in animals.
- Support for a modernized approach to regulate genetically engineered pest animals used for population control (such as genetically engineered mosquitoes).

- Desire for continued agency transparency and outreach as the modern approach is developed and possibly implemented.

As an initial step, the agencies have published a [new website](#) to answer some of the public's most frequently asked questions.

At this time, the agencies do not have a timeline for formalizing any of the approaches discussed in the whitepaper and anticipate that if the agencies implement any such changes, it could take several years to come to fruition. EPA and FDA appreciate the stakeholder engagement received to date and look forward to continuing the conversation.

[View the Q&A](#)

(EPA, November 7, 2023)

<https://www.epa.gov/pesticides/epa-publishes-new-webpage-answer-frequently-asked-questions-epafda-whitepaper>

EPA APPROVES STRENGTHENED PESTICIDE SAFETY PLANS FOR CERTIFYING APPLICATORS

The U.S. Environmental Protection Agency (EPA), in collaboration with state and tribal co-regulators, is strengthening the protection of human health and the environment and reaffirming its commitment to environmental justice by announcing the final approval of 67 updated plans for certifying applicators of Restricted Use Pesticides (RUPs). RUPs are pesticides that are the most acutely toxic pesticides or those needing to be applied with special care. With this announcement, all areas of the U.S. will be able to continue certifying applicators of RUPs, but now must also begin the process of holding RUP applicators to higher safety standards.

On January 4, 2017, EPA updated the Certification of Pesticide Applicators (CPA) regulations to set stronger standards for those who apply RUPs, which can only be used by certified applicators or individuals under a certified applicator's direct supervision, not by the general public. Applicators are certified by federal agency, state, territory, and tribal certifying authorities with an EPA-approved certification plan by completing a comprehensive training program and/or passing a written exam.

The 2017 CPA rule required that authorities certifying RUP applicators submit revised plans to EPA for approval by an extended deadline of November 4, 2023 that include:

- *Enhanced competency requirements and assessment:* Applicators must demonstrate they are competent to use RUPs through the completion of more comprehensive training programs and/or passing a written exam. Competency standards now include more specific information on pesticide application and safe use.
- *New specialized categories:* A certification is now required for aerial, fumigation, and predator control RUPs. These high-risk pesticides now require specific training due to the difficulty of application without exposing people to the pesticides.
- *Minimum age restrictions:* Applicators and noncertified applicators under a certified applicator's direct supervision must be at least 18 to apply RUPs (with a limited age exemption (16) for some uses on family farms by noncertified applicators under the direct supervision of a certified applicator who is an immediate family member).
- *Noncertified applicator qualifications and supervisor requirements:* Those applying RUPs under the direct supervision of a certified applicator must receive safety training in a manner they can understand. Applicators must verify training records for those working under their direct supervision prior to applying RUPs.
- *Recertification:* Recertification programs must ensure that applicators continue to maintain a level of competency necessary to use RUPs

without causing unreasonable adverse effects. Certifications are now valid for a maximum of only five years, whereas previously there was no federal limit.

EPA and certifying authorities from all 50 states, 5 territories, 6 federal agencies, 6 tribes, and the District of Columbia have been coordinating throughout the plan approval process for over 3 years, an effort which has resulted and will continue to result in modified plans that protect the environment and human health, including the health of certified pesticide applicators and those under their direct supervision, and will ensure that certified applicators are trained to prevent bystander and worker exposures. Plans have been approved on a rolling basis since spring of 2022. EPA has approved five tribal plans, with one remaining tribal plan currently being finalized for approval. In the interim, applicators certified under the tribe's existing plan will be transitioned to EPA federal certification under the EPA Plan for applicators of RUPs in Indian country until the revised plan is approved. The next phase for the CPA has begun as certifying authorities enhance certification programs according to the standards and implementation schedules in their plans.

Upon publication of the Federal Register notice detailing the approval of the certification plans, a list of the plans will be available in docket EPA-HQ-OPP-2022-0509 at www.regulations.gov. Copies of EPA-approved certification plans can be found on the [Certification Plan and Reporting Database \(CPARD\)](#). For more information regarding the reviews and approvals of these certification plans, visit EPA's [Certification Standards for Pesticide Applicators website](#) or [read more](#) about the [2023 EPA Plan to Certify Pesticide Applicators in Indian Country](#).

(EPA, November 3, 2023)

<https://www.epa.gov/pesticides/epa-approves-strengthened-pesticide-safety-plans-certifying-applicators>

COURT TOSSES EPA CHLORPYRIFOS ACTION

A federal appeals court threw out EPA's actions banning the insecticide chlorpyrifos, ruling on Thursday the agency's actions were arbitrary and capricious.

The ruling could clear the way for EPA to restore chlorpyrifos for the 2024 growing season. However, the ruling by the Eighth Circuit Court of Appeals is in direct conflict with a ruling two years ago by the Ninth Circuit.

EPA finalized a rule on Feb. 28, 2022, revoking the food tolerances for chlorpyrifos, effectively banning legal use of the insecticide among U.S. farmers. That rule was issued by the Biden EPA in response to an order from the U.S. Court of Appeals for the Ninth Circuit.

In its ruling on Thursday, the U.S. Court of Appeals for the Eighth Circuit said the EPA inappropriately rushed to meet a court deadline.

"The agency might have needed to move more quickly than usual to confirm the safety findings and start the process of canceling and adjusting registrations within the Ninth Circuit's deadline," the Eighth Circuit said. "But those are matters of policy and practicality, not statutory authority. The point is that the EPA should not have reflexively rejected an approach it had the power to adopt, even if it would have required more work."

Because the EPA was pressed to meet the Ninth Circuit's deadline, the Eighth Circuit said the agency "had only one real option: revoke all tolerances and ban chlorpyrifos. Its theory predetermined the outcome: 'exposures from (the 11 proposed) uses alone could not reasonably be considered as 'anticipated' since they did not yet (nor did EPA have reason to believe that they would) reflect the exposures people would be exposed to in the real world.'"

The court's ruling was met with celebration and relief from several agriculture interest groups.

The American Farm Bureau Federation was one of several agriculture organizations that sued EPA in the

Eighth Circuit, alleging the EPA "ignored scientific evidence" that proved chlorpyrifos was safe.

"AFBF appreciates the Eighth Circuit Court of Appeals for recognizing that the Environmental Protection Agency failed to follow the law when it revoked the use of chlorpyrifos," AFBF President Zippy Duvall said in a statement.

"Farmers and ranchers are committed to growing safe and nutritious food, and they use science to guide decisions on how to manage pests and insects. Today's decision sends a message to EPA that it, too, must use sound science when drafting rules."

Daryl Cates, a soybean farmer from Illinois and president of the American Soybean Association, said in a statement the ruling was important because it holds EPA accountable for considering science when acting.

"Federal agencies cannot be permitted to ignore their own science at the expense of America's farmers," Cates said.

"This ruling will restore safe, effective uses of a tool needed by many growers to protect crops from damaging pests and help preserve an affordable food supply."

Nate Hultgren, president of the American Sugar beet Growers Association, said the loss of chlorpyrifos forced many farmers to seek out more expensive options for fighting pests. Other farmers lost the only effective tool they had to protect their crops from certain pests.

"They had to use multiple pesticides applied multiple times with inadequate effectiveness," Hultgren said in a statement.

"This court's ruling supports science-based decisions. It allows our industry to safely use this product to protect our fragile plants and keep our farmers economically viable."

The EPA issued an interim registration for the insecticide in December 2020 before the Ninth Circuit handed down its order in April 2021. That order led EPA to issue its food tolerance revocation.

In the December 2020 action by EPA, it found 11 high-benefit, low-risk crop uses for chlorpyrifos. That finding was the subject of the lawsuit in the Eighth Circuit.

The Eighth Circuit said the agency could have implemented a partial ban like it has with other chemicals.

"It could have canceled some registrations and retained others that satisfied the statutory safety margin," the court said.

"The agency might have needed to move more quickly than usual to confirm the safety findings and start the process of canceling and adjusting registrations within the Ninth Circuit's deadline. But those are matters of policy and practicality, not statutory authority. The point is that the EPA should not have reflexively rejected an approach it had the power to adopt, even if it would have required more work."

(Progressive Farmer, November 2, 2023)

<https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/11/02/appeals-court-sides-ag-vacates-epa>

BED BUG RESEARCH ROUND-UP

Research from two U.S. universities show how bed bug control can be improved. One study offers practical advice to use now, and the other holds promise for more effective pesticides in the future.

1. Containerized Fumigation Eliminates Insecticide-Resistant Bed Bugs from Vehicles and Household Items

Virginia Tech University researchers have [documented](#) the efficacy of sulfuryl fluoride in eliminating bed bugs from vehicles and trailers filled with furniture and personal belongings.

According to Dr. Dini Miller and Dakotah Todd, a master's student in the Virginia Tech entomology

program, the field evaluation achieved 100 per cent mortality of bed bug eggs, nymphs and adults.

Todd believes fumigation is superior to other bed bug treatment methods for vehicles because the molecule size of sulfuryl fluoride can access spaces that spray insecticides cannot. And unlike heat, it will not damage console screens and sensitive electronic equipment found in today's vehicles. "Fumigation is the only tool we have for getting 100 per cent penetration into cracks, crevices and under plastic panels," he explains.

Using containerized fumigation, it also was possible to eliminate bed bugs from infested furniture, household items and personal belongings loaded into trailers. This lets clients keep items that may be difficult or costly to replace. It also offers a solution for eliminating insecticide-resistant bed bug populations and for treating sensitive items like artwork.

Containerized fumigation is a small-scale operation (compared to structural fumigation), so it is relatively inexpensive to undertake. It can be performed in a customer's driveway or at the pest control company's facility. While special training is required, it is not a difficult process to learn, says Miller.

"You don't have to be in the business of structural fumigation to offer this as an option for treating vehicles or household items. Fumigation is a proven and reliable method for bed bug control," she says.

[Learn more](#) about performing containerized fumigation per the University of Virginia field study.

2. Essential Oils Restore Pyrethroid Effectiveness Against Bed Bugs

Researchers from Purdue University have [discovered](#) how plant-based essential oil compounds act on bed bug physiology and how these oils can improve the lethality of pyrethroids.

"Our findings show that essential oils can kill bed bugs, but the combination of essential oils and pyrethroid insecticides has a synergistic effect," says Ameya Gondhalekar, a research associate professor in entomology.

This is especially important when dealing with bed bugs that have developed resistance to pyrethroids like deltamethrin.

Resistant bed bugs possess multiple mechanisms to resist pyrethroids, including overactive levels of an enzyme called cytochrome P450, which degrades deltamethrin. Gondhalekar and former Ph.D. student Sudip Gair, however, found that essential oil compounds (thymol from thyme, carvacrol from oregano and thyme, eugenol from clove) can bind to and deactivate that enzyme. This lets deltamethrin do its job on the bed bug's nervous system, killing the pest.

The researchers combined single doses of deltamethrin and essential oil compounds, which they anticipated would kill 25 to 50 per cent of resistant bed bugs. Instead, they found the combination killed more than 90 per cent of the resistant bed bugs.

"The essential oil compounds were able to neutralize those enzymes, allowing the deltamethrin to do its job," explains Gaire.

Gondhalekar's lab is researching potential formulations of essential oils and pyrethroids with the hope of maximizing insecticide effectiveness.

[Learn more](#) about these findings, which originally were published in the journal *Pesticide Biochemistry and Physiology* in 2020 and 2021.

(PCT, November 8, 2023)

<https://www.pctonline.com/news/bed-bug-research-roundup/>

STUDY FINDS NOVEL RELATIONSHIP BETWEEN SHINGLES AND PESTICIDE EXPOSURE

A study published in [Environment International](#) finds high pesticide exposure incidence associated with

shingles, a varicella-zoster virus (the same highly contagious virus that causes chickenpox) that reactivates in the body after having chicken pox. [Shingles](#) is a painful condition with a blistering rash that can lead to vision and hearing loss, brain and lung inflammation, and even death if not treated. Since shingles manifest decades after initial exposure, and the association is strongest among individuals already hospitalized for pesticide-related illnesses, researchers find the long-term/chronic effects most concerning. Although dermal pesticide exposure can cause a [range](#) of adverse reactions, including dermatitis, allergic sensitization, and cancer, any route of exposure can exacerbate dermal manifestations through immune system response, causing virus-based skin reactions like shingles.

People encounter toxic chemicals daily. However, frequent use of pesticides, including the use of [everyday products](#) like cleaning supplies, personal care products, agricultural chemicals, fabrics, non-stick cookware, and general airborne pollution, exacerbate chemical exposure risks. Dermal exposure is the most common pesticide exposure route, composing [95 percent](#) of all pesticide exposure incidents, and is a significant concern for [occupational \(work-related\) health](#).

The study notes, "[The] findings of elevated shingles risk associated with acute, clinically relevant pesticide exposures also highlights potential long-term costs of unintentional high-level pesticide exposures, especially those contributing to poisoning, which is a global problem in agricultural settings."

Using 22,753 licensed private pesticide applicators of 66 years and older with more than 12 consecutive months of Medicare hospital and outpatient coverage between 1999 and 2016, researchers identified patients who experience at least one shingles incident. Additionally, researchers gathered information on whether patients received medical care for pesticide-related illnesses and if they encountered high pesticide exposure events (HPEE) and poisoning. The results find that 2,396 pesticide applicators were diagnosed with shingles during the 1996 to 2016 timeframe, with higher shingles rates among patients hospitalized for pesticide-related illness, pesticide poisoning, and HPEE.

Thus, these initial findings suggest acute, high-level, and medically significant effects of pesticide exposure can increase shingles risk in individuals years to decades following exposure.

The skin responds to numerous external stimuli that can change its morphological (shape/structure), physiological (function), and histological (tissue) properties. Some responses to external stimuli are typical, including skin exposure to sunlight (UV-light) for tanning or water for wrinkling. However, exposure to excessive stimuli, including environmental contaminants, can propagate adverse, permanent changes to the skin. Just as excessive exposure to UV rays can cause skin discoloration and cancer, prolonged dermal contact with disinfectants can cause many adverse reactions, including skin [discoloration and cancer](#). One of the most predominant routes of pesticide exposure is dermal, and most disinfectants are potential skin irritants and sensitizers (allergens), suggesting that direct skin contact with these toxic chemicals and the adoption of proper application protocol is critical.

Most pesticides cause some form of acute skin irritation. Although certain pesticides are less harmful to dermal contact than others, many chemicals cause [irritant contact dermatitis \(ICD\) and allergic contact dermatitis \(ACD\)](#). ICD is a nonimmune response that manifests into localized skin inflammation by directly damaging the skin following toxic agent exposure. ACD is an immune response to skin contact with a dermal allergen that an individual is already allergic (sensitized) to, causing nonlocalized skin inflammation and systemic bodily response. However, chronic, cumulative exposure to more mild chemical irritants can elicit a skin reaction. As skin cancer has [increased significantly](#) over the past 50 years, many appropriately point to the link between sun exposure and the development of the disease. However, this research indicates that contact exposure to herbicides may be affecting risk. The authors point to studies finding links between skin adsorption of pesticides and exposure to UV radiation, as well as research that finds sunscreen itself may facilitate skin adsorption of pesticide residue.

This study is the first to demonstrate the occurrence of shingles associated with pesticide exposure. However, this study is not the first to establish pesticides'

relationship with immune system disorders related to the skin. A Dutch [study found](#) that infants exposed to dioxins (a pesticide byproduct) and PCBs have a higher incidence of recurrent chicken pox, while, as mentioned, is linked to shingles.

Although this study notes that the mechanism involved in shingles incidence is not well understood, studies, including this one, suggest immune system suppression is the main culprit. The immune system offers the best defense against viral infection, as the virus stimulates an innate and adaptive immune response to expel viral particles from the body. Innate immune responses are the first line of defense against viral infections, activating myeloid immunocytes (cells that mediate immune responses against pathogens). These mediating cells create antibodies that the complement system (a network of proteins that eliminate pathogens) enhances. Therefore, review researchers speculate that immunocytes and the complement system can restrict viral infections. However, coronavirus infections can suppress/delay interferon (INF) protein synthesis responsible for defending against viral infections, causing a lapse in the innate defense system. Similarly, an adaptive immune response involves various immune cells and antibodies essential to protect against coronavirus infections. Still, injury to cells responsible for safeguarding against viral infections can induce more severe disease progression.

The global rate of shingles over recent decades is increasing despite vaccine availability. Therefore, there is an urgent need to evaluate the effect pesticide exposure and use have on disease health outcomes. Although some practices and products can prevent viral infections, the continued use of toxic pesticides increases disease risk factors. Beyond Pesticides tracks the most recent studies related to pesticide exposure through our [Pesticide Induced Diseases Database \(PIDD\)](#). This database supports the clear need for strategic action to shift away from pesticide dependency. For more information on the multiple harms of pesticides, see PIDD pages on [body burdens](#) (including [skin reactions and diseases](#)), [immune system disorders](#), [cancer](#), and other conditions.

Additionally, replacing pesticides with [organic, nontoxic alternatives](#) is crucial for safeguarding public health, particularly in communities vulnerable to pesticide toxicity. For more information on how [organic](#) is the right choice, see Beyond Pesticides' webpage, [Health Benefits of Organic Agriculture](#). Furthermore, visit Beyond Pesticides' webpage on [Disinfectants and Sanitizers](#) and [Least Toxic Control of Pests In the Home and Garden](#) to learn more about safer, non-toxic pesticide alternatives.

(Beyond Pesticides, November 29, 2023)
<https://beyondpesticides.org/dailynewsblog/2023/11/study-finds-novel-relationship-between-shingles-and-pesticide-exposure/>

N.C. STATE RESEARCH: SUGAR AVERSION HAMPER COCKROACH COUPLING

A [new study from North Carolina State University](#) shows the behavioral mechanism behind a sweet cockroach mating ritual that takes a bitter turn, resulting in rejected males.

Male German cockroaches (*Blattella germanica*) offer females a pre-mating "gift" of body secretions that combines sugars and fats – think of the roach version of chocolate – in order to attract and hold female attention long enough to start copulation.

"This is common mating behavior in insects and some other animals: males present females a tasty or valuable gift – it's like Valentine's Day, but every day," said Coby Schal, Blanton J. Whitmire Distinguished Professor of Entomology at NC State and co-corresponding author of the paper.

The study shows, however, that females averse to the simple sugar glucose get an unpleasant surprise when they mix their saliva with the male secretions – saliva degrades the sweet treat of complex sugars to glucose, which becomes a bitter pill that ends the courtship ritual, with the female scurrying away without mating.

"We're seeing glucose-averse female German cockroaches turning down this nuptial gift – and the

chance to mate – and wanted to understand more about the mechanism behind it," said Ayako Wada-Katsumata, principal research scholar at NC State and co-corresponding author of the paper.

The study appears in [Nature Communications Biology](#). Postdoctoral scholar Eduardo Hatano, Ph.D. student Samantha McPherson and Jules Silverman, Charles G. Wright Distinguished Emeritus Professor of Entomology, co-authored the paper. The research was supported by the National Science Foundation under grant IOS-1557864, the U.S. Department of Housing and Urban Development Healthy Homes program (NCHHU0053-19), and the Blanton J. Whitmire Endowment at NC State.

(PCT Online, November 15, 2023)
<https://www.pctonline.com/news/nc-state-sugar-aversion-hampers-cockroach-coupling/>

COURT BLOCKS CALIFORNIA GLYPHOSATE WARNING

A federal appeals court has ruled the state of California cannot require a cancer warning label on Roundup products containing glyphosate. The ruling on Tuesday upheld a lower court's permanent injunction against the state and said it was unconstitutional to require such labels.

In 2015, the International Agency for Research on Cancer (IARC) declared glyphosate was "probably carcinogenic" to humans. A consensus of the scientific community does not share that determination.

Still, under California's Proposition 65 passed by voters in 1986, the state required businesses whose products exposed consumers to glyphosate to provide warnings that glyphosate is a carcinogen.

A cadre of agriculture interest groups and businesses, including the National Association of Wheat Growers, National Corn Growers Association, CropLife America, Agriculture Retailers Association and Monsanto

Company among others, took legal action that ended up at the U.S. Court of Appeals for the Ninth Circuit in San Francisco.

The plaintiffs alleged the warning label requirements violated their First Amendment rights to free speech.

"The panel concluded that the government's proposed Prop 65 warnings as applied to glyphosate were not purely factual and uncontroversial, and thus were subject to intermediate scrutiny," a three-judge panel of the Ninth Circuit said in its ruling.

"The proposed warning that 'glyphosate is known to cause cancer' was not purely factual because the word 'known' carries a complex legal meaning that consumers would not glean from the warning without context and thus the word was misleading. Moreover, saying that something is carcinogenic or has serious deleterious health effects -- without a strong scientific consensus that it does -- is controversial."

The Ninth Circuit judges said the warning on glyphosate products "still conveys the overall message that glyphosate is unsafe, which is, at best disputed. The warning therefore requires plaintiffs to convey a controversial, fiercely contested message that they fundamentally disagree with."

Brent Cheyne, an Oregon wheat farmer and National Association of Wheat Growers (NAWG) president, said the court's ruling was a long time coming.

"NAWG members knew we had a strong case and the decisions were based on the facts and science surrounding the safety of the product," Cheyne said in a statement.

"NAWG has been engaged in this legal battle as lead plaintiff challenging the California requirement for six years. California's Proposition 65 requirement threatened the use of glyphosate by requiring false and misleading labels on products that may contain glyphosate. We are pleased to see this action taken today by the court."

Bayer announced in July 2021 that it planned to stop selling Roundup containing glyphosate in the U.S. residential market beginning in 2023.

(Progressive Farmer, November 8, 2023)
<https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/11/08/9th-circuit-upholds-permanent>

VIRUSES SHOWN TO BE EFFECTIVE BIOLOGICAL CONTROL

Scientists at Minami Kyushu University in Japan have made a groundbreaking discovery of a new biological control for a target insect. They have identified a virus in tobacco cutworms that kills males, creating all-female generations. The discovery was described in a recent issue of the [Proceedings of the National Academies of Sciences](#) and [The New York Times](#) as evidence that multiple viruses have evolved to kill male insects.

This "male-killing" virus could be added to the growing attempts to control unwanted insects with biological, as distinguished from genetically engineered (GE) solutions. Efforts range from the [introduction of natural predators](#), to [radiation-based sterilization of insects, CRISPR-based genetic mutations, and other techniques](#). While the GE approach has run into controversy because of unanswered questions associated with their release into natural ecosystems, some approaches have also run into resistance problems. [Nearly a decade ago](#), researchers found armyworm resistance to *Bacillus thuringiensis* (Bt)-incorporated genetically engineered (GE) maize in the southeastern region of the U.S., calling this evolution of insect resistance to a naturally occurring soil bacterium engineered into crops "a serious threat to the sustainability of this technology."

The general population knows to avoid eating raw eggs because the bacteria salmonella, can live inside chicken eggs. Similarly, scientists have long known that microbes can live in insects' eggs. One of the scientists, Daisuke Kageyama, PhD, explained that the Wolbachia bacteria, another male-killer, is propagated through females. Dr. Kageyama told the *The New York Times*, "Males are useless" because they cannot help propagate the microbe, so the bacteria prevents male eggs from hatching.

The scientists in Japan discovered the new male-killing virus in tobacco cutworms and called it SIMKV. The New York Times described the discovery of the virus as being very lucky that research technician Misato Terao stumbled upon the caterpillars while cleaning the greenhouse and placed them in Yoshinori Shintani's lab. Even luckier was the temperature zone that enabled the virus to impact the resulting all-female generation of moths.

Anne Duploux, PhD, an evolutionary biologist at the University of Helsinki specializing in the study of microbial symbionts in insects, suggests that there is a diminishing window of opportunity for humanity to glean insights from these microbes sensitive to temperature changes. Due to climate change, she said, "we are likely to be losing many of these interactions" before they can be documented.

The authors of the study believe the identification of this male-killing virus in insects has the potential to revolutionize methods for managing agricultural pests and disease-carrying insects. Conventional pest control approaches rely on the use of toxic pesticides, which can adversely affect the environment and human health.

Many scientists believe a "female-killer" virus could be a more ecologically friendly approach to pest control. However, these biological controls do not always consider the entirety of a systems-based organic approach that focuses on the root causes of pest problems. To see a more systematic approach to mosquito control, see the city of Boulder, Colorado's [mosquito management plan](#), which includes [Living with Mosquitoes](#) and [Ecological Mosquito Management](#).

As scientists delve deeper into the study of the relationships between mosquitos and the interactions of species in an ecosystem, there is the prospect of uncovering novel strategies for pest and disease control that are both more efficacious and less environmentally harmful.

The revelation of the male-killing virus in insects serves as a poignant reminder of the extraordinary biodiversity of life on Earth. As scientists persist in their exploration of biological control, they are bound to reveal many

more captivating discoveries that will contribute to a better understanding of the natural world.

As *The New York Times* wrote in November 2018, "[The Insect Apocalypse is Here](#)." Karen Lipps, PhD, and other scientists and researchers observed the consequences for ecosystems that experience the loss of one species and its cascading impact on other species. [Dr. Lipps writes about the massive loss of frogs and other amphibians](#) due to a fungus and its resulting increase in insect populations. This, in turn, decreased snake populations (which would have preyed on the frogs).

In industrial agriculture, the typical approach to addressing pest issues often involves prioritizing the destruction of a single "pest" using a pesticide as the primary solution. This practice results in a cascade of harmful effects throughout the food chain, impacting both prey and predator as they fall victim to the broad-spectrum pesticides. While it intuitively makes sense that pesticides can affect more than just their intended insect targets, the extent of this issue came to light through a study conducted by German researchers and [published in PLOS One](#). Their findings, based on 27 years of trapping flying insects, reveals a staggering [75% decline](#) in overall biomass during the study period.

To learn more about using biological control for your yard and outdoor pest problems, make sure the use of any pest management fits within a broader, structured, [ecological approach to pest management](#). Use [Beyond Pesticides ManageSafe webpage to assist your research on biological controls](#).

(Beyond Pesticides, November 30, 2023)
<https://beyondpesticides.org/dailynewsblog/2023/11/virus-shown-to-be-effective-biological-control/>

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: December 5, 2023

Title: Cross Timbers Ag Producers Meeting

Location: Creek County Fairgrounds

17808 W Hwy 66 Kellyville, OK 74039

Contact Olivia Toothman (918) 224-2192

<https://calendar.okstate.edu/oces/?trumbaEmbed=view%3Devent%26eventid%3D163191859>

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

Date: December 6, 2023

Title: Holiday Classic Turf Grass CEU Seminars

Location: Canadian County OSU Extension 220 N

Country Club Rd, El Reno

Contact Kyle Worthington (405) 262-0155

<https://calendar.okstate.edu/oces/?trumbaEmbed=view%3Devent%26eventid%3d171125271>

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

Date: December 7-8, 2023

Title: KPCA Winter Conference

Location: Double Tree Hotel, Lawrence KS

Contact Jared Harris (785) 633-0912

<https://www.kansaspest.com/winter-conference>

CEU's:	Category(s):
1	3A
6	7A
7	7B
3	8
11	10

Date: December 19, 2023

Title: McClain County Drift Minimization & Safety

Location: McClain County OSU Extension

Contact Justin McDaniel (405) 527 -2174

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

Date: January 15-16, 2024

Title: 2024 OAAA Ag Aviation Expo

Location: Embassy Suites Norman OK

Contact Sandy Wells (405) 341-3548

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

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

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**

