

Fumigant Pesticides Put Central Coast Communities At Risk

April 2015

Fumigants are outdated, toxic technology that undermine soil health. Safe replacements are needed to grow our food.

With two young sons, Justin Matlow and his wife were concerned when they learned that the strawberry field visible from their backyard was going to be fumigated with chloropicrin — a cancer-causing pesticide that can easily drift away from where it's applied. They were also concerned for their neighbors: 12 children ranging in age from 3–6 live right next to the field, and over 30 homes are within ½ mile of the property.

As a parent and special education teacher in Monterey County, Justin has become aware of the health risks that pesticides pose to children. Consequently, he decided to conduct air monitoring to measure chloropicrin

concentrations in the air in his backyard where his children play. The results were concerning: even at distances much greater from the fields than state-required buffer zones, chloropicrin concentrations were above regulators' levels of health concern, and represented a significantly increased cancer risk.

Justin's family and community are not alone. Across California, millions of people live, work, study and play in close proximity to fields where fumigants and other pesticides are applied.

Fumigant pesticides pose serious health risks and degrade soil health

Fumigants are the most dangerous pesticides on the market. Applied in massive quantities to the soil before crops are planted, they are among the most toxic and difficult-to-control chemicals used in farming. They drift, poison entire communities, and keep our farm economy tethered to toxic pesticides.

Fumigants are linked to cancer, reproductive and developmental harm and groundwater contamination. From 1999 to 2012, fumigants drifting from fields in California have poisoned at least 1641 workers and community members with symptoms of burning eyes, nausea, headaches, asthma attacks and throat irritation. These reported poisonings are only the tip of the iceberg, as most pesticide-related illnesses likely go unreported.¹

In 2012, Monterey County was the sixth highest pesticide use county in the state, applying more than 9.2 million pounds of agricultural pesticides. Half (50%) of this use came from just five fumigants: chloropicrin, Telone, methyl bromide, metam sodium and metam potassium. That same year, Santa Cruz County applied 1.7 million pounds of agricultural pesticides, with more than 80% of

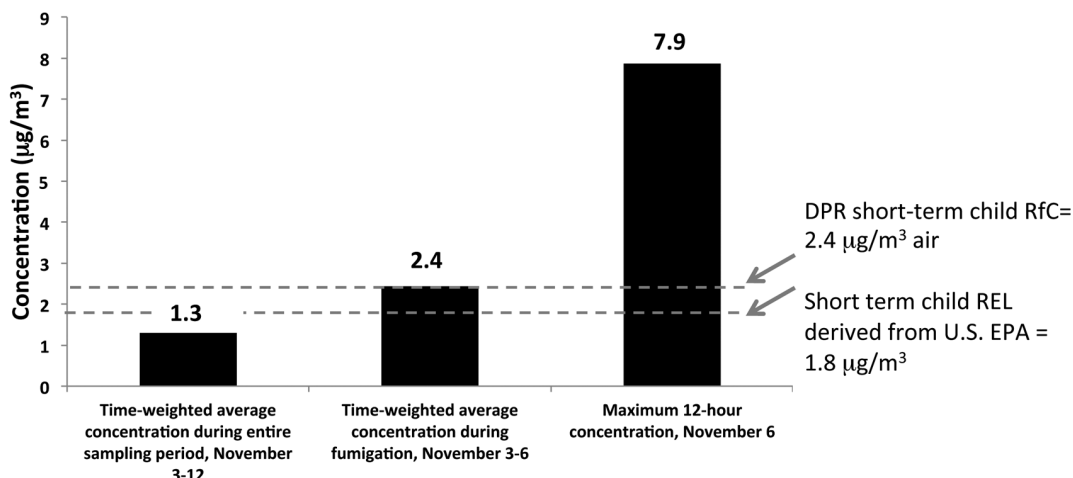


Drift Catcher equipment for monitoring the fumigant chloropicrin in Justin's backyard where his children play. The tarps of the fumigated strawberry field are visible in the distance. He found concentrations of chloropicrin that pose an increased risk of cancer.

this use coming from the same five fumigants.

Fumigants are used to kill soil pests and diseases before crops are planted, but in the process, they kill almost everything in the soil—including beneficial bacteria, fungi and organisms that keep the soil healthy. Soil is a precious resource: the foundation of our food supply and California’s agricultural economy. By undermining sound soil stewardship, fumigants put our food supply at risk.

Average and maximum chloropicrin concentrations in the air, Watsonville, California, November 3–12, 2014



Note: REL=reference exposure level; RfC=reference concentration. The maximum 12-hour concentration was from the sample taken on 11/6 in the A.M. Values above each column on the graph indicate the exact value. RELs are based on DPR toxicologists’ analysis of risk.

Cancer-causing chloropicrin is in the air where Monterey County children live and play

One hundred years ago, chloropicrin was used in World War I as tear gas and “vomiting gas.” Today, independent scientists have concluded that lifetime exposure to chloropicrin results in “very high” cancer risks.² Chloropicrin is the highest-use pesticide within ¼ mile of Monterey County schools,³ and a state air monitor stationed at the Salinas airport showed that concentrations of chloropicrin in the air exceeded “safe” levels by 40% in 2013.⁴ This is especially concerning because the airport is located much further away than homes and schools are from fields. Many Monterey County schoolchildren and community members are breathing air much closer to chloropicrin applications, putting them at risk of even higher exposure.

Monitoring confirms chloropicrin in Watsonville’s air poses an increased cancer risk — despite state-required buffer zones

In November 2014, Justin Matlow used the “Drift Catcher” (a community air monitoring device based on the same technology used by California Air Resources Board) to take air samples at his home, located 350 and 850 feet away from two seven-acre fields that were fumigated with chloropicrin in preparation for strawberry planting. He started sampling the morning of November 3 when fumigation of the first field began, and ended on November 12, several days after fumigation was completed. The chloropicrin application was done using drip irrigation under “totally impermeable film” (TIF), a thick tarp that state regulators claim should dramatically reduce emissions from the field.

Chloropicrin detections in the air exceeded regulators’ “levels of health concern”

Behind Justin’s house, where his children regularly play outside, the air monitoring samples documented significant health risks for children. At the peak 12-hour concentration, the chloropicrin levels were 4.3 times regulators’ “level of health concern” for a one-day exposure for a child.

Over the four-day period of fumigation, the average concentration of chloropicrin in the air in Justin’s backyard was at regulators’ “level of health concern” for a one-day exposure for a child. Over the full course of the testing, chloropicrin was detected in 61% of the 12-hour samples collected (11 out of 18 samples). In four of these, samples confirmed that chloropicrin levels exceeded regulators’ “level of health concern” for a one-day exposure for a child.

“Levels of health concern” (known as “Reference Exposure Levels [RELs]” or “Reference Concentration Levels [RfCs]”) are levels below which state and federal regulators don’t expect to see harm. However, levels below the REL or RfC do not necessarily mean that the air is “safe” to breathe. People are also often exposed to multiple pesticides and/or have differences in their ability to metabolize toxic substances due to individual variability, illness, or even medications they may be taking.

Chloropicrin concentrations in the air show significantly increased cancer risk

The chloropicrin detections found in Watsonville translate into significantly increased cancer risk for people in this community who live near fields. This cancer risk was

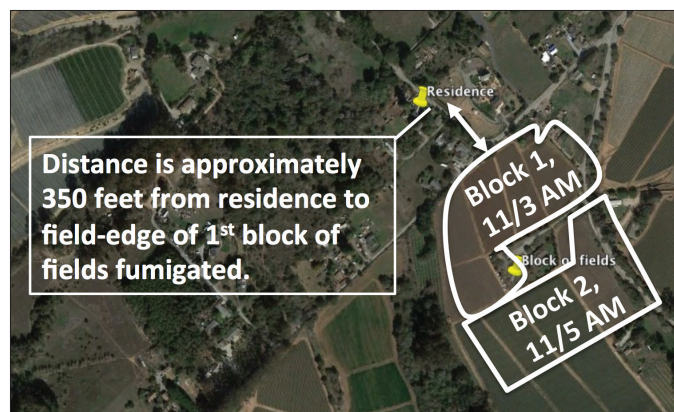
increased based on only nine days' worth of exposure at the levels detected in this study. Based on the monitoring results, we could expect to see a probability of:⁵

- Nine more cases of cancer per million, for children exposed from 0–2 years of age
- 16 more cases of cancer per million, for juveniles exposed from 2–16 years of age
- 18 more cases of cancer per million, for exposure from 0–9 years of age
- 39 more cancer cases per million, for exposure over a lifetime 70-year residency

State-required protections for chloropicrin failed to prevent increased health risks

In January 2015, the California Department of Pesticide Regulation (DPR) released new rules for chloropicrin applications to protect community members from exposure. These only require buffer zones (the distance between a pesticide application and nearby homes or schools) to protect to levels of chloropicrin in the air of 73 parts per billion (ppb, or $490\mu\text{g}/\text{m}^3$)—a level 25 times higher than the exposure limit recommended by state agency toxicologists and independent scientists.

For the type of application near Justin's house, the DPR-specified buffer zone is 40 feet.^{6,7} Yet at distances of 350 feet from one field and 850 feet from the other fumigated field, the Drift Catcher still documented chloropicrin concentrations in the air that pose elevated cancer risk and are above regulators' levels of health concern. Chloropicrin levels at the edge of a 40-foot buffer zone border would likely have been considerably higher.

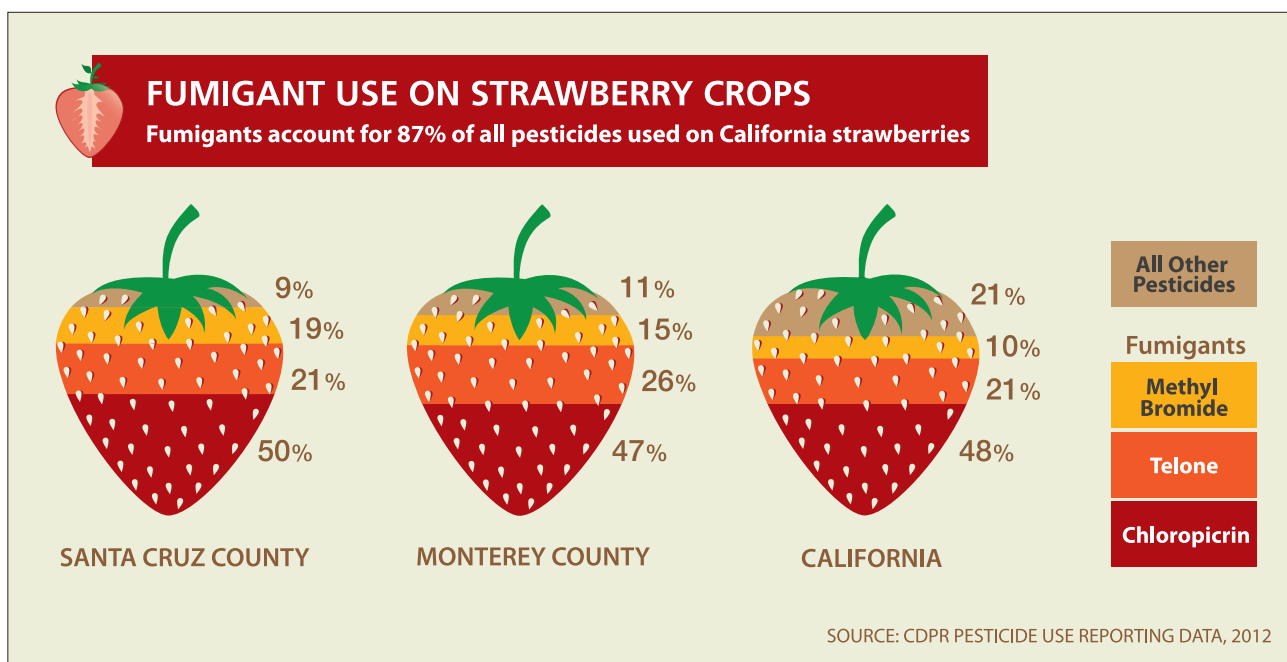


State rules only require a 40-foot buffer zone for this chloropicrin application, yet Justin's house is located 350 and 850 feet from the fields and he still found concentrations above regulators' "levels of health concern"—including an increased probability of 18 more cancer cases among children 0–9 years old.

These findings demonstrate that the recommended buffer zone protections that DPR recently finalized would not have protected Justin Matlow's children from levels of exposure to chloropicrin that pose increased health risks. This is a concern not only for Justin and his neighbors, but also for the many families across the Central Coast and the state that live near fields fumigated with chloropicrin.

The future of farming is fumigant-free

With strong science showing the human and soil health risks posed by pesticides, we can no longer continue to grow our food with fumigants. We must protect community health by preventing exposure to outdated, toxic fumigants, and protect our food supply by innovating safer pest control



methods that foster healthier soil. Substituting one dangerous fumigant with other dangerous fumigants is not the answer.

Instead, California urgently needs to pursue a different path to protect soil health and invest in research, exten-

sion and support for growers to transition to safe, innovative and profitable fumigant replacements. Promising replacements exist — such as solarization or anaerobic soil disinfestation — and need support to become market ready, at scale.

Strong protections for communities needed now!

While fumigants are still in use, California's Department of Pesticide Regulation immediately needs to protect California's schoolchildren, farmworkers and community members by:

- 1. Establishing protection zones** around schools, homes, parks, businesses and other "sensitive sites:" Since fumigants can drift at least one mile from where they are applied, there needs to be at least a one-mile buffer where fumigants can't be applied around places where people live, work, study and play.
- 2. Requiring neighbor notification for all fumigants:** Schools, homes, hospitals and other sites should all receive notifications before fumigants are applied near them.
- 3. Developing stronger regulations on chloropicrin use:** These air monitoring results illustrate the need to tighten chloropicrin use rules to reduce exposure levels and better protect children from risk of respiratory illness and cancer. In addition to establishing one-mile buffer zones, DPR should recognize chloropicrin as a carcinogen and ban all non-tarped applications.
- 4. Commitment to reduce fumigant use:** DPR must complete "risk assessments" for all fumigants in 2015 and propose added safety measures, as well as a plan to reduce use of all fumigants.



Notes

1. Reeves, Margaret, Kristin Schafer, Kate Hallward, and Anne Katten. *Fields of Poison: California Farmworkers and Pesticides*. San Francisco, CA: Pesticide Action Network North America, United Farmworkers of America, AFL-CIO, California Rural Legal Assistance Foundation, 1999.
2. Froines, John R. "Findings of the Scientific Review Panel on 'Evaluation of Chloropicrin as a Toxic Air Contaminant' as Adopted at the Panel's February 24, 2010, Public Meeting." California Department of Pesticide Regulation, April 1, 2010.
3. Agricultural Pesticide Use near Public Schools in California. California Environmental Health Tracking Program, California Department of Public Health, April 2014.
4. Air Monitoring Network Results from 2013. California Department of Pesticide Regulation. http://www.cdpr.ca.gov/docs/emon/airinit/amn_2013_report_final.pdf, pp. 18-19.
5. These probabilities are typically called "excess" cancer risk, or the increased probability for the occurrence of cancer. Scientists consider even one case in one million an "excess" cancer risk.
6. DPR set a minimum 25-foot buffer zone with TIF tarps, and set a buffer zone of 40 feet with TIF tarp drip, when accounting for the approximate acreage that was fumigated and concentration of chloropicrin used.
7. "Chloropicrin Mitigation Measures: Control of Resident and Bystander Acute Exposure From Soil Fumigation Applications." California Department of Pesticide Regulation, Sacramento, CA, January 6, 2015.

For more information about transitioning California agriculture to a resilient, fumigant-free future, please contact:



Californians for Pesticide Reform
Ph: 510-788-9025
pests@pesticidereform.org
www.PesticideReform.org

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