



January 22, 2025

RE: Comments on DPR Regulation 24-001 – 1,3 D Occupational Bystanders Exposure Regulation

Submitted via SmartComment online public comment portal at

<https://cdpr.commentinput.com?id=gCFatJfYB>

Ann Schaffner, Environmental Program Manager
Worker Health and Safety Branch
Department of Pesticide Regulation
1001 I St.
Sacramento, CA 95812

Dear Ms. Schaffner:

In order to adequately protect Californians from exposure to the fumigant pesticide 1,3-dichloropropene (1,3 D), both occupational and residential bystanders should be protected to the No Significant Risk Level (NSRL) of 3.7 ug/day, which is equivalent to 0.04 ppb (24 hour average) to reduce cancer risk to the 10^{-5} level. The NSRL is the level set in regulation¹ by the Office of Environmental Health Hazard Assessment (OEHHA), the state's experts in evaluating cancer risk of chemicals. It is deeply troubling that the average concentration of 1,3 D at all six air monitors operated by DPR exceeds the OEHHA NSRL by 2 to almost 24 times.²

¹ <https://oehha.ca.gov/proposition-65/cnr/proposition-65-no-significant-risk-level-13-dichloropropene-13-d> (Attachment #1)

² DPR PREC Ambient Air Monitoring Results for 2023 (Average concentrations divided by OEHHA NSRL of 0.4 ppb)

This regulation as proposed falls far short of protecting occupational bystanders from levels of exposure to the soil fumigant 1,3 D that pose a significant cancer risk for reasons detailed below including but not limited to failure to consider general ambient work time and non-work exposure of workers.

Finalization of this regulation will eliminate the township use cap, potentially leading to even higher use in rural, majority Latino and Indigenous communities where 1,3 D use is already concentrated. The proposed requirement to evaluate the adequacy of the regulation by reviewing 1,3 D air level modeling and monitoring data to determine if annual air concentrations exceed significant cancer risk levels in any township is a good concept, but as proposed it lacks clarity and falls far short of being adequately health protective.

We appreciate that the regulatory target level of 0.21ppb used by DPR for this proposed regulation is based on the OEHHA NSRL. But by employing a different cancer risk level from the existing regulation for residential bystanders (which uses a 0.56ppb target level), the proposed regulation creates an unworkably inconsistent bifurcation, especially for worker-residents who are subject to different regulations during the course of a given day. It is unconscionable to continue to allow exposure of residential bystanders, including young children, to the Department of Pesticide Regulation's (DPR's) target level of 0.56 ppb³, a level 14 times higher than the NSRL set by OEHHA.

We note also that key documents need to be added to the rulemaking file. These documents are included as attachments to these comments.

Section by Section Comments

6448(d) 1,3 D Field Fumigation – General Requirements – Buffer zones

This regulation as proposed falls far short of protecting occupational bystanders from 1,3 D exposures that pose a significant cancer risk, because the only protection proposed is a 100 foot buffer in effect for 48 hours for all field fumigations before planting tree and grape crops. There is no buffer zone required for most application methods when used before planting crops other than trees and grapes. The rationale is that application rates are currently lower for

³ ISOR Doc # 22: Marks, Teresa. 2016b. "Risk Management Directive and Mitigation Guidance for Cancer Risk from 1,3-Dichloropropene (1,3-D)," October 6, 2016. Department of Pesticide Regulation Memorandum. https://www.cdpr.ca.gov/docs/whs/pdf/1,3-d_directive_mitigation.pdf

fumigation before planting other crops. This is flawed reasoning because 1,3 D will still drift when applied at lower application rates before planting other crops. Buffer zones should be required for all 1,3 D fumigations.

Exposures at the edge of fumigated fields were also substantially underestimated because modeling assumed a workday of 8 am to 4 pm, despite the evidence that agricultural work often starts at daybreak so that work in the hottest hours of the late afternoon can be avoided. The UC Merced Labor Center surveyed over one thousand fieldworkers between 2021 and 2022 and found that 60% of these workers reported starting their shifts before 7 am, and a further 31% reported starting between 7 and 8 am. Just 2.8% reported starting work between 8:00 and 8:59am. The assumption of an 8 am to 4 pm workday is generally incorrect, and facially wrong for more than 90% of the fieldworkers who participated in the UC Merced Labor Center study.⁴ Other reports have documented that harvest of certain crops is also increasingly conducted at night throughout California. As stated by UC Davis Western Center for Agricultural Health and Safety, "The general, unofficial consensus among a number of professionals involved in agriculture is that night work is increasing. Possible reasons include rising temperatures and heat illness prevention regulation, increasing labor shortages, product quality and taste preferences, time-sensitive harvests, and avoidance of pests."⁵

8 am to 4 pm is the time period when fumigant air emissions are lowest, as documented in attached modeling by hour conducted by OEHHA, which show large differences in daytime and night-time emissions.⁶ While OEHHA used the default assumption in the exposure analysis that strawberry fieldworkers were the most affected population and that their typical workday was 8 am – 4 pm, in the request for external peer review⁷ OEHHA states:

“... since the update to the health-based recommendations were provided to DPR, OEHHA was made aware through its various consultations that fieldworkers working with other crops (eg.

⁴ UC Merced Farmworker Health Study 2021-2022 data from survey of 1198 farmworkers **(Attachment # 2)**

⁵<https://www.dir.ca.gov/OSHsb/documents/Outdoor-Agricultural-Operations-During-Hours-of-Darkness-dr6.pdf> **(Attachment 3)**

<https://www.desertsun.com/story/news/2016/10/27/farming-dark-california-moves-closer-introducing-regulations-night-farming/91564328/> **(Attachment 4)**

<https://aghealth.ucdavis.edu/news/night-work-growing-trend-western-agriculture>

⁶ OEHHA Response to Anne Katten_Emission Data. July 2024 **(Attachment # 5)**

⁷ ISOR Doc # 25 OEHHA Request for External Scientific Peer Review of the Scientific Basis of the OEHHA Memorandum: “Update to the Health Based Recommendations to Mitigate Cancer Risk of Occupational Bystander Exposure to 1,3 Dichloropropene and its associated documents.

lettuce, spinach, canning tomatoes, onions, garlic, wine grapes and sweet corn) might be harvesting during night-time, at dawn, or at dusk.⁸ This is particularly important because air concentrations vary significantly between night and day, where nighttime concentrations tend to be higher. These differences are affected by season and region. Most of these activities require mechanical labor and happen infrequently, limiting the overall time spent at the edge of treated fields. However, exposure to ambient air might be significantly impacted by the working hours. Therefore, OEHHA is now suggesting that 0.21 ppb be considered in the context of localized work practices and work shifts other than 8 am to 4 pm.” DPR should follow OEHHA’s recommendation in this regard to increase the buffer zone size and strengthen other mitigation methods in this proposed regulation.

In addition, no clear explanation is provided for choosing 100 feet as the maximum buffer zone to model, other than a passing mention in DPR’s Modeling for evaluating occupational bystander cancer risk from 1,3 D⁹ that “A larger buffer would likely require revisions to the setback requirements.” Using setback distances previously established to comply with DPR’s much higher acute exposure limit to dictate the maximum size of the possible buffer for occupational bystanders is not consistent with basing the regulation on OEHHA’s recommendations. No credible data supports the conclusion that 100 foot buffers in place for 48 hours will be adequate to protect bystander workers from exposure levels that pose high cancer risk given that 1,3 D is known to drift for miles over many days.

We also oppose the use of region-wide relative frequencies of use of field fumigation methods to reduce some buffer zone durations from the 5 or 7 days initially recommended by OEHHA to 48 hours, and to eliminate some buffer zones entirely. Relative frequency of use of methods aren’t going to be evenly distributed within a region. As a result, those workers who labor most often next to fields where higher emission field fumigation methods are used will not be adequately protected.

Posting of buffer zone perimeter must be required.

It is alarming that the proposed regulation does not require posting of warning signs around the 1,3 D buffer zone perimeters. Posting is essential for ensuring that irrigators, who often set their own schedules, and field work crews employed by Farm Labor Contractors are alerted to

⁸ WCAHS 2019 Webinar- Night work: A Growing Trend in Western Agriculture?

⁹ ISOR Doc # 17: Y Luo and R Segawa. Modeling for evaluating occupational bystander cancer risk from 1,3 D. 8/29/24.

the fact that a buffer zone is in effect. We join the County Agricultural Commissioners (CACs) ¹⁰ in urging DPR to revise the regulation to require posting of the buffer zone perimeter. The perimeter should be posted by the certified applicator at the time of application and the applicator should be responsible for either removing the signs when the buffer zone expires or ensuring that the property operators do so. We note that, in contrast, the methyl bromide field fumigation regulation and chloropicrin permit conditions require posting of buffer zone perimeters.

Buffer zone table

For ready access, clarity, and transparency, the buffer zone sizes and durations established during the rulemaking process should be included in a table that is part of the regulation rather than being placed on the final page of a 54-page document incorporated by reference. Tables of similar size are found in other sections of the pesticide regulations. These include: Maximum work hours for methyl bromide soil fumigation activities (6784(b)); California Specific Restricted Entry Intervals (6772); VOC Emission Limits (6452.2) Structural fumigation table of fumigant retention method conditions (6454) Aldicarb application restrictions (6458)

We also note that the entire 54-page document titled “1,3-Dichloropropene Field Fumigation Requirements Revised January 1, 2026” woefully fails the clarity requirements of the Administrative Procedures Act in that it is facially not written in a manner that makes it easily understood by agricultural workers and other people directly affected by the regulation.

Activities allowed within buffer zone

The regulation is unclear and ambiguous by first stating that the only activities allowed within the buffer zone are fumigant handling and transit, and then later adding that local, state or federal officials performing inspections, sampling, and other official duties are not excluded from the application block or buffer zone. We suggest instead stating:

While the buffer zone is in effect, the only activities allowed within the buffer zone are fumigant handling and transit and ~~then to state that~~ local, state or federal officials performing inspections, sampling, and other official duties conducted by officials wearing appropriate respiratory protection.

¹⁰ ISOR doc # 10: Review by the Toxic Air Contaminant Workgroup of Documents Related to the Draft 1,3 D Regulations. November 2024.

For clarity, Section (d)(1) should be reworded to state the following:

(1) The buffer zone must not include any property operated by persons other than the operator of the application block, unless the operator of the other property provides written agreement permission to the certified applicator and written certification that they, their employees, residents and other persons will stay out of the buffer while it is in effect. The certified applicator shall provide a copy of the written agreements to the commissioner with each notice of intent.

Failure to consider general ambient work-time and non-work exposure

It is deeply troubling that the regulation fails to protect worker bystanders from general background ambient work-time exposure to 1,3-D in high use areas. Protection from ambient exposure is very important for fieldworkers and all other bystander workers in high exposure areas such as areas near the Shafter, Parlier and Delhi air monitors where average air levels exceed 0.21 ppb. The ISOR states that this is because DPR and OEHHA don't yet have a method for modeling near-field and general background ambient work-time exposure together. OEHHA also acknowledges that many bystander workers live near their work areas so can be expected to have significant ambient non-work exposure throughout their lifetimes. These are additional reasons why it is imperative that DPR regulations protect all bystanders, both residents and workers, to the 0.04 ppb level. Protection to this level would involve setting a stringent use cap at the township or more localized level and could and should be accomplished by utilizing the SPM Roadmap to dramatically reduce reliance on use of 1,3 D in particular and soil fumigants generally.

6448.2 1,3 D Field Fumigation Methods

In comments on the residential bystander 1,3 D regulation, we expressed concerns that emission levels from the higher moisture 24" injection methods had not been adequately evaluated and that the new requirements could be difficult to enforce.

We reviewed the Shafter 1st quarter 2024 monitoring results and noted a 24-hour average air level of 4.55 ppb measured on February 22, 2024. Review of Kern County pesticide use data show that the only recorded nearby 1,3 D applications were an application completed on February 17th about a mile from the monitoring site to 34.5 acres at a rate of 326.7 lbs/acre and an application completed on February 23, 2024 about 3 miles from the monitoring site to 24 acres at a rate of 326.7 lbs/acre. Both applications were made using field fumigation method 1226 (deep/strip).¹¹ We are very concerned that this indicates that the new 24" deep

¹¹ Air Monitoring Network results for Q1 2024 – Shafter. Summary prepared by Anne Katten and Mike Zeiss. November 2024. (**Attachment # 6**)

application methods may not be as low emission as predicted and that air levels closer to these applications in time and distance could have been much higher. We communicated these observations to DPR on November 4th, 2024, and asked for an analysis but have not yet received a substantive response.¹² We are also concerned to note that AMN preliminary sampling results have not yet been posted for the 2nd or 3rd quarter of 2024. Last year DPR kept to a quarterly schedule for posting AMN preliminary sampling results.

We have also reviewed the 2024 1,3 D application records through September 30, 2024 [12] posted on the DPR website and noticed that at least 27 applications appeared to exceed the 80 acre limitation. We communicated this concern to DPR enforcement managers on November 25, 2024 along with the question: “How many 1,3 D application inspections have been conducted this year to check for compliance with the other use requirements such as injection depth and soil moisture and compliance with setbacks?”

Anne Katten received the following response from DPR Deputy Ken Everett on December 19th:

“Regarding your questions pertaining to 1,3-D applications potentially over the 80-acre exceedance. DPR staff reviewed the data you had provided along with our own data and found 32 records with application sizes exceeding the 80-acre limit. DPR staff have verified that applicators of 1,3-D continue to combine several application records and report them as a single entry in the PUR. This has occurred in nine (9) counties, and we will work with these counties to make sure they review the NOI information to verify and correct PUR entry for applications of 1,3 D.

I appreciate you bringing this to our attention.”

This widespread failure to accurately record 1,3 D applications in the PUR is very concerning and could affect accuracy of modeling. We are still awaiting a response to our question about the inspections conducted in 2024 to check compliance with the new regulation.

6448.4 Annual 1,3 D Report

We are concerned to see that the requirement to start annual report preparation to cover the calendar year 2024 has been deleted. This requirement must be reinstated so that real world evaluation of the effectiveness of the new 24” fumigant injection methods at reducing emissions can start.

¹² Email communication from Anne Katten of CRLAF to Minh Pham of CDPR on November 4, 2024.

6448.5 Analysis of Need for and Implementation of Interim Mitigation Measures for 1,3 D

The proposed requirement to evaluate the adequacy of the regulation by reviewing 1,3 D air level modeling and monitoring data to determine if annual air concentrations exceed 0.21 ppb in any township is a good concept, but in order to be health protective, it needs to have a goal of reducing air concentrations to 0.04 ppb and act on annual average data rather than wait for 3 to 5 year averages. The first two sentences of proposed 6448.5(b), should be modified as shown below, because exposures at night and in the early morning should be modeled routinely, rather than only if the predicted air concentration during 8 am to 4 pm work shifts exceed 0.21 ppb. Density of applications should also be added as a factor to review.

~~“(b) The 0.21 ppb air concentration is a time-weighted average during any 8 hour period a work period of 8:00 AM to 4:00 PM. However, t~~
The Department shall determine if estimated air concentrations exceed 0.21 ppb during any 8 hour time period ~~using alternative work periods if warranted~~ for specific townships and times of the year when 1,3-Dichloropropene applications occur. If there is an exceedance of 0.21 ppb during any 8 hour period, the Department in consultation with OEHHA shall identify the factors causing the exceedance in the township(s), such as non-compliance with current requirements, fumigation method, weather conditions, application amount, density, or application frequency.” ~~and include a discussion of whether those factors are likely to continue.”~~

Also, exceedances of the 0.21ppb level documented by DPR in its 6448.5(a) evaluation should trigger mandatory implementation of interim mitigation measures under 6448.5(c) unless the exceedance was solely caused by non-compliance with current requirements. The unclear and ambiguous loophole requiring DPR in consultation with OEHHA to determine that the exceedance is “likely to continue” before triggering an obligation to adopt interim mitigation measures should be eliminated. Specifically, this phrase in proposed 6448.5(b) and (c) should be deleted: ~~“(c) If the Department, in consultation with the Office of Environmental Health Hazard Assessment (OEHHA), determines that the factors causing 0.21 ppb to be exceeded are likely to continue in a township or townships,”~~

The regulation should also include deadlines for adopting mitigations, and these should remain in place as long as air level modeling and monitoring indicate they are needed, or until regulations are revised to make the requirements permanent.

Furthermore, as PREC member Garrett Keating noted, more targeted air monitoring will be needed for meaningful evaluation. This should include monitoring multiple days per week during months of high 1,3 D use at sites where worst case air levels are predicted. Average 1,3

D air levels monitored at DPR AMN sites through 2023 range from 2.25 x the OEHHA NSRL at the Watsonville site to 23.75 x the OEHHA NSRL at the Parlier site. This regulation should require continuing air monitoring in at least the six current locations.

The following comment on 2023 Draft AMN Results from Kathleen Kilpatrick, a retired school nurse residing in Watsonville, details why supplemental monitoring is especially needed in the Pajaro Valley:

“Although labeled Watsonville, the monitor at Ohlone Elementary is almost four miles away from town, on a bluff above the Pajaro Valley that faces the sea and the mouth of the Pajaro River. Our valley spans two counties; our school district stretches across the county line and over the ridges on either side. The levels of pesticides recorded on that playground behemoth are unlikely to accurately reflect those present in the valley, which, as are most ag communities, is unmonitored.

The Pajaro Valley is roughly wedge-shaped, ringed on three sides by hills and mountains, unevenly divided by the Pajaro River, which separates the two counties. Minus artichokes, ag crops overlap with those around Ohlone: strawberries and cane berries, a diversity of row crops and yes, there are still apple orchards. Fumigated berry fields still predominate, although organic acreage is expanding.

Ohlone Elementary is just over the rise on the southwest edge. Behind it are a small residential community and a golf course. To the southeast of the school and monitor is a conventionally farmed berry field, and in front, facing the Pacific, a large organic berry field. More fields span the coast curving south and northwest, farmed variously in strawberries, artichokes, brassicas, and various leafy greens. Winds on the bluff are variable, but, as is the nature of wind, often come from the sea. Prevailing winds blow mostly toward the Pajaro Valley, and not from it. Looking at the geology, geography, and the diversity of crops, it should be obvious that air sampling from the Ohlone monitor is not necessarily representative of Watsonville.”

Conclusion

We conclude that this regulation as proposed falls far short of protecting farmworker health or the health of the general population. Instead, it cuts corners to avoid added controls on use of a pesticide considered so toxic and volatile it has been banned in 40 countries.¹³ DPR put tremendous effort into the SPM Roadmap and should now utilize it to put in place stringent controls on use of 1,3 D to protect both bystander workers and residents from exposure to 1,3

¹³ : <https://pan-international.org/pan-international-consolidated-list-of-banned-pesticides/>

D above the level that OEHHA scientists- the state's chemical cancer risk experts have determined pose a significant risk of cancer.

Sincerely,



Anne Katten, MPH
CRLAF Pesticide and Work Health and Safety Specialist

Angel Garcia
Co-Director, Californians for Pesticide Reform

cc. (via email) Yana Garcia, Daniel Rubin, Karen Morrison, Minh Pham, Nan Singhasemanon, Randy Segawa, Dave Edwards, Ouabiba Laribi, Elaine Khan, Jing Tao, Shannon McKinney, Josh Tooker, Naomi Ondrasik

List of Attachments

1. Final Statement of Reasons: 1,3 Dichloropropene; Proposition 65 Safe Harbor Levels
2. UC Merced Farmworker Health Study 2021-2022 data from survey of 1198 farmworkers
[See below](#)
3. W.C. Fairbank et al. (1987) Night Picking. California Agriculture. January-February 1987
4. G. Solis. (2016) In three years 1,500 farmworkers suffered injuries at night. Desert Sun. 10/27/16
5. OEHHA Response to Anne Katten_Emission Data. July 2024
[See below](#)
6. Air Monitoring Network results Q1 2024 –Shafter. Summary by Anne Katten & Mike Zeiss
[See below](#)

Table 1. Agricultural Worker Shift Start Time

	<u>Percent</u>
1AM	0.3%
2AM	0.1%
3AM	0.7%
4AM	2.3%
5AM	8.6%
6AM	48.1%
7AM	31.8%
8AM	2.8%
9AM	0.8%
10AM	0.9%
11AM	0.7%
12PM	0.3%
1PM	0.1%
2PM	0.3%
3PM	0.3%
4PM	0.6%
5PM	0.8%
6PM	0.5%
8PM	0.1%
10PM	0.1%

Source: UC Merced Farmworker Health Study 2021-2022 data

Table 2. Agricultural Worker Shift Start Time (recoded)

	<u>Percent</u>
1AM-6:59AM	60%
7AM-9:59AM	35%
10AM-10:59PM	5%

Source: UC Merced Farmworker Health Study 2021-2022 data

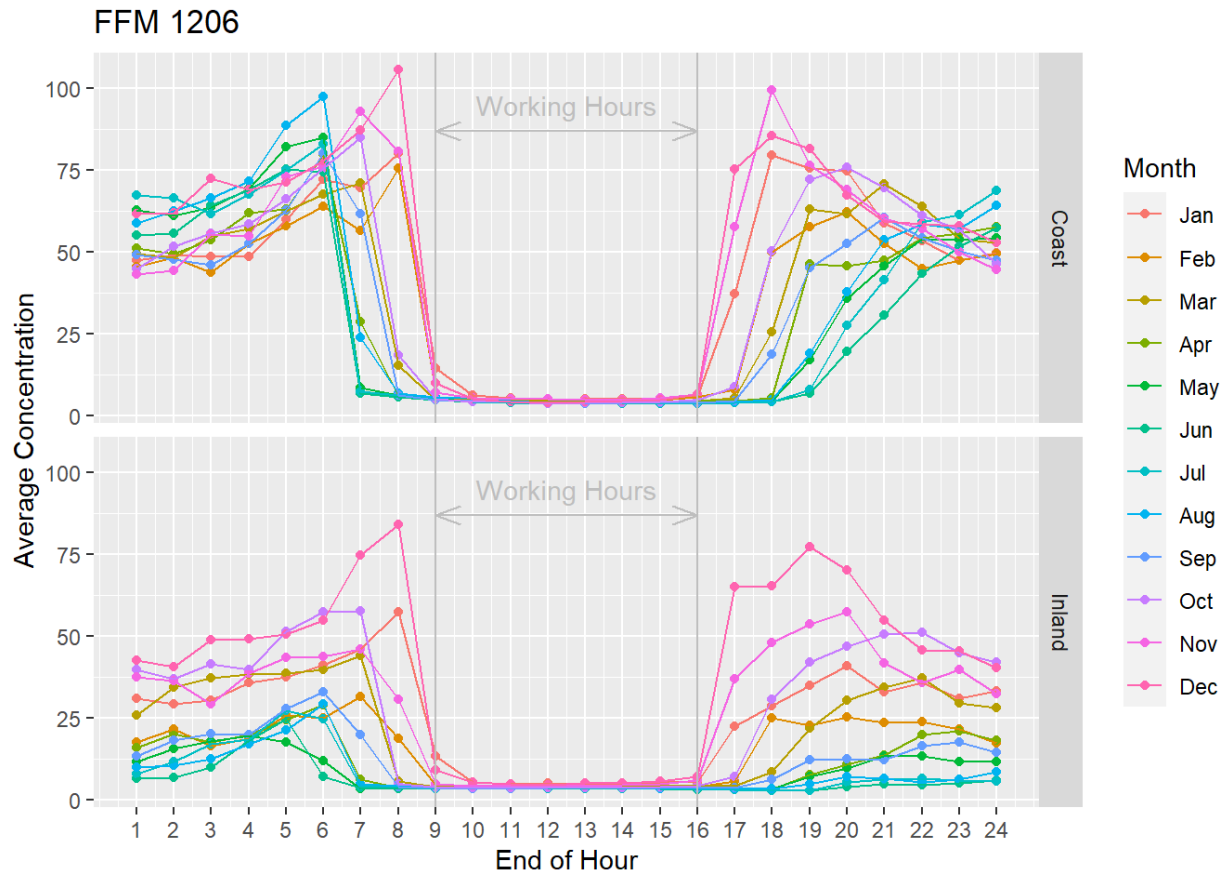
Anne Katten wrote: We would also like to obtain a summary of the by hour 1,3 D modeling results you mentioned but are not sure what format to request.

OEHHA's response: The modeling results were based on hypothetical 1,3-D applications with FFM 1206 or FFM 1242. These results are intended to show the large differences between estimated daytime hour concentrations and nighttime hour estimates near a treated field. They are also intended to show how the daytime/nighttime air concentrations vary with different FFMs.

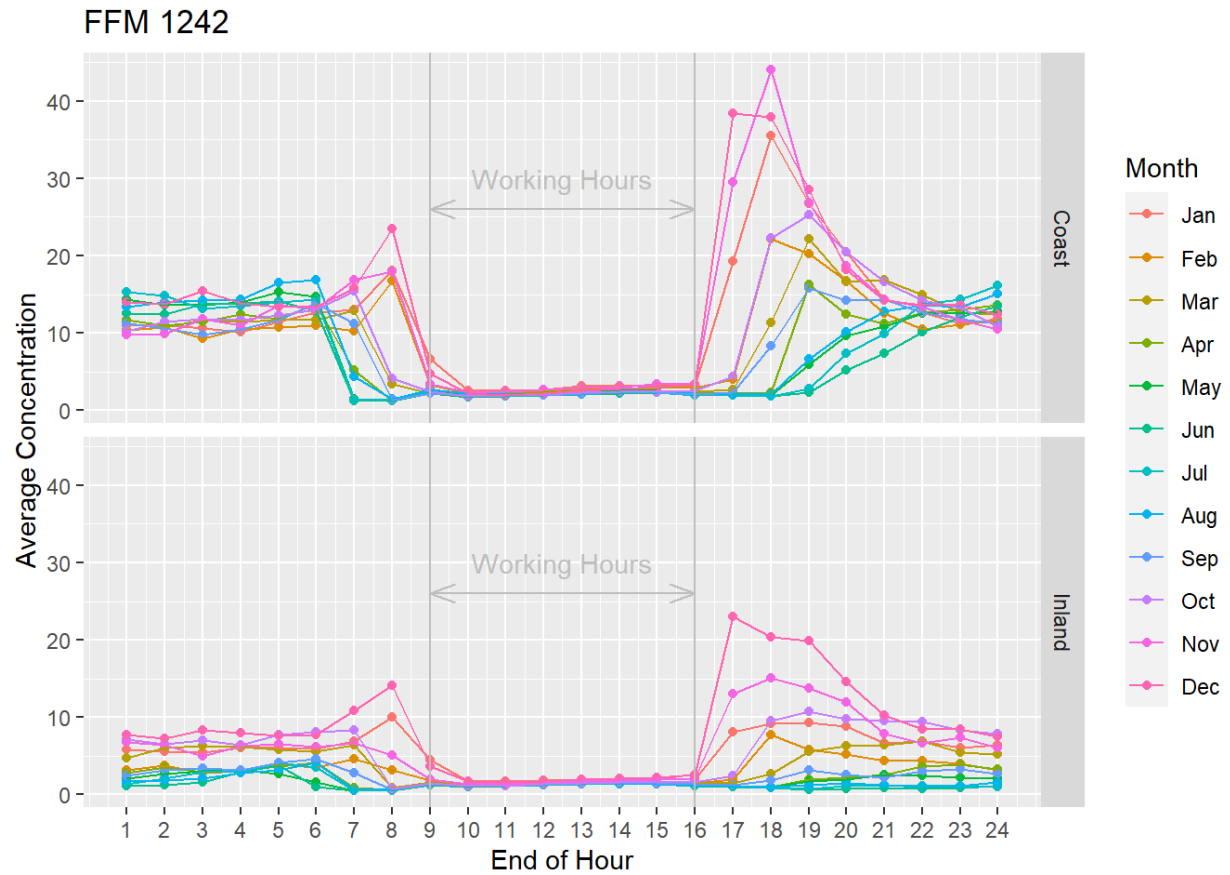
Here are key inputs and assumptions for the model:

- We used 2017 weather data from Parlier (inland) and Watsonville (coastal) to represent regional conditions.
- The modeling simulated one application with 500-hr emission starting at 8 AM Pacific Standard Time on each day of a year and estimated concentrations at a 100-foot distance from an 80-acre application.
- Next, we averaged all the estimated concentrations for each hour of the day for each month of the year.
- The application rate was assumed to be 100 lbs/ac.

Disclaimer: These results cannot be used to quantifiably determine the actual concentration difference between daytime and nighttime for any monitoring data, which have concentrations contributed from multiple applications occurring at different locations. It also cannot be used to decide the exposure differences of any population during daytime and nighttime. More sophisticated modeling assumptions and configuration are necessary for those estimation purposes.



FFM 1206		Average Concentration ($\mu\text{g}/\text{m}^3$)	
Region	Season	4PM - 8AM	8AM - 4PM
Coastal	non-Winter (Mar – Oct)	46.7	4.1
Coastal	Winter (Nov – Feb)	61.7	5.6
Inland	non-Winter (Mar – Oct)	17.0	3.6
Inland	Winter (Nov – Feb)	38.6	5.1



FFM 1242		Average Concentration ($\mu\text{g}/\text{m}^3$)	
Region	Season	4PM - 8AM	8AM - 4PM
Coastal	non-Winter (Mar – Oct)	10.7	2.2
Coastal	Winter (Nov – Feb)	16.0	3.0
Inland	non-Winter (Mar – Oct)	3.1	1.4
Inland	Winter (Nov – Feb)	7.7	1.9

Air Monitoring Network results for Q1 2024 – Shafter monitoring location

The Shafter air monitor is installed at Sequoia Elementary Schoolⁱ, which is located at 500 East Fresno Avenue in Shafter CAⁱⁱ. The geographic coordinates of that street address, *per se*, are Latitude 35.5154986 Longitude -119.2677133ⁱⁱⁱ. The location is shown in Figure 1. The highest air level measured at the Shafter AMN site in the first quarter of 2024 was 4.55 ppb measured on 2/22/2024 as shown in Table 1.

1,3-D application ending on 2/17/2024

As shown in Table 2, on 2/17/2024 there was one reported 1,3-D application, on 34.5 acres, within section 28S25E2 at an application rate of 326.7 lb/ac using Field Fumigation Method (fume code) 1226 (24" deep/strip). The application location is identified more precisely by the Site Identification Number “Mauers” within the Restricted Materials Permit held by “Phil Jeffries Farms” (Table 1). However, to obtain the geographic coordinates for that site identification number, it would be necessary to contact the Kern County Agricultural Commissioner. Therefore, the center point (centroid) of section 28S25E2 was used as a proxy location.

The centroid of section 28S25E2 has coordinates Latitude 35.5217429 Longitude -119.2514258^{iv}. The straight-line distance between that centroid and the air-monitor location at Sequoia Elementary School was measured as **1.00 miles**, using the “ruler” tool within the online software program GoogleEarth (Figure 2). Note that, if the actual 1,3-D application location was in the southwestern portion of the section, the distance would be shorter than 1 mile.

1,3-D application ending on 2/23/2024

As shown in Table 2, on 2/23/2024 there was one reported 1,3-D application, on 24 acres, within section 28S26E7 at an application rate of 326.7 lb/ac using Field Fumigation Method (fume code) 1226 (24" deep/strip). The application location is identified more precisely by the Site Identification Number “3262074P” within the Restricted Materials Permit held by “Wonderful Orchards - Eastside” (Table 1). However, to obtain the geographic coordinates for that site identification number, it would be necessary to contact the Kern County Agricultural Commissioner. Therefore, the center point (centroid) of section 28S26E7 was used as a proxy location.

The centroid of section 28S26E7 has coordinates Latitude 35.5069009 Longitude -119.2150988^{iv}. The straight-line distance between that centroid and the air-monitor location at Sequoia Elementary School was measured as **3.02 miles**, using the “ruler” tool within the online software program GoogleEarth (Figure 3).

ⁱ CA Department of Pesticide Regulation. October 2024. *Appendix C: Shafter results*, page 45. In: Air Monitoring Results for 2023. Available at:

https://www.cdpr.ca.gov/docs/emon/airinit/air_monitoring_results/2024/2023_amn_results-2024.pdf

ⁱⁱ Sequoia Elementary School. 2024. <https://www.sequoiabears.com/>

ⁱⁱⁱ Map Developers. 2024. Geocode Finder. https://www.mapdevelopers.com/geocode_tool.php

^{iv} Earth Point. 2024. CA DPR Township and Range - Search By Description. <https://www.earthpoint.us/TownshipsCaliforniaSearchByDescription.aspx>

Figure 1. Township 28S25E, with selected sections numbered, showing location of Sequoia Elementary School within section 03. Each section measures 1 mile by 1 mile.



Figure 2. Distance between Sequoia Elementary School and the centroid of section 02. Both are within township 28S 25E. Each section measures 1 mile by 1 mile.



Figure 3. Distance between Sequoia Elementary School and the centroid of section 28S26E07.

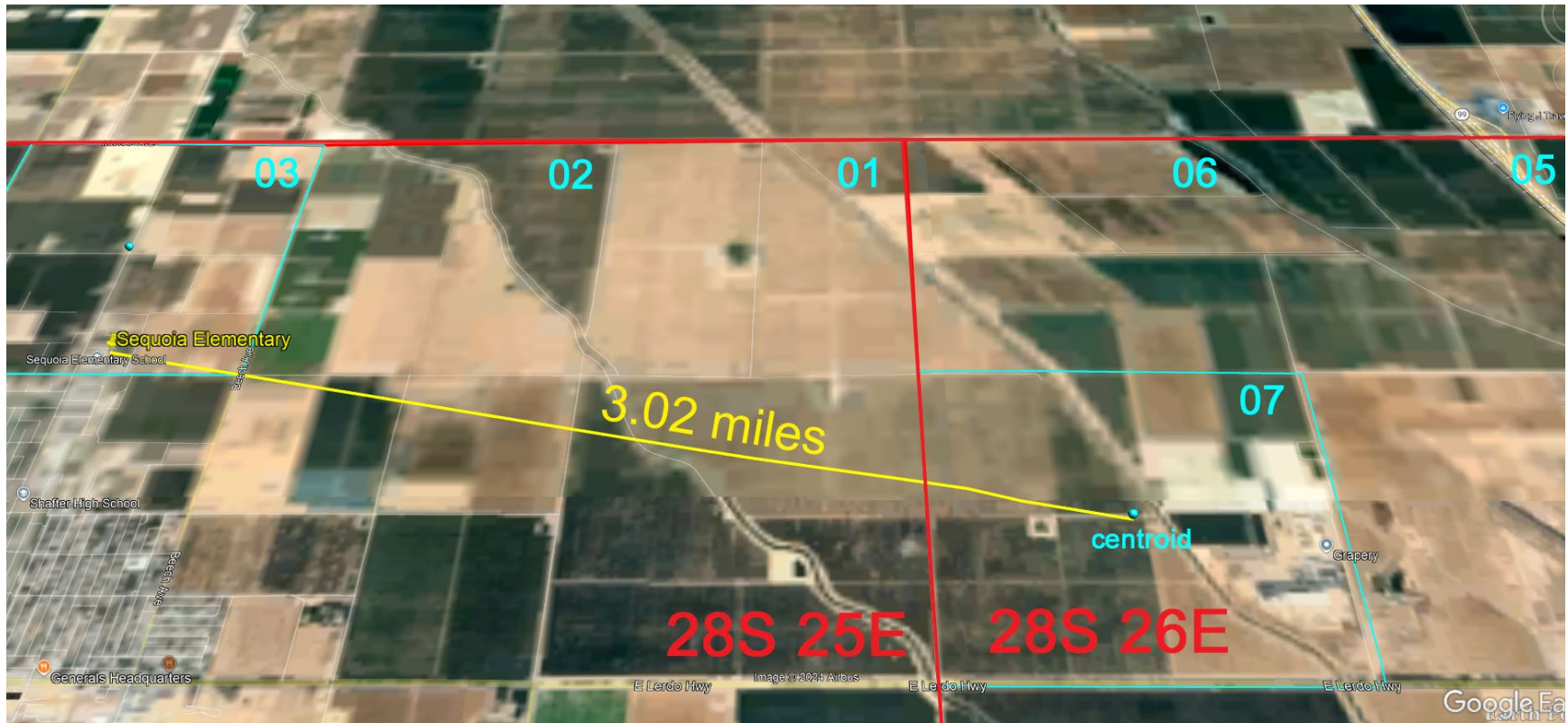


Table 1: Shafter AMN results for January - March 2024

Sample_Year	Data_Type	Study_Type	Sampling_Agency	Study_Number	Site_Status	Site_Code	Site_Name	Latitude_WGS84	Longitude_WGS84	Sample_ID	Start_Date	Runtime_min	MeanFlow_ccm	Chemical	Concentration_ppb	Concentration_ng/m3	LOQ_ppb	LOQ_ng/m3	MDL_ppb	MDL_ng/m3	Lab_Code	Flag_Desc
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03875	1/4/2024	1440	3.1	1,3-dichloropropene	ND	ND	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03881	1/10/2024	1440	3.1	1,3-dichloropropene	ND	ND	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03885	1/18/2024	1440	3.4	1,3-dichloropropene	0.0644	292.289	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03893	1/22/2024	1440	3.3	1,3-dichloropropene	0.0317	143.875	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03897	1/28/2024	1440	3.1	1,3-dichloropropene	0.012	54.464	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03903	2/7/2024	1440	3.3	1,3-dichloropropene	ND	ND	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03913	2/13/2024	1440	3.3	1,3-dichloropropene	ND	ND	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03915	2/22/2024	1440	3.5	1,3-dichloropropene	4.55	20650.859	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03922	3/1/2024	1440	3.5	1,3-dichloropropene	0.183	829.211	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03923	3/5/2024	1440	3.3	1,3-dichloropropene	0.623	2827.579	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03934	3/11/2024	1440	3.3	1,3-dichloropropene	0.196	889.122	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03935	3/19/2024	1440	3.4	1,3-dichloropropene	0.386	1751.919	0.01	45.4	0.0066	29.7	CDFA	NULL
2024	Preliminary	Long-Term	DPR	257	Active	257-BA	Shafter	35.516477	-119.268763	257-BA03943	3/25/2024	1440	3.4	1,3-dichloropropene	0.0151	68.534	0.01	45.4	0.0066	29.7	CDFA	NULL

Table 2 (continued): Kern County 1,3-D applications from 1/1/24 to 9/4/24

Permit #	Permittee	Site ID	Meridian	Township	Range	Section	Application End Date	Application End Time	Commodity	Planted Amount	Planted Units	EPA Reg No.	Product Name	Quantity Used	Quantity Units	Treated Amount	Treated Units	Appl. Method	Fume Code	Appl Rate (lb/a)
1505856	5-G CUSTOM AG, LLC.	29	M	27S	24E	33	7/5/2024	4:00 PM	CARROT	37.50	ACRES	95290-1-AA	TELONE II	449.48	Gallon	37.50	ACRES	Fumigation	1206	
1500245	KIRSCHENMANN BROS.	11C24	M	27S	25E	33	7/5/2024	9:30 AM	CARROT	11.00	ACRES	95290-1-AA	TELONE II	108.00	Gallon	9.00	ACRES	Fumigation	1206	
1500245	KIRSCHENMANN BROS.	12C24	M	27S	25E	33	7/5/2024	3:00 PM	CARROT	20.00	ACRES	95290-1-AA	TELONE II	222.00	Gallon	18.50	ACRES	Fumigation	1206	
1505856	5-G CUSTOM AG, LLC.	30	M	27S	24E	33	7/6/2024	12:00 PM	CARROT	34.50	ACRES	95290-1-AA	TELONE II	413.52	Gallon	34.50	ACRES	Fumigation	1206	
1500249	LESTER NEUFELD & SON/NEUHOUSE	35W24RO	M	27S	22E	12	7/8/2024	8:15 AM	OP-ROSE	20.00	ACRES	11220-20-ZA	TELONE C-1	689.00	Gallon	18.10	ACRES	Fumigation	1242	
1500187	WILSON AG	CAW36	M	28S	24E	25	7/15/2024	2:30 PM	CARROT	38.10	ACRES	95290-1-AA	TELONE II	412.61	Gallon	34.80	ACRES	Fumigation	1206	
1500187	WILSON AG	CAW38	M	28S	24E	25	7/16/2024	11:00 AM	CARROT	35.70	ACRES	95290-1-AA	TELONE II	398.39	Gallon	33.60	ACRES	Fumigation	1206	
1500249	LESTER NEUFELD & SON/NEUHOUSE	35E24RO	M	27S	22E	12	7/19/2024	10:00 AM	OP-ROSE	51.00	ACRES	11220-20-ZA	TELONE C-1	1314.00	Gallon	34.50	ACRES	Fumigation	1242	
1500249	LESTER NEUFELD & SON/NEUHOUSE	35E24RO	M	27S	22E	12	7/22/2024	9:30 AM	OP-ROSE	51.00	ACRES	11220-20-ZA	TELONE C-1	510.00	Gallon	13.40	ACRES	Fumigation	1242	
1500880	R & G FARMS	2801A	M	29S	26E	28	7/23/2024	8:30 AM	CARROT	83.00	ACRES	95290-1-AA	TELONE II	875.00	Gallon	73.00	ACRES	Fumigation	1224	
1500187	WILSON AG	CAHPL	M	28S	25E	08	7/26/2024	8:00 AM	CARROT	72.00	ACRES	95290-1-AA	TELONE II	881.30	Gallon	70.00	ACRES	Fumigation	1224	
1500187	WILSON AG	CAL34	M	28S	25E	07	7/27/2024	7:00 AM	CARROT	32.90	ACRES	95290-1-AA	TELONE II	377.70	Gallon	30.00	ACRES	Fumigation	1224	
1500249	LESTER NEUFELD & SON/NEUHOUSE	34E24RO	M	27S	22E	12	7/30/2024	9:00 AM	OP-ROSE	72.00	ACRES	11220-20-ZA	TELONE C-1	1371.60	Gallon	36.00	ACRES	Fumigation	1242	
1500249	LESTER NEUFELD & SON/NEUHOUSE	34E24RO	M	27S	22E	12	8/2/2024	9:36 AM	OP-ROSE	72.00	ACRES	11220-20-ZA	TELONE C-1	1370.00	Gallon	36.00	ACRES	Fumigation	1242	
1500187	WILSON AG	CAGAD	M	28S	25E	05	8/3/2024	1:00 PM	CARROT	17.50	ACRES	95290-1-AA	TELONE II	210.54	Gallon	15.50	ACRES	Fumigation	1224	
1500187	WILSON AG	CAW16	M	28S	25E	05	8/3/2024	1:00 PM	CARROT	16.70	ACRES	95290-1-AA	TELONE II	206.46	Gallon	15.20	ACRES	Fumigation	1224	
1501374	HANDEL & WILSON FARMS	84C	M	28S	25E	08	8/7/2024	2:00 PM	CARROT	31.00	ACRES	95290-1-AA	TELONE II	374.00	Gallon	31.00	ACRES	Fumigation	1206	
1500249	LESTER NEUFELD & SON/NEUHOUSE	34W24RO	M	27S	22E	12	8/7/2024	9:00 AM	OP-ROSE	76.00	ACRES	11220-20-ZA	TELONE C-1	1485.00	Gallon	39.00	ACRES	Fumigation	1242	
1500249	LESTER NEUFELD & SON/NEUHOUSE	34W24RO	M	27S	22E	12	8/10/2024	8:00 AM	OP-ROSE	76.00	ACRES	11220-20-ZA	TELONE C-1	1371.60	Gallon	36.00	ACRES	Fumigation	1242	
1504311	POSO RIDGE, LLC	213FCA	M	32S	29E	32	8/12/2024	3:00 PM	CARROT	55.00	ACRES	95290-1-AA	TELONE II	664.00	Gallon	55.00	ACRES	Fumigation	1206	
1500245	KIRSCHENMANN BROS.	GW24	M	27S	25E	31	8/13/2024	4:30 PM	CARROT	54.00	ACRES	95290-1-AA	TELONE II	651.00	Gallon	53.00	ACRES	Fumigation	1206	
1500249	LESTER NEUFELD & SON/NEUHOUSE	32RBTP24	M	26S	25E	31	8/15/2024	8:00 AM	OP-ROSE	56.00	ACRES	11220-20-ZA	TELONE C-1	2133.60	Gallon	56.00	ACRES	Fumigation	1242	
1500245	KIRSCHENMANN BROS.	BC24	M	28S	25E	05	8/20/2024	4:00 PM	CARROT	37.00	ACRES	95290-1-AA	TELONE II	451.00	Gallon	37.00	ACRES	Fumigation	1206	
1500187	WILSON AG	CAL38	M	28S	25E	07	8/23/2024	3:00 PM	CARROT	37.20	ACRES	95290-1-AA	TELONE II	450.00	Gallon	37.20	ACRES	Fumigation	1206	
1500555	THOMSON INTERNATIONAL INC.	321WCAR	M	31S	29E	08	9/4/2024	8:00 AM	CARROT	50.00	ACRES	95290-1-AA	TELONE II	246.00	Gallon	20.00	ACRES	Fumigation	1206	