

DAILY NEWS BLOG

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Pesticide Contaminated Cannabis in California Reveals Testing and Regulatory Failures



(*Beyond Pesticides*, July 9, 2024) Last month, California cannabis regulators recalled a pesticide-tainted vape, one of the contaminated products identified in a *Los Angeles Times* investigation. The report reveals that the California Department of Cannabis Control (DCC) has for months been aware of the presence of dangerous chemicals in legal cannabis sold to the public. Conducted by *Los Angeles Times* and *WeedWeek*, a cannabis industry newsletter, the investigation has uncovered alarming levels of the insecticide [chlorfenapyr](#) in legal cannabis products sold in state dispensaries. According to an article via the [National Institutes of Health](#), "Although [chlorfenapyr] has been identified as a moderately toxic pesticide by the World Health Organization (WHO), the mortality rate of poisoned patients is extremely high. There is no specific antidote for chlorfenapyr poisoning." The chemical is [associated](#) with adverse liver effects and is toxic to bees, birds, and aquatic organisms.

Despite claims that the state's cannabis is safe and regulated, many popular brands of vapes and pre-rolled joints were found to contain dangerous pesticides at levels exceeding state limits and federal standards for tobacco. This investigation comes on the heels of the discovery of large amounts of illegal Chinese pesticides at cannabis grow operations around the state. The findings are the latest in a series of [reports](#) about high rates of pesticides and other chemicals found in cannabis around the country. (See [here](#) and [here](#) for prior *Beyond Pesticides* reporting). With an estimated five million Californians consuming legal cannabis products monthly, the potential health consequences are extreme.

One Recall—Extensive Pesticide Contamination and Testing Laboratory Failures

The integrity of California's cannabis laboratory testing has come under scrutiny, as has the certifying company, Verity Analytics, which has since had its license suspended. The recalled product was among many tested by Infinite Chemical Analysis last fall and found to contain pesticide levels above state limits, despite having been previously certified as safe by other labs. Infinite Chemical Analysis lodged a complaint with the state in November 2023, noting that the now-recalled product contained [paclobutrazol](#) (a plant growth retardant and fungicide) and [trifloxystrobin](#) (a fungicide), chemicals found at levels deemed unsafe by California standards. Paclobutrazol is associated with genetic mutation and reproductive toxicity, is very toxic to aquatic life, and is a potential [endocrine disruptor](#). [Trifloxystrobin](#) is toxic and associated with negative reproductive, birth, and developmental effects, as

well as kidney and liver damage.

A significant issue within the California cannabis industry is the integrity of laboratory testing and its impact on regulatory oversight. Infinite Chemical Analysis Labs and Anresco Laboratories, testing labs for the cannabis industry filed [a lawsuit](#) on June 26 against 13 other laboratories for issuing false certificates of analysis (COAs). According to the complaint, this practice, known as “lab shopping,” involves cannabis producers selecting laboratories that are willing to overlook regulatory compliance, including: “fraudulent testing practices at the heart of this complaint involve the deliberate manipulation of testing results ...to hide dangerous contaminants in the products. This manipulation is not a result of mere negligence or error but is a calculated effort to misrepresent the actual makeup of cannabis products. Such practices are alarmingly widespread.”

Los Angeles Times and WeedWeek Investigation

To conduct the recent study, the *Los Angeles Times* and *WeedWeek* purchased cannabis products from licensed dispensaries across California, using two accredited labs—Anresco Laboratories and SC Labs—to screen the samples for over 100 pesticides, more than the 66 chemicals required by the state. Many samples were tested by both labs, with some undergoing repeat testing. In total, 66 tests were conducted across 42 products. Results from a state agriculture lab showed 16 additional pesticides present that the private labs were not equipped to measure, suggesting contamination may be even more widespread than uncovered

Out of 42 legal cannabis products tested, 25 show pesticide concentrations above allowed levels, and contaminants include chemicals linked to cancer, liver failure, thyroid disease, and neurological harm. Vapes from five well-known brands had pesticide levels exceeding federal thresholds for harm from a single exposure. Some products contained as many as two dozen different pesticides. The findings corroborate complaints filed by other private cannabis testing labs over the past eight months, suggesting contamination in over 250,000 vapes and pre-roll packages currently on store shelves. While most pesticides found were in low concentrations, some products had over 20 different pesticides; some levels exceeded the U.S. Environmental Protection Agency's (EPA) threshold for human health risk from a single exposure. The investigation identified 45 toxic chemicals in the products tested, with 29 products exceeding either state limits for cannabis or federal tobacco standards.

For example, chlorfenapyr—an insecticide not permitted on any food products or on California cannabis—was discovered at over two thousand times a base limit of .03 part per million used to calculate exceedances for pesticides prohibited upon detection. [Pymetrozine](#)—an insecticide prohibited in the European Union, Canada, and Norway as a known [reproductive toxicant and carcinogen](#)—was found at levels 762 times the reference base level. Notably, pymetrozine is not one of the 66 pesticides that undergo residue screening in California. In fact, ten of the 29 chemicals found to exceed the permitted limit are not included on California's list of required testing, so even if testing is performed correctly, these chemicals would not be identified. As a result, these products would then pass the certification process.

California Pesticide Residue Tolerances

California's Department of Pesticide Regulation (CA DPR) website and [regulations](#) state a pesticide product can be used on cannabis only if its active ingredient is exempt from federal residue tolerance requirements and either exempt from federal registration requirements or registered for a use that is broad enough to include use on cannabis plants. However, California has acknowledged the reality of pesticide use on cannabis, including potential overspray from neighboring farms and contamination of ingredients in cannabis edibles. As a result, the state has imposed limits on some pesticide residues in cannabis products instead of outright bans. As mentioned above, California has developed a list of 66 pesticides for screening by state-certified third-party labs. Twenty-one are Category I pesticides, banned for cannabis use due to their significant risks. Any detection of these results in a failed test. The other 45 are Category II pesticides, with specific action levels for ingestible and inhalable products. Growers can use these under certain conditions if residue levels remain below the prescribed limits. For example, bifenthrin, a possible human carcinogen, and acephate, which is neurotoxic and a potential endocrine disruptor, are allowed with controlled residue limits.

State toxicologists used pesticide reference doses from EPA for ingestible products, ensuring limits account for potential contamination of all ingredients. For inhalable products, due to a lack of toxicity data, CA DPR used values from the French agency [CORESTA](#) (*Centre de Coopération pour les Recherches Scientifiques Relatives au Tabac*). These levels do not incorporate toxicological considerations, as there are no specific data for smoked or vaped cannabis. As Beyond Pesticides executive director Jay

Feldman noted in the 2019 article, [‘Into the Weeds: Regulating Pesticides in Cannabis,’](#) CA DPR “is establishing a false sense of security regarding the allowed residues, given that they have not looked at the aggregate cumulative risk of dietary and nondietary exposure in combination with cannabis residue,” he says. “If [the DPR] does not have this kind of data... then it should use its statutory authority to embrace a precautionary approach,” Mr. Feldman says.

A genuinely precautionary approach would go well beyond catching prohibited pesticides and other contaminants in cannabis, as Beyond Pesticides’ 2018 [‘Pushing for Organic Cannabis as the Industry Grows,’](#) argues. Since the federal government classifies cannabis as a Schedule 1 narcotic, and cannabis is not a legal agricultural crop under relevant federal law—the *Federal Insecticide, Fungicide, and Rodenticide Act* (FIFRA)—EPA has not evaluated the safety of any pesticide on cannabis plants. EPA has established no allowances for pesticide use in cannabis production, and no tolerances, nor any exemptions from tolerances, for pesticide residues on cannabis. The lack of a federal role in establishing which pesticides are allowed for use in the plant’s production [raises critical concerns](#) related to (i) exposure from inhalation, ingestion, or absorption of pesticide residues on the crop; (ii) exposure to workers cultivating the plant; and (iii) environmental contamination and wildlife effects.

The illegal federal status of cannabis and, therefore, the inability of EPA to register pesticides for use in cannabis production, offers a window for state regulators to force the industry to embrace an organic approach to cannabis cultivation, including prohibiting synthetic pesticides and fertilizers. Beyond Pesticides has maintained that pesticide use on cannabis is therefore illegal and the best regulatory solution for states is to require the cannabis industry to adhere to an organic systems approach used in certified organic agriculture, which also prohibits synthetic pesticides and fertilizers.

Health Risks

With an estimated five million Californians consuming cannabis products monthly, the potential health consequences are staggering. [Medical users](#) seeking relief from health conditions are at increased risk of harm from pesticide contaminants. Additionally, [cannabinoids](#) (active compounds in cannabis) have been shown to inhibit the activity of cytochrome P450 enzymes, which can make exposure to pesticides more toxic. In other words, pesticide contamination of cannabis can interfere with the detoxification of those pesticides, as well as pharmaceuticals (important for those undergoing medical treatment). Among the pesticides detoxified by cytochrome P450 enzymes are pyrethroids, organophosphates, and carbamates.

Organophosphates can combine with cannabinoids to [pose developmental risks](#) to offspring. Even at low concentrations, through repeated use pesticides can [cause long-term harm, including](#) neurological damage, an increased risk of Parkinson’s disease, thyroid and liver cancers, heart failure, endocrine disruption, reproductive harm, and birth defects and developmental delays in offspring.

The Problem with Vapes

Young adults, who make up the largest market segment and often view vaping as a “healthier” alternative, face long-term health concerns from contaminated products. [Pesticides in cannabis](#) pose unique risks compared to other products because smoking and vaping deliver chemicals directly to the lungs, bloodstream, and brain. Up to 82% of pesticides in cannabis end up as smoke inhaled into the lungs. [Some pesticides](#) break down into toxic gasses like hydrogen cyanide when heated. Some of the most highly contaminated products include vape pens.

The exploding vape market has created a high demand for low-quality “biomass” to produce distillate, much of it contaminated with pesticides. Oils are often made from stems and leaves left after harvest, parts of the plant where pesticides can concentrate upon absorption from the environment. In addition, manufacturers dilute contaminated oils to meet state screening limits. Yet, one vape oil was found to have more than 60 times the amount allowed in cigarettes. Additionally, the state does not require testing for other toxic pesticides like pymetrozine or illegally used Chinese pesticides, so the product can pass the state certification tests and still be dangerously contaminated.

Vapes also have caused deaths and illness due to ‘e-cigarette, or vaping, product use-associated lung injury’ (EVALI). The Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), state and local public health departments continue to be vigilant and CDC reported a total of 2,807 [hospitalized EVALI cases or deaths](#) reported nationally in February 2020. Laboratory data show that [vitamin E acetate](#), an additive in some THC-containing e-cigarette, or vaping, products, is strongly linked to the EVALI outbreak.

However, as Beyond Pesticides [reported in 2019](#), solvent vitamin E acetate is not the only source of harm. Many unregulated vaping products tested in an [NBC news investigation](#) contained the fungicide

[myclobutanil](#). Heating myclobutanil can cause it to break down into harmful products, including hydrogen cyanide – a known potent carcinogen. Other pesticides detected included mixtures of the following pesticide or pesticide formula ingredients: [fipronil](#), [piperonyl butoxide](#), [permethrin](#), [malathion](#), and others ([see full test results here](#)).

Chinese Pesticides and Regulatory Failures

The presence of so many toxic chemicals is no surprise given the recent findings of illegal Chinese pesticides at various grow operations—both legal and illegal—around the state. The [Los Angeles Times](#) found that over the last three years, the use of illegal Chinese pesticides has exploded in California. Some of the chemicals found in these pesticides are otherwise unknown in California and the state's labs lack the proper equipment to test for them. Moreover, many of these chemicals are [so toxic](#) that a single exposure could be fatal. Law enforcement agencies at both the state and local levels have started [requiring their officers](#) to wear personal protective gear when working in these locations and to undergo routine blood analysis for pesticides. However, the state has not extended the same level of warnings and protection to the public.

According to the *Los Angeles Times* report, '[The dirty secret of California's legal weed](#)', California regulators have largely failed to address evidence of widespread contamination, including at least 85 complaints from private labs. The state's pesticide testing requirements have not been updated since 2018, despite repeated requests from toxicologists. [Regulators](#) are not testing for many dangerous chemicals currently used in cultivation, including some that must be smuggled in because they are illegal in the United States. [For example](#), in the case of Chinese pesticides, only six of over 20 chemicals found in those products are required to be screened.

Contrary to best practices, there is no routine testing of products on store shelves. The state lacks a lab accredited to test for pesticides, leaving oversight largely to private labs financially tied to the companies they test. Legislation to require independent checks on testing accuracy has stalled in Sacramento for two years. In addition, when alerted to contamination by private labs, regulators were slow to act. It took 41 days to announce the state's first-ever pesticide recall after receiving a complaint. Including last week's recall of one vape product, there have been three pesticide-related recalls issued since recreational sales began in 2018. Many flagged products were left to sell out rather than being pulled from shelves.

Recently, California DCC put the industry on notice about [its intention](#) to step up testing and enforcement, explaining that the agency will use both voluntary and mandatory recalls when a product is "product is mislabeled, defective, or unsafe for consumption," or "there is an immediate and serious threat to human life or health, and other remedies would cause an unreasonable delay." DCC also warned of the potential for disciplinary actions against licensees. However, it is unclear if these actions will be effective. Advocates note that consumers remain at risk as regulatory and market failures continue.

Market Pressures Leave Cannabis Consumers Exposed to Pesticide Contamination

Arriving full circle, Infinite Chemical Analysis Labs' and Anresco Laboratories' lawsuit charges deliberate manipulation of testing results. Such practices are alarmingly widespread and highlight a significant failure in regulatory oversight, which has been insufficient in deterring or detecting these fraudulent activities. The alleged fraudulent testing practices involve not only inflating THC potency but also concealing the presence of dangerous contaminants, which should render the products unsellable.

Moreover, the lawsuit points out that the labels displaying the defendants' test results are misleading to consumers, who rely on these labels to make informed decisions. These labels claim compliance with DCC regulations and assure consumers that the THC content is within a 10% margin of what is stated. However, the reality is often a stark contrast, as the lawsuit documents.

Response and Calls for Reform

Cannabis companies whose products were found to be contaminated in the study offered various responses but primarily claimed to have no knowledge of how the contamination occurred or why it was not uncovered during testing. Some claimed to adhere to all state standards and limits. However, many dispensary owners and consumers are unaware of the contamination risks, believing that any product with a certificate of analysis is safe. The state has even launched a \$5 million taxpayer-funded campaign promoting legal cannabis as tested and regulated to protect consumers.

Cannabis researchers, toxicologists, and industry veterans are calling for stronger oversight and updated regulations. Among their recommendations are expanding the list of prohibited pesticides to

include chemicals currently used in cultivation and implementing routine testing of products on store shelves. In particular, safety advocates say that the state must take a more active role in monitoring weed cultivation, preparation, and sale including establishing an independent state lab to verify test results, investigating the sources of contamination, and collecting data on health impacts experienced by cannabis users.

Beyond Pesticides [has advocated](#) that states establish laws and/or regulations mandating an organic systems approach to cannabis production, a genuinely precautionary approach, even more critical as the *Los Angeles Times* report reveals. Detecting and regulating prohibited pesticide contaminants in cannabis is not protecting consumers (or cannabis workers, another [important issue](#)). Instead, a framework mandating an organic systems approach to cannabis production—for example, a requirement that growers and processors follow the dictates of national organic soil management standards—would be prudent, precautionary, and a positive trajectory for the cannabis industry.

To learn more about the impacts of pesticide residues in marijuana products on your health, see our reports: [Pushing for Organic Cannabis as Industry Grows](#) and [Pesticide Use in Marijuana Protection: Safety Issues and Sustainable Options](#). If you are concerned that you or a loved one was exposed to pesticides, see [Pesticide Emergencies](#). Click to learn more about the impacts of [herbicide](#), [insecticide](#), [rodenticide](#), or [fungicide](#) exposure on your health.

For additional information on crop production, see please Beyond Pesticides' [organic agriculture webpage](#). To get involved and ensure that organic standards comply with the principles, values, and letter of the *Organic Foods Production Act*, please see [Keeping Organic Strong](#) (KOS). Through KOS, Beyond Pesticides makes it easy for the public to comment on critical issues before the National Organic Standards Board and the National Organic Program, under the U.S. Department of Agriculture.

All unattributed positions and opinions in this piece are those of Beyond Pesticides.

Sources:

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[Pushing for Organic Cannabis as Industry Grows](#), Beyond Pesticides

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