

PESTICIDE REPORTS

Division of Agricultural Sciences and Natural Resources • Oklahoma State University
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CHEM

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PRIVATE APPLICATOR TESTING NOW ONLY AVAILABLE AT PSI TEST CENTERS

Private applicator testing has reverted to testing only at PSI test centers as of June 1, 2021. The exemption for open book testing because of Covid-19 expired on June 1, 2021.

Private applicator testing can be done at 7 PSI testing locations throughout Oklahoma. Study material can still be obtained at county extension offices or by calling 405-744-9037.

The current private applicator certification cycle runs through December 2023. Private applicators now have the option to recertify by continuing education units (CEU).

More information can be found at the OKSTATE Pesticide Education webpage at <https://extension.okstate.edu/programs/pesticide-safety-education/odaff-pesticide-applicator-testing-procedure/index.html>

(OSU PSEP)

COMMENT PERIOD EXTENDED FOR EPA'S ANALYSIS OF GROUNDWATER MODEL

EPA is extending the public comment period on its *Analysis of Subsurface Metabolism in Groundwater Modeling* to give the public and stakeholders more time to review and comment.

The current comment period was set to close on June 6, 2021, and EPA is extending the comment period for an additional 30 days. Comments can be submitted through July 6, 2021, to the docket EPA-HQ-OPP-2021-0241 at www.regulations.gov.

This report evaluates assumptions used in Pesticide in Water Calculator groundwater modeling, which EPA developed to estimate pesticide concentrations in vulnerable groundwater sources and is used in human dietary risk assessments. EPA will carefully consider public input when evaluating whether changes in the methodology for estimating pesticides concentrations in groundwater are necessary.

Learn more about the Pesticide in Water Calculator [here](#).

(EPA June 4, 2021)
<https://content.govdelivery.com/accounts/USAEPAO/PPT/bulletins/2e2b292>

EPA PROPOSES REGISTRATION OF THE NEW FUNGICIDE IPFLUFENOQUIN

The U.S. Environmental Protection Agency (EPA) is taking comments on its proposal to register the new active ingredient ipflufenquin.

Ipflufenquin may serve as a beneficial tool in managing several plant diseases, some of which are resistant to other fungicides. Proposed labeling is for scab and powdery mildew on pome fruits, and brown rot blossom blight, shot hole, anthracnose, scab, and *Alternaria* leaf spot on almond.

EPA's evaluation included a robust scientific assessment, which was used to conclude that there are no risks of concern for humans. The ecological risk assessment showed there were no risks of concern for any tested non-target, non-listed (i.e., not an endangered or threatened species) organism, including birds, honeybees, and terrestrial plants.

EPA is committed to making progress on protecting endangered species, including conducting analyses and putting mitigations in place earlier in the registration process. For ipflufenquin, EPA evaluated potential effects to federally endangered or threatened species ("listed species") and their designated critical habitats.

EPA has determined that ipflufenquin will have no effect on listed species except for listed terrestrial plants and those species that have an obligate relationship (i.e., needed for survival) with a terrestrial plant species. EPA has not yet made a final effects determination for listed terrestrial plants and those listed species that have an obligate relationship and is gathering additional information in order to make this decision.

EPA will accept public comments on this proposal via docket number EPA-HQ-OPP-2020-0225 at www.regulations.gov for 15 days.

(EPA, June 25, 2021)
<https://www.epa.gov/pesticides/epa-proposes-registration-new-fungicide-ipflufenquin>

PARKINSON'S LINKED TO PESTICIDE EXPOSURE IN VINEYARD FARMERS

Pesticide exposure may raise the risk of Parkinson's disease in farmers, research suggests.

The progressive condition is caused by a loss of nerve cells in the part of the brain responsible for producing the chemical dopamine, which helps co-ordinate movement.

Exactly why this occurs is unclear, however, the disease is known to run in families and is increasingly being linked to environmental factors, like traffic and air pollution.

To learn more, [scientists from Paris-Saclay University analyzed the pesticide exposure against any](#) Parkinson's diagnosis among farmers throughout France.

In the regions where the vineyards spent the most on pesticides, farmers were 16% more likely to develop the disease.

[Around 145,000 people are diagnosed with Parkinson's in the UK](#), with one in 37 expected to be told they have the disease in their lifetime.

In the US, [nearly 1 million are living with Parkinson's](#), expected to rise to 1.2 million by 2030.

To better understand the disease's onset, the Paris-Saclay scientists calculated the pesticide expenditure of more than 3,000 French regions in 2000.

The French National Health Insurance database then identified Parkinson's cases in farmers between 2010 and 2015.

In vineyards specifically, a high pesticide expenditure was linked to Parkinson's onset in male farmers and those over 75.

High fungicide use, pesticides that kill fungi or their spores, was associated with the disease.

Vineyards mainly use fungicides, while herbicides – substances that are toxic to weeds – and insecticides – toxic to insects – are also applied to cereal crops.

In France, vineyards made up just 3% of agricultural land in 2000, but accounted for 20% of all pesticides sold, of which 80% were fungicides.

Fungicides have previously been associated with Parkinson's in both real life and "toxicological" studies.

Although generally considered to be safe, farmers are exposed to "a large variety of pesticides over a long period of time", potentially causing any hazardous ingredients to build up.

"This result suggests agricultural practices and pesticides used in these vineyards may play a role in PD [Parkinson's disease] and farmers in these farms should benefit from preventive measures aiming at reducing exposure," the scientists wrote in the journal Environmental Research.

"Our study highlights the importance of considering farming type in studies on pesticides and PD and the usefulness of pesticides expenditures for exposure assessment." (Yahoo Life, June 29, 2021) <https://www.yahoo.com/lifestyle/parkinsons-linked-pesticide-vineyard-farmers-100324449.html>

ROUNDUP SETTLEMENT SCUTTLED

Editor's Note: This is an update to DTN's previous story on this federal court ruling, posted here: <https://www.dtnpf.com/...>

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LINCOLN, Neb. (DTN) -- A federal judge on Wednesday rejected Bayer's \$2 billion Roundup settlement on the grounds it would not adequately address the concerns of families who may later be diagnosed with non-Hodgkin's lymphoma and sent the company back to the drawing board.

"If a settlement that reasonably protects the interests of Roundup users who have not been diagnosed with NHL (non-Hodgkin's lymphoma) can be reached, that agreement must be presented on a new motion for preliminary approval," Judge Vince Chhabria said in his order handed down in the U.S. District Court for the Northern District of California.

At the beginning of February, Bayer announced it had reached a \$2 billion settlement resolving outstanding and future legal issues related to the herbicide glyphosate (found in Roundup). The proposed compensation would only have been considered for

those who develop non-Hodgkins lymphoma within four years of settlement.

Attorneys representing cancer victims objected to the proposed settlement earlier this month and, ultimately, Judge Chhabria agreed with them. In his newly issued opinion, Chhabria said Bayer's proposed settlement was "clearly unreasonable" with "glaring flaws" that "vastly overstated" the potential benefits to future cancer victims from Roundup, particularly those who have not yet been diagnosed.

The judge's ruling won't immediately affect the availability of Roundup products within the agricultural industry, but it dealt a blow to shareholder confidence in Bayer, whose shares fell nearly 5% in response to the news.

Opponents of glyphosate use greeted the ruling with celebration.

"We applaud the court for resoundingly rejecting this proposed settlement, which would leave many Roundup-using victims of non-Hodgkin lymphoma high and dry in order to limit Bayer/Monsanto's liability for their carcinogenic herbicide," said Bill Freese, science director at the Center for Food Safety said in a statement.

BAYER RESPONDS

Bayer released a statement on May 27, seeking to reassure the agricultural industry of the continued availability of Roundup, as well as shore up confidence among shareholders.

"[W]e have legal and commercial options that together will achieve a similar result in mitigating future litigation risk, and we will pursue them as quickly as possible," the statement read.

The statement outlined those five options:

--Bayer will revisit and "discuss the future" of its lawn and garden Roundup products targeted toward residential consumers, which account for the majority of claimants suing the company over health concerns. "None of these discussions will affect the availability of glyphosate-based products in markets for professional and agricultural users," the company stressed.

--The company will remain open to settling existing claims against Roundup. Bayer noted that it is nearing resolution on the majority of the claims it is facing, stating that approximately 96,000 claims "have been finalized, are in the final stages of resolution or involve claims that are not eligible."

--Bayer will "explore alternative solutions" to address future claims against Roundup. The company also still plans to create a scientific advisory panel "comprised of external scientific experts to review scientific information regarding the safety of Roundup," and publish their results.

--The company will continue to appeal past jury judgements against it and is pursuing a federal case that could have a major impact on the Bayer's future liability risk. "The Carson case, now before the 11th Circuit Court of Appeals, also raises the same federal preemption issue -- whether state-based failure-to-warn claims can stand if they are different from or conflict with federal law -- that is central to this litigation," the statement noted.

--Bayer will create a new website to compile scientific studies on Roundup's safety profile and ask EPA to put links to that website on the labels of their Roundup products.

BACKGROUND

These developments harken back to June 2020, when Bayer first reached a potential settlement of between \$8.8 billion and \$9.6 billion to resolve current and future litigation against its glyphosate and dicamba herbicides.

Bayer acquired Roundup brands as part of its \$63 billion purchase of Monsanto in 2017. Bayer continues to maintain that glyphosate is safe, regularly pointing out that the EPA and many other countries' regulatory agencies support glyphosate's continued use.

But during the past few years, Bayer has lost a number of lawsuits from plaintiffs who alleged their use and exposure to Roundup caused non-Hodgkin's lymphoma and other cancers.

EPA reapproved an interim registration of glyphosate in January 2020, but the agency has now asked for a federal court's permission to reexamine that decision, which is facing lawsuits from farmworker and

environmental groups. In particular, EPA wants to revisit glyphosate's registration in light of its own biological evaluation of glyphosate's potential effect on endangered species and critical habitats, which was released in November 2020 and found that the herbicide was "likely to adversely affect" the vast majority of the species and habitats the agency considered.

See more on that development here: <https://www.dtnpf.com/...>

Read more about Bayer's attempts to settle existing and future Roundup claims here:

(Progressive Farmer, May 27, 2021)
<https://www.dtnpf.com/agriculture/web/ag/crops/article/2021/05/27/court-rejects-proposed-bayer-future>

FIRST ASIAN GIANT HORNET CONFIRMED IN WASHINGTON IN 2021

Entomologists from the [Washington State Department of Agriculture](#) (WSDA) and [U.S. Department of Agriculture](#) (USDA) confirmed the first report of an Asian giant hornet in 2021 in Snohomish County, Wash.

This is the first confirmed report from Snohomish County and appears unrelated to the 2019-2020 Asian giant hornet introductions in Canada and Whatcom County, Wash.

A resident found a deceased hornet near Marysville, Wash., and submitted the report the evening of June 4 on [WSDA's online Hornet Watch Report Form](#). When WSDA retrieved the hornet on June 8, the specimen was dried out, and entomologists observed that it was a male.

Being the first detection in Snohomish County and having different coloring than previously collected specimens in North America, the hornet was submitted to the [USDA Animal and Plant Health Inspection Service](#) (USDA APHIS) for final verification.

On June 11, WSDA and USDA APHIS entomologists confirmed that the collected specimen was *Vespa mandarinia*, also known as the Asian giant hornet. WSDA DNA testing and the color variation of the specimen indicate that it appears unrelated to the Whatcom County or Canadian Asian giant hornet introductions.

Given the time of year, that it was a male, and that the specimen was exceptionally dry, entomologists believe the specimen is an old hornet from a previous season that wasn't discovered until now. New males usually don't emerge until at least July. There is no obvious pathway for how the hornet got to Marysville.

"The find is perplexing, because it is too early for a male to emerge," said Dr. Osama El-Lissy, deputy administrator for the [USDA's Plant Protection and Quarantine program](#). "Last year, the first males emerged in late July, which was earlier than expected. However, we will work with WSDA to survey the area to verify whether a population exists in Snohomish County. USDA will continue to provide technical expertise and monitor the situation in the state. USDA has already provided funding for survey and eradication activities as well as research into lures and population genetics."

Sven Spichiger, WSDA managing entomologist, said the new report underscores the importance of public reporting for suspected invasive species like the Asian giant hornet.

"We'll now be setting traps in the area and encouraging citizen scientists to trap in Snohomish and King counties," Spichiger said. "None of this would have happened without an alert resident taking the time to snap a photo and submit a report."

(PCT Online June 24, 2021)
<https://www.pctonline.com/article/asian-giant-hornet-confirmed-in-washington-state/>

ARE YOU MIXING PESTICIDES IN THE RIGHT ORDER?

Mixing pesticides in the wrong order can result in the formation of precipitates or other nasty goo.

Someone once asked me what I thought it takes to be a successful American farmer. It's very complicated. Most farmers I know personally have abundant faith in God, but they also must be a part-time agronomist, chemist, entomologist, plant pathologist, engineer, economist, soil scientist, weed scientist and climatologist. Lots of balls to juggle and plenty of opportunity to drop a few. Our country is lucky to have folks who have the guts to do this 365/24/7!

For this month, I would like to remind you once again of the importance of mixing sequence when it comes to applying several pesticides at one time in a single application. Mixing pesticides in the wrong order can result in the formation of precipitates or other nasty goo that can jam up an 800-gallon sprayer pretty quickly. Not a good day when that happens!

I was reminded of this issue personally when I tried to spray my own small pecan orchard with a mixture of Roundup and Alion (Figure 1).

Also, I have been privy to a few other unfortunate mixing catastrophes over the past month (Figure 2). FYI, not picking on any one product here since this can happen with any and pesticide mixed incorrectly.

The best place for you to get mixing sequence/order information is the pesticide label. If you look hard enough, you might also discover a few helpful cell phone apps. Your friendly neighborhood county extension agent can also assist you as well.

It can vary slightly depending upon products, but the general formulation science mixing order is:

1. Water soluble bags (WSB)
2. Water soluble granules (WSG)
3. Water dispersible granules (WG, XP, DF)
4. Wettable powders (WP)

5. Water based suspension concentrates/aqueous flowables (SC, F)
6. Water soluble concentrates (SL)
7. Suspoemulsions (SE)
8. Oil-based suspension concentrates (OD)
9. Emulsifiable concentrates (EC)
10. Surfactants, oils, adjuvants
11. Soluble fertilizers
12. Drift retardants

In the heat of the pest management battle, it is often easy to overlook the importance of mixing sequence when tank-mixing various pesticides. When the wind is blowing hard or it is too dry/hot, mixing order is probably the last thing on someone's mind. By taking some time to review the label beforehand, phoning a friend, or using a cell phone app, tank-mixing mishaps can be avoided.

(My apologies to my regular readers for missing my May 2021 Tailgate Talk. Like most of you, I have been busy planting, spraying, and worrying about the weather (too cold, too hot, too dry, too wet, and too windy). Also, I have been writing popular press articles for so long it has been difficult for me to come up with new topics that I have not already discussed. I would welcome any suggestions - eprosto@uga.edu.)

As always, good weed huntig!

(SouthwestFarmpress, June 16, 2021)

<https://www.farmprogress.com/herbicide/are-you-mixing-pesticides-right-order>

ARKANSAS COURT CHANGES DICAMBA DEADLINE

Soybean and cotton growers in Arkansas are free to spray the weedkiller dicamba on their crops until June 30 under an order from the Arkansas Supreme Court on Tuesday. It was the latest turnabout in court for use of the herbicide, which has been embraced by farmers as a tool against invasive weeds but criticized as too likely to evaporate and land on nontarget crops.

The state Supreme Court overrode a May 21 temporary restraining order from the Pulaski County Circuit Court that effectively made May 25 the last date for using dicamba during the growing season.

The county court, in turn, had blocked a State Plant Board regulation that set June 30 as the cut-off date for dicamba.

With the stay issued by the Supreme Court, the Plant Board regulation is in effect again. It dictates buffer zones designed to prevent accidental damage by dicamba. For example, it calls for a .25-mile buffer between fields where dicamba is applied and fields with cotton and soybean varieties that are not genetically engineered to tolerate the herbicide; it also requires .5 mile between dicamba applications and fields with organic crops or commercial-scale plantings of specialty crops and a 1-mile buffer between fields where dicamba is used and University of Arkansas ag research stations.

The Arkansas State Plant Board notice of the Supreme Court action is [available here](#).

(Successful Farming, May 25, 2021)
<https://www.agriculture.com/crops/crop-protection/sentris-and-glyphosate-tank-mix-compatibility-problems-reported-in-arkansas>

WHEN HERBICIDES GET HOT

Few farmers enjoy working outside when temperatures soar into the 90s or higher -- and they aren't alone.

Herbicides, weeds and crops all perform differently in high heat -- generally not in the applicator's favor. With hot, dry conditions roasting parts of the country this week, particularly the northern Midwest and Plains, weed scientists are asking farmers and applicators to keep these five things in mind before they roll the sprayer into their fields.

1. WATCH THE MERCURY

Droughty conditions expanded across the northern Midwest and Plains this past week, and as often happens, scorching hot temperatures played a role, explained DTN Ag Meteorologist John Baranick.

"For the most part, where drought currently is located is where the heat has been the most intense so far," he said. "Since June 2, temperatures have been in the 90s and sometimes eclipsed 100 degrees from the Dakotas

to Wisconsin. One-hundred-degree temperatures have also been a regular occurrence for West Texas."

Cooler temperatures are in the forecast for some of country next week, but not for long and not for everyone, Baranick added. "A front coming through the region Friday is knocking temperatures back several degrees, but we'll see temperatures rise back up into the 90s across the Plains, and possibly the western Midwest -- Iowa and Minnesota -- next week, while temperatures will be much more seasonable elsewhere."

2. TRY TO AVOID CROP INJURY

When heat and dryness stress a crop, its ability to rapidly metabolize and escape herbicide injury lessens. North Dakota State University weed scientist Joe Ikley said this scenario sometimes plays out when systemic herbicides such as growth regulators like dicamba are sprayed on heat-stressed corn plants. "It's just an additional stress on the plant," he told DTN.

Moreover, contact herbicides tend to become more potent in high heat, cautioned Iowa State University weed scientist Prashant Jha.

"Most contact herbicides (carfentrazone, atrazine, fomesafen, lactofen, fluthiacet, acifluorfen) become more active at high temperatures (90 degrees or above)," Jha wrote in a university news alert. "Increased activity of these herbicides under hot weather conditions may improve weed control, but can also increase risk of crop injury."

Growers who are spraying contact herbicides on a hot day and are worried about crop injury can safely use the lower labeled rates of the herbicide and its recommended adjuvant, given that weeds will be more susceptible to them in these conditions, especially if humidity is high as well, Jha noted.

Avoiding applications in the hottest midday hours can also give crops a break, especially corn plants, which tend to "take any stress a little harder on the chin," as Ikley puts it. "If your sole concern is crop stress, then evening spraying would be better than morning spraying, as that gives the crop all night to recover before the heat cranks up again the next day," he said.

3. EXPECT WEEDS TO SHAKE OFF SOME APPLICATIONS

It's not just crops that get weary and sluggish in hot conditions. Weeds will also slow their rate of growth, which is bad news for herbicide uptake, said Ikley. It can be especially problematic for systemic herbicides, which rely on a weed's healthy growth and uptake to do their damage. Aiming for labeled weed sizes will be especially important -- the smaller, the better, Ikley said.

"Herbicides that will have the largest drop in performance during drought conditions are usually systemic herbicides like Group 1 (ACCase inhibitor -- e.g., Select Max, Assure II, and Puma, etc.) and Group 2 (ALS inhibitor -- e.g., Raptor, and Pursuit, etc.) herbicides," Ikley listed in a university newsletter this week. "Glyphosate and Group 4 (auxin mimics -- e.g. dicamba and 2,4-D) will also have reduced efficacy in these conditions."

Even worse, some weeds actually pack on a tougher, thicker coat in the face of droughty conditions, which will limit the efficacy of any kind of herbicide, Ikley warned. "Weeds that have endured hot, droughty conditions may have already developed a thicker cuticle than normal in an attempt to slow their rate of transpiration or water loss," Ikley wrote. "Even after a field receives rainfall, the weed's cuticle will not 'shrink' back down immediately. This means any herbicide-containing droplet will have a tougher pathway to enter the plant."

When labels permit, Ikley recommends adding oil adjuvants or nitrogen-based spray additives like AMS or UAN to increase weed response. Keep in mind that this will also increase potential crop injury, he noted. "But many of our broadleaf crops, and specifically soybean, can recover from this type of injury," Ikley concluded. "In most cases, the yield loss due to weed competition would be worse than any crop response from the adjuvant."

Keep in mind that weeds' attempts to protect themselves from high heat and sun can thwart herbicides, as well. Grassy weeds will roll up like a cigar and broadleaf weeds will droop downward, both of which decrease spray coverage. Consider spraying in the morning and evening (while keeping an eye on temperature inversions) to avoid this, Ikley said.

4. BRACE FOR HERBICIDE EVAPORATION

Hot, dry air will result in more evaporation of fine spray droplets, often before they can reach their target weed leaves. Knowing the percentage of driftable fines that your nozzle produces is a good first step to avoiding this, Ikley said.

"If you know that percentage, it might be worth it to see if you can switch to a nozzle with similar droplet sizes, but lower driftable fines," he said. Specifically, you'll want to reduce the number of droplets smaller than 100 microns, added Ohio State University pesticide specialist Erdal Ozkan, in a newsletter this week.

Larger droplets are much more likely to survive the hot, dry fall to the crop canopy, Ozkan explained. For example, whereas a 70-micron droplet will completely evaporate after traveling 13 feet at 86 degrees, a 150-micron droplet will lose only 3% of its size in those conditions.

Another way to reduce those tiny, evaporation-prone droplets is to use drift-reducing agents, or DRAs, in your spray mixture, Ozkan wrote.

Finally, consider lowering your spray pressure, while slowing your sprayer speed. "What reducing spray pressure does is make larger droplets," Ikley explained. "The lower the pressure, the larger the droplets."

5. GUARD AGAINST VOLATILITY

As temperatures rise, so does the risk for volatility of herbicides, Ikley said. "Dicamba and 2,4-D are the primary ones we're concerned about," he said.

If you're spraying Xtend crops with dicamba this year, remember that volatility-reducing agents (VRAs) are required in the tank this year -- don't leave them out, Ikley warned.

But there is no such requirement for dicamba applications in corn, he added. "So volatility from dicamba use in corn could be a bigger issue for those spraying in heat," he said. "And we know that dicamba will volatilize more readily off leaf surfaces than bare soil, so given how much leaf area you have in a cornfield, that's going to be a risk."

Keep in mind that one state -- Illinois -- also bans spraying dicamba on days that the temperature climbs beyond 85 degrees, and a host of other new federal and state guidelines exist for dicamba applications this year. See them here: <https://www.dtnpf.com/...> and here: <https://www.dtnpf.com/...>.

See more from Ikley on spraying in hot conditions here: <https://www.ag.ndsu.edu/...>.

See Jha's article for Iowa State here: <https://crops.extension.iastate.edu/...>. You can find Ozkan's explanation of evaporation of herbicides in the heat here: <https://agcrops.osu.edu/...>.

(Successful Farming, June 9, 2021)

<https://www.agriculture.com/news/crops/arkansas-court-changes-dicamba-deadline>

(Progressive Farmer, June 11, 2021)

<https://www.dtnpf.com/agriculture/web/ag/crops/article/2021/06/11/five-things-watch-spraying-high-heat>

PAST USE OF LEAD ARSENATE PESTICIDES CONTINUE TO CONTAMINATE RESIDENTIAL AREAS 70 YEARS LATER

Lead arsenate pesticides continue to contaminate Central Washington residential areas that were once tree fruit orchards. Although these toxic legacy pesticides have not been in use for almost 70 years, the Washington State Department of Ecology [report](#) finds lead and arsenic soil concentrations above the Washington State cleanup levels. It is well-known that [traces of legacy \(past-use\) pesticides](#), like organochlorines, remain in the environment for decades—possibly centuries, post-final application. However, these chemicals have profound adverse impacts on human health, with links to cancer, reproductive and endocrine (hormone) disruption, and birth/developmental abnormalities. Current-use pesticides also contaminate the ecosystem via drift, runoff, and leaching. Therefore the impact of both current and past use of pesticides on human, animal, and environmental health, especially in combination, is critical to any safety analysis.

The researchers note, “Historical application of lead arsenate (LA) pesticides on tree fruit orchards has resulted in the accumulation of lead and arsenic in

shallow soil at concentrations above Washington State cleanup levels. These are levels that may be harmful to human health when properties are used for activities other than agricultural or industrial land uses. This report outlines a recommended approach for managing and mitigating LA pesticide soil contamination, as well as educating impacted people and communities about the issue.”

The Washington State Department of Ecology examined lead arsenate pesticide contamination in areas of Central Washington from historical tree fruit orchard practices. There are increasing concerns over health risks to residents living in areas of past pesticide use, especially for those unaware of possible contamination. Hence, the department established the Legacy Pesticide Working Group (LPWG) in 2019 to include stakeholders throughout Central Washington state “to address the complex issues surrounding lead and arsenic contamination on former orchard lands.”

For a year, the LPWG identified residential and commercial areas that were once tree fruit orchards. The group devised recommendations to help landowners, land developers, and communities combat contamination using the Washington State Model Toxics Control Act (MTCA) as a guide. The final recommendations include the following objectives:

- “Creating a process for evaluation of all properties.
- Notifying buyers and current homeowners concerning the specifics of LA pesticide contamination on their properties.
- Identifying actions that meet Ecology’s cleanup regulations.
- Creating a broad-based strategy for educating the public about managing the risk from [lead arsenate] pesticide contamination.”

The report finds approximately 115,000 acres of Central Washington has possible lead arsenate contamination from historical orchards, including existing and developing residential (i.e., single-family homes, apartment buildings) and commercial (i.e., malls, schools, parks) areas. From this data, the LPWG set up a “[Dirty Alert](#)” map highlighting historic orchards and possible lead arsenate contamination. Property owners can use the map to

assess whether they reside in an area of contamination based on previous orchard locations.

The issue of environmental pesticide contamination is not a new phenomenon, especially for legacy pesticides. Pesticides are pervasive in all ecosystems, [soils](#), water ([solid](#) and [liquid](#)), and [air](#), frequently at levels [exceeding](#) U.S. Environmental Protection Agency (EPA) standards. Many legacy pesticides are on the Stockholm Convention annex lists (i.e., [organochlorine compounds](#)) and are no longer manufactured or utilized. However, [90 percent](#) of Americans still have at least one pesticide biomarker (includes parent compound and breakdown products) in their body, including legacy compounds. The presence of pesticides in the body has implications for human health, especially during vulnerable life stages like childhood, puberty, pregnancy, and old age. Scientific literature [demonstrates](#) pesticides' long history of severe adverse human health effects (i.e., endocrine disruption, cancer, reproductive/birth abnormalities, neurotoxicity) and effects on [wildlife](#) and [biodiversity](#). Therefore, it is essential to address pesticide contamination using proper prevention practices, risk assessments, and clean-up methods to safeguard human, animal, and ecosystem health and services.

The study demonstrates most of the contamination in Central Washington is in the soil that can experience biological changes in the presence of synthetic chemical pollutants like pesticides. Past misconceptions assuming stable, banned chemicals like legacy pesticides would bind to soil and remain immobile are worrisome. However, studies find some current-use pesticides can induce changes in soil properties that re-release soil-bound, legacy chemicals into the ecosystem, contributing to contamination. A [2020 study](#) finds glyphosate use stimulates soil erosion responsible for soil-based chemical emergence. Continuous pesticide use leaves the dirt bare and more susceptible to decay from lack of organic material, altering the storage compartments of soil sediments from pesticide sinks to sources. Furthermore, soil pesticide contamination impacts organisms, including beneficial insects and microbes that provide essential [ecosystem services](#) by aerating the soil, cycling nutrients, and increasing microbial activity.

This report is a valuable tool that serves as a model for pesticide contamination evaluation and recommendations globally.

Although [lead](#) and [arsenic](#) are naturally occurring, these chemicals impact the endocrine system, kidneys, liver, heart, and brain. Exposure can prompt ailments like diabetes, reproductive dysfunction, and various cancers. Similar to current-use pesticides, the severity of poisoning depends upon the amount of chemical exposure, the length of exposure, and pre-established sensitivity to chemical exposure. Not only do reports like these protect future human health, but also human well-being. The current housing crisis demonstrates the need to transform idle landscapes into residential areas for housing development. However, similar to Central Washington, much of this idle land includes abandoned or barren agricultural pasture containing pesticide contamination from past use. In addition to agricultural land, the conversion of [golf courses](#)—known for using copious amounts of pesticides—into housing also poses similar health and environmental exposure risks. The researchers suggest decontaminating existing and developing residential areas, requiring property owners to investigate and clean up toxicants from land.

The researchers conclude, “The current confusion about the LA pesticide contamination issue has created a demand for significant education and outreach efforts geared toward reaching a wide variety of stakeholders. Areas of concern include ensuring all who may be affected (e.g., residents, local governments, developers) are aware of the issue; understanding who may be liable for historic LA pesticide contamination and required cleanup activities; creating consistent messaging and guidance related to compliance with MTCA; and making sure updated, accurate data is used to create easy to find mapping resources identifying areas that may be affected by historic LA pesticide applications.”

[Legacy pesticide poisoning in the environment](#) has extensive documentation, despite being banned for decades. Chronic, low-level exposure to pesticide residues in habitats weakens ecosystem health and productivity for all species, including humans. Organic production standards must adequately address problems associated with soil contaminants to protect soil health and productivity. The National Organic Standards Board must bring greater attention to the

damage that contamination from widespread pesticide use causes, going beyond the focus on residues in the finished food commodities.

(Beyond Pesticides, June 17, 2021)

<https://beyondpesticides.org/dailynewsblog/2021/06/past-use-of-lead-arsenate-pesticides-continue-to-contaminate-residential-areas-70-years-later/>

Date September 7-9, 2021

Title: ENSYSTEX - 2021 CEU Workshop

Location: TBA

Contact: Don Stetler (281) 217-2965

CEU's:	Category(s):
2	7A
6	7B

CEU Meetings

Please note that many of these meetings are now being done virtual. Please contact the meeting host directly if you have any questions.

Date October 6-7, 2021

Title: 2021 Fall OKVMA Conference

Location: Hard Rock Casino Catoosa OK

Contact: Kathy Markham (918)-256-9302

<https://okvma.com/conferences/>

Date July 21, 2021

Title: OARA Fumigation Methods and Best Practices

Location: Northwest Technology Center Alva OK

Contact: Tammy Ford-Miller (580)-233-9516

<https://web.oklahomaag.com/events/OGFA-Fumigation-Methods-and-Best-Practices-1046/details>

CEU's:	Category(s):
4	A
4	1A
6	3A
5	5
6	6
6	10

CEU's:	Category(s):
3	7C

Date July 23, 2021

Title: 2021 Oklahoma Fumigation Workshop

Location: OSU Greenhouse Learning Center Stillwater OK

Contact: Edmond Bonjour (405)-744-6489

https://secure.touchnet.com/C20271_ustores/web/store_main.jsp?STOREID=15

CEU's:	Category(s):
3	7C

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>

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

Norman Moore Norman Technology Center, 4701 12th Ave NW, Norman, Oklahoma, 73070

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

Find us on Twitter at @OkstatePestEd

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