Pesticides Plague Californians Farm Workers, New Study Shows

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Carmen Obeso was pulling weeds at a strawberry field in Ventura County, California when she smelled something strange. Nearby she spotted a machine spraying pesticides; soon, her eyes were watering and she felt sick to her stomach. Obeso, a Latina farmworker, reported the incident to her crew leader and was evaluated at an on-site health care clinic. A doctor there reassured her that she had not been exposed to anything harmful, and the company expected her back at work the following Monday.

But Obeso didn't feel better by the next week, nor in the weeks that followed. Her eyes continued to water and felt gritty, and her vision was changing. She knew something was wrong, but the on-site physician still insisted she was fine. Finally, Obeso went to see a different doctor, who confirmed that her eyes had been affected.

It has been two years since the spray incident, and Obeso said in a recent interview that her vision continues to worsen. She is almost blind in sunny conditions unless she wears shaded glasses, she said.

Image: Carmen Obeso stands in a strawberry field in Ventura County. Photo by Teresa Gomez.

Now, instead of working in the fields, she volunteers with farmworker advocacy groups, and is one of a growing number of Hispanic/Latino farmworkers pushing for improved working conditions, including protections for pesticides.

“I feel there are other farmworkers in similar situations and they’re not able to voice it,” she said in Spanish during an interview aided by a translator. “When [the company] sprays the fields, they don’t put up postings. People go in and work and accumulate whatever was sprayed there. They might not always have acute reactions, but in the long run that’s when the consequences can be seen.”

Ventura County is known for its year-round production of roughly $2 billion worth of fruits and vegetables that feed people throughout the US and more than 70 other countries. Strawberries are the top crop, but workers also produce peppers, tomatoes, blueberries, avocados, and more.

But while these farms produce foods many consider staples of a healthy diet, the profusion of pesticides used on the fields pose significant risks to already vulnerable populations living and working in the area, according to research published this month in the journal *Science of the Total Environment*. These include thousands of mostly Latino farmworkers, many of which live below the poverty line and lack health insurance.

The study found that 17.1 million pounds of pesticides, or an average of 5.7 million pounds per year, were sprayed in Ventura County from 2016 to 2018. The pesticides used included more than 60 types known to be carcinogenic and 74 types linked to endocrine disruption. Another 85 pesticides used in the county were linked to developmental and reproductive toxicity.

Table 4. Pesticides used in Ventura County (2016-2018) ranked by toxicity-weighted use in comparison to ranking by total pounds applied

	Pesticide Name	Total Pounds (2016-2018)	Toxicity Adjusted Pounds (2016-2018)	Rank by Total Pounds		Pesticide Name	Total Pounds (2016-2018)	Toxicity Adjusted Pounds (2016-2018)	Rank by Total Pounds
1	Petroleum Oil and Distillates	5,563,685.67	2,781,842.83	1	16	Dicloran	43,714.18	96,171.19	22
2	Metam	1,381,178.20	2,762,356.39	3	17	Cyprodinil	25,570.14	92,052.50	31
3	Chloropicrin	5,288,250.86	2,644,125.43	2	18	DCPA (Chlorthal-dimethyl)	44,649.13	89,298.27	21
4	Telone (1,3-Dichloropropene)	851,827.49	1,533,289.48	4	19	boscalid	24,191.64	77,413.24	32
5	Captan	509,716.98	1,529,150.93	6	20	Kaolin clay	129,373.86	64,686.93	11
6	Glyphosate	479,366.88	719,050.32	7	21	Pendimethalin	31,950.84	57,511.51	28
7	Thiram	92,231.73	553,390.35	15	22	Cryolite	111,710.65	55,855.32	13
8	Chlorothalonil	110,891.18	443,564.71	14	23	Linuron	13,797.21	52,429.41	42
9	Chlorpyrifos	54,709.25	410,319.38	19	24	Fenhexamid	27,408.06	49,334.50	30
10	Mancozeb	41,857.09	242,771.14	24	25	Oxyfluorfen	16,267.99	45,550.38	38
11	Imidacloprid	43,284.17	203,435.61	23	26	Copper compounds	84,076.46	42,038.23	16
12	Sulfur	575,167.74	172,550.32	5	27	Prometryn	41,585.68	41,585.68	25
13	Methyl Bromide	161,271.53	161,271.53	9	28	Abamectin	4,568.49	41,573.27	77
14	Malathion	73,704.94	147,409.88	17	29	Pyraclostrobin	16,399.34	36,078.56	37
15	Acephate	38,389.59	119,007.74	26	30	Dimethoate	4,467.43	33,505.76	78

In terms of volume, pesticides linked to cancer accounted for nearly a quarter of the total pounds of pesticides applied in the county, the researchers documented.

Notably, the study found that township sections where people of color were the majority had not just the most pesticide use, but also the most toxic pesticide use. More than half of the population in these areas was Latino or Hispanic. In contrast, areas that were relatively free of pesticides were overwhelmingly white communities.

The work adds to a growing body of research underscoring how communities of color face disproportionate exposure to pesticides and bear the brunt of adverse health impacts.

“Pesticide use is a known environmental justice issue,” said Alexis Temkin, a toxicologist at the Environmental Working Group (EWG) who helped lead the research. “But this study really adds a lot more data to show more specific impacts, potentially, on individual communities and individual areas.”

Monitoring the air

The researchers used sociodemographic data from the U.S. Census Bureau’s American Community Survey, layering over pesticide use data from 2016-2018 for Ventura County and then grouping together the most harmful types of pesticides.

The researchers highlighted two fumigants – metam potassium and sodium and 1,3-dichloropropene (1,3-D) – as examples of chemicals sprayed in the county that are both highly used and highly toxic.

The US Environmental Protection Agency (EPA) classified 1,3-D as “likely carcinogenic to humans” from 1985 to 2018, but in 2019 downgraded the classification to a “suggestive evidence of carcinogenic potential,” a decision that essentially allowed for expanded use and greater human exposure to the chemical often referred to by the trade name Telone. The EPA’s Office of Inspector General castigated the regulator for failing to properly consider cancer risks. But the EPA has not changed its position.

Anne Katten, pesticide safety specialist at the California Rural Legal Assistance Foundation (CRLAF), said the foundation has been calling on state officials to tighten restrictions on use of soil fumigants such as Telone. But the opposite has happened: while there used to be a

cap on Telone use at 90,250 lbs per 36-square-mile area, the cap is now at 136,000 lbs.

DPR says it plans to propose Telone regulations later this fall and adds that it is developing a statewide pesticide notification system that will give the public advance notice about pesticide applications.

Air monitoring stations in Ventura County have detected high levels of Telone as well as a fumigant called chloropicrin, commonly used in producing strawberries, according to Katten. "Quite high levels" of chloropicrin were detected last year at an air monitoring station at a high school in the county, exceeding levels deemed safe by the California DPR, she said.

"It's a problem for people working in the application of fumigants, but also people in nearby fields and people who live in the area are exposed to the drift," she said.

The new study builds on work published in April in the journal BMC Public Health that examined how disparities in exposures and harms from pesticides impact disadvantaged communities in both rural and urban settings and how those disparities are perpetuated by a range of factors, including inadequate worker protections.

Concerns for children

As many as 500,000 children work as farmworkers in U.S. fields and orchards, according to the Association of Farmworker Opportunity Programs. But even children not in the fields still face significant risk from the agricultural chemicals, according to Bob Gunier, an environmental health scientist at the University of California, Berkeley. Gunier has spent more than a decade working on a birth cohort study of mostly Latino children born in the Salinas Valley, another coastal farmworker community.

"The strongest association we have seen between pesticide exposure during pregnancy and effects on children's brains are with cognition, so like IQ and attention, ADHD," said Gunier. "We have also looked at respiratory health, like asthma and lung function. For that, we actually see stronger associations [with exposure] during their childhood."

California DPR adopted a regulation in 2018 creating a quarter-mile buffer zone for schools and daycares near fields that use pesticides, saying they are "working to improve grower field-level pesticide use reporting to more accurately track compliance with the school regulations." But Gunier questions whether the measure is enough to protect communities, saying that pregnant women might be more sensitive and susceptible to pesticide exposure problems than other adults.

"If we really want to protect children's health, we need to start there," Gunier said.

Image: A farmworker picks strawberries in Ventura County. Photo by Amadeo Sumano

Rosario Castañeda, a former Ventura County farmworker who has long suffered from a skin condition she developed while working in the fields, says she has seen many farmworker women suffer miscarriages. She believes they were caused by pesticide exposure.

“We see miscarriages happen a lot with women working in the field,” said Castañeda, who now works with a women’s farmworker advocacy organization called Lideres Campesinas. “Women who maybe don’t know they are pregnant and are exposed to dangerous pesticides end up having miscarriages.”

Avital Harari, an endocrine surgeon at the University of California, Los Angeles, is concerned about the role pesticide exposure might play in hormone function and cancer.

“We believe [pesticide exposure] can be both an endocrine disruptor, which can basically alter the hormone function of the thyroid, and potentially cause an increase in neoplasm, leading to thyroid cancer,” said Harari.

As Harari began researching risk factors for advanced thyroid cancer at UCLA, she noticed that a lot of her referrals were coming from Bakersfield in Kern County– one of the top agricultural counties in the U.S. In a recent case-control study using thyroid cancer cases from the California Cancer Registry, Harari and colleagues found that 10 of the 29 pesticides they analyzed were associated with thyroid cancer.

No voice, no vote

Despite scientific evidence for pesticide links to diseases and other health problems, many farmworkers are not aware of the extent of the risk they face, worker advocates say.

“On a daily basis, there are still immigrants coming to the U.S. that have no idea,” said Mily Trevino-Sauceda,executive director of the Alianza Nacional de Campesinas, which translates to the National Alliance of Farmworker Women.

However, those who have learned about pesticide health risks firsthand and managed to leave agricultural work behind are speaking out. And last month, hundreds of farmworkers

made a 24-day, 335-mile march from Delano to Sacramento to urge California Gov. Gavin Newsom to sign a bill that would help enable farmworkers to unionize – an ability that would help empower them to fight back against pesticide exposure and other injustices.

Image: Pesticides are sprayed in a field near farmworkers. Photo by Amadeo Sumano.

“It’s more important for them to preserve the fruit than the wellbeing of the workers,” said Claudia Quezada, a former farmworker who now coordinates Lideres Campesinas’ projects in Oxnard. Quezada recalled that the company she used to work for would spray pesticides without regard for the weather. On humid mornings, when the chemicals would linger on the plants, the workers would sometimes develop rashes, she said.

Teresa Gomez, the Ventura County Community Organizer for Californians for Pesticide Reform, echoed the complaints, saying rashes and headaches are common among those working fields where pesticides are sprayed.

“We couldn’t complain… they would just tell us that we were being problematic and that we were just looking for a lawsuit,” said Gomez. “And so, we would just have to keep on working. Farmworkers don’t have a voice nor a vote and if they do speak up, they are threatened with being laid off or fired.”

Amadeo Sumano said he was fired from his job on a Ventura County farm after sharing a photo and a video on social media that showed pesticides being sprayed close to several farmworkers. He said his efforts to share the video have made it difficult for him to find other farm work in the area.

Nathan Donley, a researcher with the Center for Biological Diversity who was a co-author on the April study published in BMC Public Health, said the EPA needs to take several steps to better protect farmworkers, including establishing a national monitoring system to analyze the scope of harm they face just doing their jobs.

"I think it would be relatively easy for EPA under this administration to make some significant gains," said Donley. "It would be nice to see this agency put the values of people over those of the pesticide industry."

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