Pesticide Drift

Inadequate protections for California families

From their front door, Manuel Silveira and his wife Susie can watch tractors applying fumigant pesticides in the strawberry fields. Their family lives just feet from one of the many commercial strawberry nurseries covering a third of the Bend District in Tehama County, California.

Along with neighbors, the Silveiras have grown increasingly concerned about the health impacts of fumigants drifting from the fields. “We’ve all exchanged stories of burning eyes from the chemical drift, tarps ripping off,” said Manuel. “We have anxiety over the real and possible danger of exposure for us all, especially our children and grandchildren.”

In 2008, alarmed by the smell of chemicals in the air during fumigation, Manuel contacted the Tehama County Agricultural Commissioner. He asked that buffer zones be created between the fumigant application sites and the schools and backyards where children play.

He was told that a legally mandated buffer zone was already in place—a 60-foot barrier between the edge of the fumigation site and a non-agricultural property. Furthermore, Driscoll's—the company that owns and operates strawberry nurseries in the area—was complying with regulation and fumigating the soil with a mixture of methyl bromide and chloropicrin as directed. According to the Commissioner’s office, there was no proof that drift was occurring beyond the buffer zone.

Between 2003 and 2008, 561 Californians reported illness related to drift from chloropicrin alone. The reported incidents are believed to represent only a fraction of the true number of poisonings.

**Fumigants: A real and present danger**

Across California, communities and farmworkers live, work and play in close proximity to strawberry fields—sometimes just a few feet from where pesticides are applied. Strawberry seedlings are commonly grown in nurseries in the Sacramento Valley and then transported to the Central Coast for fruit production. In many cases, hundreds of pounds of pesticide fumigants are used to sterilize each acre of soil.

Methyl bromide and chloropicrin are some of the most commonly used fumigants in California. Chloropicrin is commonly mixed with most other fumigants, including the recently approved cancer-causing methyl iodide. And scientists, as well as communities, are very concerned.

Due to the likelihood of pesticide drift, fumigants—like chloropicrin—are inherently unsafe and difficult to control. And, unfortunately, fumigants are poorly monitored and laws are poorly enforced.

Local and state officials need to create better policies—and enforce existing policies—to protect Californians from harm.

Recently reported mass fumigant poisonings in California:
- Monterey 2008: 25 people sickened by metam sodium
- San Bernardino 2006: 26 sickened by chloropicrin
- Monterey 2005: 204 sickened by chloropicrin
- Salinas 2005: 60+ sickened by chloropicrin
- Kern 2003: 193+ sickened by chloropicrin
- Lamont 2003: 235 sickened by chloropicrin

From living next door, Manuel and his neighbors knew the 60-foot buffer zone wasn’t providing enough protection; from personal experience, and research into similar situations, they suspected that heavy use of fumigants in the area was exposing them to serious health harms, including increased risk of cancer.

The situation in Tehama is not unusual. Applying fumigant pesticides is dangerous and unsustainable, and many communities like Manuel’s have been poisoned by drift. While some of these incidents were caused by applicator’s mistakes, there are numerous examples where the fumigation was conducted according to legal requirements and people’s health was still jeopardized. In some cases, poisonings occurred a half-mile or more from the fumigation site, far beyond the 60-foot buffer zone required for methyl bromide applications.
The Bend community takes action

To address the issue of pesticide drift, Manuel and his neighbors created Healthy Tehama Farms (HTF), a group dedicated to promoting farming practices and fostering healthy community. After first approaching Driscoll’s and urging the company to stop using pesticide fumigants and transition its operation to organic—which the company declined to do—HTF turned its focus to air sampling and monitoring for the presence of drift over the areas they live, work and play.

HTF enlisted the help of Pesticide Action Network (PAN). Scientists from PAN provided air-monitoring equipment—“Drift Catchers”—and conducted rigorous trainings with the community in air sampling techniques. A Drift Catcher works like a vacuum cleaner, sucking air through tubes packed with absorbent resin that traps pesticides. The tubes are then sent to an independent lab for analysis.

Knowing that a fumigation would take place in the fall of 2011, Manuel and his family put three Drift Catchers along the west edge of the field to determine whether or not methyl bromide and chloropicrin were drifting into his yard. The first Drift Catcher was stationed in the shared neighborhood garden, the second next door in his grandchildren’s sandbox, and the third was in Manuel’s front yard.

In total, they collected 24 air samples (eight from each site) from Nov. 4 through Nov. 11, 2011. The fumigation took place on Nov. 4, and the tarps were removed on Nov. 10. A total of 1,755 lbs. of a methyl bromide and chloropicrin mixture were applied to a five-acre section of the strawberry nursery, at a rate of 351 lbs. per acre. The samples were analyzed for only chloropicrin.

Fourteen homes are located alongside this field, where 17 children under the

Fumigants are widely used across the state

In 2010, over 34 million pounds of fumigants were used in California, putting many communities like Manuel’s at risk. That same year, 5.8 million pounds of chloropicrin and 3.8 million pounds of methyl bromide were applied across the state. In Tehama County alone, over 99,000 pounds of methyl bromide were applied in 2010.

Residents of the Bend community placed Drift Catchers in their yards to monitor air quality during pesticide fumigations of adjacent strawberry fields. The California DPR has participated in scientific reviews of the Drift Catcher and the U.S. EPA has used previous Drift Catcher results to assess exposure and risk for several chemicals.
The Drift Catcher results paint a 
troubling picture. Manuel, his 
grandchildren and neighbors were 
breathing high levels of chloropicrin 
continuously during the tested time 
period, with all samples at all sites 
showing fumigant drift. The time-
weighted average 24-hour 
chloropicrin levels at each site were 
all nearly twice as high as the level 
determined to be acceptable for a 24-
hour exposure for children (6.2 µg/ 
m³) by the scientists at the California 
Department of Pesticide Regulation, 
the Scientific Review Panel and 
scientists at the California Office of 
Environmental Health Hazard 
Assessment. The time-weighted 
average concentrations over eight 
days were 5.8-6.7 times higher than 
the U.S. EPA’s short-term (1-30 days) 
Reference Concentration of 1.8 µg/m³ 
for children and 4.4-5.0 times higher 
than the comparable California DPR 
Seasonal Reference Concentration.

These numbers indicate an unacceptably 
high risk for both children and adults 
who not only experienced these high 
levels of toxins in their air, but did so for 
eight continuous days. Even more 
troubling is that the actual chloropicrin 
concentrations were probably much higher 
than those determined in the Drift 
Catcher experiment, because the amount 
of chloropicrin in the air exceeded the 
absorption capacity of the sample tubes 
for most samples.
Too hazardous for California communities

Fumigants are inherently unsafe
Fumigant pesticides are unique in that they are highly toxic and volatile. They are also applied at much higher rates than typical pesticides. The same properties that make them powerful agents for sterilizing soil also render them extremely hazardous to the workers applying them and to the people living, working or playing near treated fields. Additionally, many are known or suspected to cause cancer. Some are also endocrine disruptors and also cause problems with pregnancy, including miscarriage.

The main fumigants used in California agriculture are methyl bromide, chloropicrin, 1,3-dichloropropene (Telone) and metam sodium. Methyl bromide is currently slated for an international phaseout under the Montreal Protocol because of its ozone-depleting properties but is still being used during the phaseout period. “Critical-use exemptions,” like the exemption granted for Driscoll’s strawberry nurseries in the Bend, will likely continue to be issued through 2015.

New fumigant methyl iodide is not a better solution
Next fall, the strawberry farm next to Manuel and Susie’s will have the choice of using a new fumigant, methyl iodide. Arysta LifeScience has marketed it as a safer substitute for methyl bromide, despite the fact that methyl iodide has been called “one of the most toxic chemicals on earth” by scientists.

Under industry pressure it was approved for use by the U.S. EPA in 2007, and in California in December 2010.

Methyl iodide was approved despite objections from many prominent independent scientists around the country—including six Nobel laureates—who warned that using methyl iodide would put people at “serious risk,” especially pregnant women, children and farmworkers.

California’s decision to approve methyl iodide for use as a soil fumigant puts communities like the Bend at risk not only for cancer and acute poisonings, but also for late-term miscarriage and ground water contamination.

Time for better solutions
For years, farmers in California and around the world have successfully grown strawberries without the use of methyl iodide. Whether a small or large operation, fumigant pesticides are not required to grow strawberries. Large and small operations alike are proving that safer, more sustainable pest control methods work.

Communities in California are calling on the Brown Administration and newly-appointed Director of Pesticide Regulation, Brian Leahy, to protect people who live, work and play near strawberry fields by taking the following steps:

1. Reverse the decision to register methyl iodide as a fumigant pesticide, given findings of DPR’s external Scientific Review Committee, and Drift Catcher results.

2. Support alternatives to the use of fumigants and establish a multi-stakeholder, inter-agency panel charged with creating a plan to end reliance on fumigants within the next five years.

3. Create substantial interim buffer, or protection zones, to protect workers and communities from hazards of pesticide drift, until fumigants are phased out.