January 18, 2023

Julie Henderson, Director, julie.henderson@cdpr.ca.gov
Minh Pham, Environmental Monitoring Branch Chief, minh.pham@cdpr.ca.gov
Lauren Otani, Senior Environmental Scientist
California Department of Pesticide Regulation
Via email: dpr22005@cdpr.ca.gov

RE: Comments on proposed regulation #22-005 for 1,3-dichloropropene soil fumigation

Dear Director Henderson, Dr. Pham and Ms. Otani,

Thank you for the opportunity to comment on the California Department of Pesticide Regulation's (DPR's) proposed regulation for the soil fumigant 1,3-dichloropropene (1,3 D). The statewide coalition Californians for Pesticide Reform and farmworker advocacy organization California Rural Legal Assistance Foundation submit these comments for your consideration.

Tighter restrictions on use and emissions of the pesticide 1,3-D are urgently needed because this cancer-causing soil fumigant is highly drift prone with long-term air levels greatly exceeding the Proposition 65 Safe Harbor level at all of DPR's air monitoring network sites and short-term spikes in air levels posing risk to infants and the elderly.

1,3-D is the third most heavily used pesticide in California with over 12 million pounds reported annually in recent years and historic use of 25 million pounds per year prior to 1990.[1] It is used as a pre-plant soil fumigant mainly for berry crops along the central coast; almonds, sweet

[1] DPR. 2002. California Management Plan: 1,3-Dichloropropene.

potatoes, tree fruit, grapes and nursery crops in the San Joaquin valley; and carrots in Imperial County. Over 90% of use between 2013 and 2017 was concentrated in the 13 counties of Fresno, Kern, Tulare, Stanislaus, San Joaquin, Imperial, Madera, Monterey, Santa Barbara, San Luis Obispo, Kings, Santa Cruz and Ventura counties.[2] Over half of these counties are over 50% Latinx.[3] 1,3 D has been banned in 34 other countries[4]. California should be working towards rapidly reducing and eliminating use, and accelerating the research and adoption of alternative practices.

We have grave concerns that these regulations, as proposed, will fall far short of protecting fieldworkers and other rural residents from harmful levels of exposure to this cancer-causing and highly drift prone soil fumigant because:

1) The rule is not designed to control 1,3-D use and emissions to the Safe Harbor Level set in June 2022 under Proposition 65 or even to the regulatory target level of 0.1ppb recommended by OEHHA in 2016;
2) Farmworkers and other outdoor workers are left unprotected and allowed to work at the very edge of fumigated fields;
3) A rule designed to control acute exposures to a 72-hour average of 55 ppb cannot be relied on to prevent lifetime exposures above 0.56 ppb. The modeling which predicts that the rule will control annual exposures to 0.35 ppb does not consider worst case exposure scenarios;
4) It is reckless to eliminate the existing township use cap given that estimated emission reductions rely on modeling that has been shown to underestimate peak exposures; on predicted emission levels from new fumigation methods that have only been evaluated on tiny test plots; and on increased soil moisture in the face of ever scarcer water supplies;
5) Weak enforcement will undermine implementation of these complex regulations;
6) There is no required timeline for completion of an annual report on 1,3-D use and air monitoring levels or for implementing increased mitigations.

The regulation must be redesigned to control 1,3-D exposures to the Proposition 65 Safe Harbor Level

To be health protective, the regulation needs to be redesigned to control maximum average annual air levels to the Proposition 65 No Significant Risk Level (NSRL) set by the Office of Environmental Health Hazard Assessment (OEHHA) which is 3.7 micrograms per day, equivalent to an average annual air concentration of 185 ng/m3 or 0.04 ppb.[5] This level is being exceeded from 2.5 to 29-fold at the Department's six air monitoring stations.

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[2] DPR 2022. Modeling for mitigation measures to reduce acute exposure from 1,3-D, Modeling Approach #2

[3] https://www.indexmundi.com/facts/united-states/quick-facts/california/hispanic-or-latino-population-percentage#table See Appendix for more details.

[4] https://pan-international.org/pan-international-consolidated-list-of-banned-pesticides/

[5] 1,3-D NSRL = 3.7 micrograms per day. Breathing rate used by OEHHA = 20 cubic meters per day (from OEHHA regs 27 CCR § 25721 Level of Exposure to Chemicals Causing Cancer). https://govt.westlaw.com/calregs/Document/IBBC153FD512211EC828B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Currently the regulation is only designed to reduce annual air levels to 0.56 ppb, a level 14 times higher than the Prop 65 NSRL and more than 5 times higher than the 0.10 ppb level recommended by OEHHA in 2016 based on cancer study data summarized by DPR.[6] To set the Proposition 65 NSRL, OEHHA obtained and independently reviewed the full cancer study and found evidence that 1,3 D is a more potent carcinogen.

Farmworker protection must be included in this pesticide regulation

By the nature of their exposure, farmworkers face disproportionately negative impacts compared to residential bystanders. Farmworkers are overwhelmingly Latinx, while the racial makeup of residential bystanders more closely tracks the county's demographics. Proposing a pesticide regulation that is expressly designed to protect residential bystanders only, and which excludes from its scope low-income Latinx people who work around treated fields, is an outrageous environmental injustice that must be corrected.

In *Vasquez vs DPR and Dow*[7], the court ordered DPR to develop a regulation that protects farmworkers (occupational bystanders) and to work in concert with OEHHA on development of pesticide worker protection regulations in accordance with Food and Agriculture Code sections 12980 and 12981.

This regulation is designed to reduce peak 1,3-D air levels in part by reducing maximum application plot size, a change that may reduce peak acute exposures but will result in a greater number of applications to smaller field areas. In turn, this can be expected to increase the number of days of possible work adjacent or very close to recently fumigated fields for fieldworkers, tractor drivers, irrigators preparing other field sections for fumigation, and other outdoor workers. By excluding worker bystanders from this regulation, the Department is callously ignoring their exposures to 1,3-D.

Air monitoring during and for 7 days after fumigation at the perimeter of a deep injection (24"), untarped 1,3-D application to a small (2 acre) test plot at the maximum application rate in October found a maximum 6-hour air level of 143 ppb at 50 feet from the field and 10 additional air levels about 50 ppb at 50 feet of the field edge.[8] Presumably air levels adjacent to larger applications and in winter months would be even higher. As proposed, between March and October, the regulation would allow an 80 acre application only with a 500 foot setback to occupied structures or a maximum 20 acre application with a 100 foot setback. From

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If a person breathes air contaminated with 3.7/20 (=.185) micrograms per cubic meter of 1,3-D. they will be exposed to 3.7 micrograms per day. To convert .185 micrograms per cubic meter to ppb, and given 1,3-D's molecular weight of 111, we used https://www.gastec.co.jp/en/technology/knowledge/concentration/ to yield 0.04 ppb.

[6] Marks, Teresa. 2016a. "Comments on the Draft Risk Management Directive for 1,3-Dichloropropene (1,3-D) and Responses." Department of Pesticide Regulation Letter, October 6, 2016.

[7] https://casetext.com/case/vasquez-v-dept-of-pesticide-regulation

[8] Study 331: An Evaluation of 1,3 D Air Monitoring Results from an untarped 24" Deep Broadcast Application in Atwater, CA using increased soil moisture. October 2021. Obtained from DPR by PRA request.

November-February the maximum plot size at the maximum application rate would be 30 acres and require a 500 foot setback.

There is no legitimate basis for DPR to adopt setbacks between treated fields and occupied structures (except structures like barns that are agricultural workplaces) while at the same time allowing farmworkers and dairy workers to work for full days, even multiple workdays, up to the very edge of the treated field immediately after and even during the fumigation. DPR's 2015 Risk Characterization Document (RCD) includes estimates of worker bystander exposure and risk, and identifies exposures of concern. The Risk Management Directive (RMD) for 1,3-D cancer risk includes occupational bystanders in the scope to be addressed in mitigations. The Township Cap Program that this regulation is intended to replace was designed to control area air levels of 1,3-D to protect both residents and farmworkers. DPR is willfully omitting farmworkers in the draft regulation in order to enable continued high levels of 1,3-D use.

Setbacks or buffer zones between treated fields and nearby fields where work could be taking place should be included in this regulation.

The proposed acute exposure controls are not designed to prevent high annual air levels and cancer risks

Simple math shows that setbacks and proposed application restrictions designed to control acute exposures to 55 ppb over 72 hours cannot be relied on to control annual exposure levels or lifetime average exposure levels even to DPR's cancer regulatory target of 0.56 ppb. Exposure for 72 hours at 55 ppb will come close to reaching an annual average level of 0.56 ppb. Combined additional exposures during the year totaling only 40 ppb from off-gassing from the same or other nearby fumigations will result in an annual average exposure level exceeding 0.56 ppb.

The analysis conducted by DPR which predicts maximum average lifetime exposure levels of 0.35 ppb is designed to model high use levels. However, it does not appear to model worst case conditions where a residence is at or near the setback border for multiple fumigations. The restrictions on overlapping blocks will not prevent this scenario.

At the Parlier Air Monitoring Network (AMN) site, the annual average air concentration (estimated from one sample per week, which may not capture peak exposures) was 5.25 times the 0.56 ppb target in 2018, 2.76 times the 0.56 ppb target in 2021 and more than twice DPR's target level over 5 years of monitoring. [9] We fail to see how the proposed restrictions can prevent replication of these documented air concentration levels, much less worst-case exposure scenarios, from recurring.

Use restrictions over all winter months must be strengthened

We recognize that restricting 1,3-D use throughout the winter months may make sense because the prohibition of 1,3-D fumigations in December with no restrictions in other winter months

[9] DPR PREC Presentation of 2021 1,3-D Ambient Air Monitoring Results. July 15, 2022

contributed to high air concentrations in November and January. The proposed restrictions, however, are inadequate. We note that the economic analysis by CDFA and the University of California, Davis (UCD)[10] indicates a lower economic impact to growers and applicators with the seasonal setbacks compared to a December (or longer) prohibition and are concerned that minimizing economic impacts may have been prioritized over minimizing acute and cancer risks to residents from exposure to 1,3-D.

In January of 2018, a 24-hour level of 50.5 ppb was measured at the Shafter air monitoring station with the likely source an untarped 297.3 lb/ac application to a 25 acre field 650 feet from the air monitoring site. Oddly, the Notice of Intent for the application[11] lists the injection depth as 36 inches rather than 18 inches. Air modeling predicted even higher levels,[12] up to 220 ppb, closer to the treated field. Even if new application methods reduce emissions by 50%, levels above 110 ppb would be expected adjacent to a 30 acre field treated at the maximum application rate (332 lb/ac). The current proposal would allow winter applications under these conditions with farm work and other outdoor work allowed up to the field border.

The requirements for keeping a running tally of 1,3-D applications at the township level and enforcing a township cap must be retained and taken over by the Department
In the face of the uncertainties in modeling and in extrapolating from results of small-scale studies of new application methods, eliminating the existing use cap and the requirement for a running tally of 1,3-D applications is reckless.

The Department claims that the new modeling methodology would support a greatly increased township cap of 204,200 adjusted total pounds but acknowledges that the current and proposed methods for setting a township cap are not directly comparable because they are based on different years of pesticide use data and meteorological data, different fumigation methods, associated flux time series, application factors, and modeling/statistical approach.[13] The Department's conclusion that the new field fumigation methods are <u>expected</u> to reduce ambient levels of 1,3-D and therefore allow more use in adjusted total pounds is not reassuring in light of the fact that multiple peer reviewers have concluded that the models DPR uses to estimate air levels at different distances from fumigations substantially underestimate peak 1,3-D soil fumigation emissions.

In external peer review of DPR's use of the HYDRUS and AERFUM/AERMOD models to model 1,3-D emissions from field fumigations[14], Dr. Stephen Hanna observed that the AERFUM model underpredicted the observed annual average air concentrations from year-round monitoring in Merced in 2011 by about a factor of 2. Dr. Acula Venkatram concluded that the model consistently underestimates concentrations and misses high concentrations. The

[10] Economic and Pest Management Evaluation of Proposed 1,3 Dichloropropene Regulation 6/21/22
[11] Notice of Intent to Apply Restricted Materials. See Appendix for copy
[12] DPR Air modeling of air levels downwind from the January 20, 2018 application. See Appendix for diagram
[13] DPR 2022. Modeling for the township cap of 1,3-D applications, Modeling Approach #2
[14] External Peer Review of the Methodology to develop a township cap for 1,3 Dichloropropene. 2019.

underestimation of air concentrations is very concerning since AERFUM is utilized in determining required setbacks from fumigations. It does not appear that sufficient modifications have been made to the model to address these concerns, so an additional uncertainty factor should be used to increase setbacks needed to protect public health.

In reviewing this proposed regulation, OEHHA also observed "Considering that the models used to estimate air concentration (i.e. HYDRUS and AERMOD) have been shown to underestimate peak air concentrations detected by the Air Monitoring Network, similar uncertainties may exist when predicting long-term 1,3-D exposure."[15]

We are also concerned to note that the new modeling excludes receptors within the setback zone around modeled applications from emissions estimates for the setback duration of 7 days, without quantifying how this approach affects the revised estimate for the township cap.

The Department must take over the duty for maintaining real-time 1,3-D use inventory and enforcing a health protective use cap by reviewing all 1,3-D Notices of Intent to determine whether or not they should be granted. 1,3-D use reports should then be required to be submitted to both counties and DPR on the date of fumigant application. To be health protective, the township cap should also be reduced to a level designed to reduce average annual levels below the Proposition 65 NSRL of 0.04 ppb.

Any business with the technical expertise to conduct fumigations is clearly capable of submitting both Notices of Intent and pesticide use reports online. DPR can then use spreadsheets to keep a running tally of adjusted total pounds and total pounds used per township and hot spots within townships.

Weak Enforcement will undermine implementation of this complex regulation

How will 50% moisture (only 10% higher than the existing requirement for some methods) and 24" injection depth be monitored and enforced across large fumigation plots, especially given the scarcity of water and presence of rocks and tree roots impeding 24" injection? How has the reliability of the three proposed methods for checking soil moisture been evaluated? How will injection depth be verified in inspections and investigations? One of the proposed methods for achieving 50% moisture is applying 3 inches of water. It is therefore concerning that the Atwater pilot study reported application of "approximately 6 inches of water" and the amount of water applied in preparation for the other pilot tests was not reported.

Moreover, in 2019 in some of the highest use counties, 10% or fewer of 1,3-D soil fumigations were inspected. The highest rates of inspection were in Monterey, Ventura, San Luis Obispo and Santa Barbara counties where TIF-tarped applications are common and there are affluent neighborhoods close to berry fields. The lowest rate was in Kern County, where some of the

[15] Review by the Toxic Air Contaminant Workgroup of Documents Related to the Draft 1,3-Dichloropropene Regulations (November 7, 2022) https://www.cdpr.ca.gov/docs/legbills/rulepkgs/22-005/dpr_22-005_8_tacwg.pdf

highest recent 1,3-D exceedances were measured. See the table of fumigation inspections in the Appendix for more details.

We are also concerned rather than reassured to note that no violations were found in 94.7% of soil fumigation inspections in high 1,3-D use counties in 2019. Such a high rate of compliance suggests that inspections may not be thorough enough and stands in stark contrast to the poor enforcement record for TriCal, the state's largest fumigant application company. TriCal is facing licensing action by DPR due to past violations resulting in a total of 40 incidents in multiple counties and characterized by DPR Enforcement Deputy Ken Everett as "an unacceptable pattern of egregious and dangerous actions that place workers and the public in danger".[16]

Fumigation code should be added to the pesticide use database
We strongly support requiring inclusion of the fumigation method code in all soil fumigation use reports. This additional information should also be included in the online pesticide use reporting database going forward.

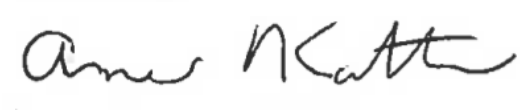
Annual report requirement must include a due date
In addition to our recommendation that DPR maintain a running tally of use in each township, we strongly support requiring an annual report with a public comment period to improve transparency and accountability. However, the regulation must include a timeline or deadline for annual report release to prevent long delays in report completion. For comparison, a Pesticide VOC Annual Inventory is required in statute without a deadline, and the most recent completed report is for 2019.

We think June 1st of the subsequent year would be an appropriate deadline for issuing the Annual Report. The scope of the report also needs to be extended beyond the 10 highest use townships. At minimum it must include all highest use townships in each county and spanning multiple counties. As noted in rulemaking documents, over 90% of use is concentrated in 13 counties. The regulation also needs to include clear requirements for timely tightening of use restrictions if 1,3-D levels documented in air monitoring or predicted by modeling exceed action levels, rather than the vague obligation to "determine if additional restrictions are needed" in the proposed regulation. Clear regulatory triggers have precedence in the field fumigation VOC emission limits (CCRT3 section 6452.2).

Conclusion
As currently drafted, this proposed regulation falls far short of protecting farmworkers and other rural bystander workers and residents from health-harming levels of exposure to 1,3-dichloropropene and disproportionately impacts both Latinx state residents and especially farmworkers. We urge you to carefully consider our recommendations for strengthening this regulation and to establish clear and enforceable reduction targets for 1,3 D use and emissions.

Sincerely,

[16] https://www.cdpr.ca.gov/docs/pressrls/2022/111522_2.htm



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Appendix to CRLAF/CPR Comments:

1,3- D Use, Field Fumigation Inspections and Latinx population in high use counties

County	% Latinx Population	2019: # 1,3 D applications	2019: # field fumigation inspections*	2020: # field Fumigation Inspections*	2019: Maximum % 1,3 D Fumigations inspected*	% 2019 Inspection with NO violations
Fresno	53.5	328	60	27	18%	100%
Imperial	84.6	91	22	19	24%	100%
Kern	54	197	9	7	5%	100%
Kings	55	31	9	11	29%	88.9%
Merced	60.2	313	25	33	8%	93.9%
Monterey	59.1	351	251	172	72%	98.3%
S. Joaquin	41.9	115	26	15	23%	100%
SLO	22.8	116	47	26	41%	100%
S. Barbara	45.8	152	49	50	32%	98%
S. Cruz	34.1	157	9	18	6%	88.9%
Stanislaus	47.0	223	22	7	10%	100%
Tulare	65.2	208	42	21	20%	100%
Ventura	43.0	75	51	85	68%	97.6%
Average	39.3	na	na	na	27%	97.4%

*Field fumigation inspections may also include inspections of metam sodium, metam potassium or chloropicrin field fumigations so the actual number of 1,3 D application inspections or percent inspected is probably significantly lower.

Sources: DPR Pesticide Use Enforcement Profiles https://apps.cdpr.ca.gov/docs/county/statistics/index.cfm
Preliminary 2019 PUR data (obtained from DPR by PRA)
https://www.indexmundi.com/facts/united-states/quick-facts/california/hispanic-or-latino-population-percentage#table (39.3% Latinx: California population statewide)

Notice of Intent for 1,3-D application linked to January 2018 high air level in Shafter:

Notice of Intent To Apply Restricted Materials

(937-591877)

County	Nursery	Sec.	Twn	Rng	Base	Method	Property Operator	Applicator Name and Address
Kern	No	10	28S	25E	M	Ground 1206	B & R Farms	SIMPLOT GROWER SOLUTIONS 19421 CREEK RD BAKERSFIELD 93314 Applicator ID: 37215

Permit No.	Site ID	Planted Area
1500227	HORSERAN	50 Acres

Location	Block ID	Pre-Plant
SCHOOL, CHILDCARE CENTER, RESIDENTIAL		No

Est. Application Time	Est. Treatment Area	Commodity
2018-01-21 11:30:00	25 Acres	ALMOND 3001-00

Chem No	Product Applied	Total Product Used	Rate	Dilution	Pest
573	NOI Dow Telone II (62719-32-ZA) (97.50% - 1,3-Dichloropropene)	750 ga	30 Ga / Acre	00 Ga	Wireworm

1,3-D Application Information

Method (Code) :	Nontarpaulin/Deep/Broadcast or Bed (1206)	**Total Applied :**	750.00 Gallons
		1,3-D per Gallon :	9.91 Pounds (0.975)
Tarp Information :	Not Specified / Not Applicable	**Chloropicrin per Gallon :**	None
		Total 1,3-D (TP) :	7,433.16 Pounds
Available 1,3-D Amount (Before This Application)		**Application Factor (AF) :**	1.90
28S 25E M :	94,054.58 Adjusted Pounds	**Adjusted 1,3-D (ATP) :**	**14,123.00 Pounds**
		Application Depth :	36 in

Re-Entry Interval	Pre-Harvest Interval	Applied / Supervised By
7 Days	0 Days	SIMPLOT GROWER SOLUTIONS

Environmental Changes / Comments

Field Observation, pest is present. Pesticide will be Strip Shanked FFM Code 1206. Application will require a Disc and a Cultipack applied behind the application for proper ground sealing.
there is Multiple sensitive areas near the Application Site. *Applicator to maintain no less than a 100 Foot buffer zone near all sensitive areas.* **Note 1; Sequoia elementary School to the North West corner. note 2; Housing Track on the west side. Note 3; Kern high School Baseball Area to the South side.** *Grower has made contact with Aracelia Soto at sequoia elementary at 10:13 am, also has made contact with Mrs Osuna at 10:43 am with Kern High School. Date Jan 19th, 2018. Both stated there will be no extra school sponsored activities Sunday the 21st.*
Also there is 1 unoccupied structure adjacent on the North West corner is permitee yard and office/home the job will start at 7am

Treatment Area

Adjacent Crops, Schools, Dwellings, Etc.

the job will take approx 1/2 days
Do not apply, or Stop application if working crews are 500 Ft from the application site.
Do not apply if Soil moisture is not adequate for A telone application. (See Label)
Use caution with Walking People on Beech and Fresno Streets.

| Restrictions: Avoid Drift -- Certified Applicator Required -- Closed Mixing System Required -- Notice of Intent Required -- Posting Required --
As of January 1, 2018, California Code of Regulations go into effect. In summary these codes state pesticide use within a quarter mile of a school site or day care facility is prohibited between the hours of 6 AM to 6 PM on days when school is in session. For details or exceptions to this general summary please reference the code or speak to your County Ag Commissioner for clarification.

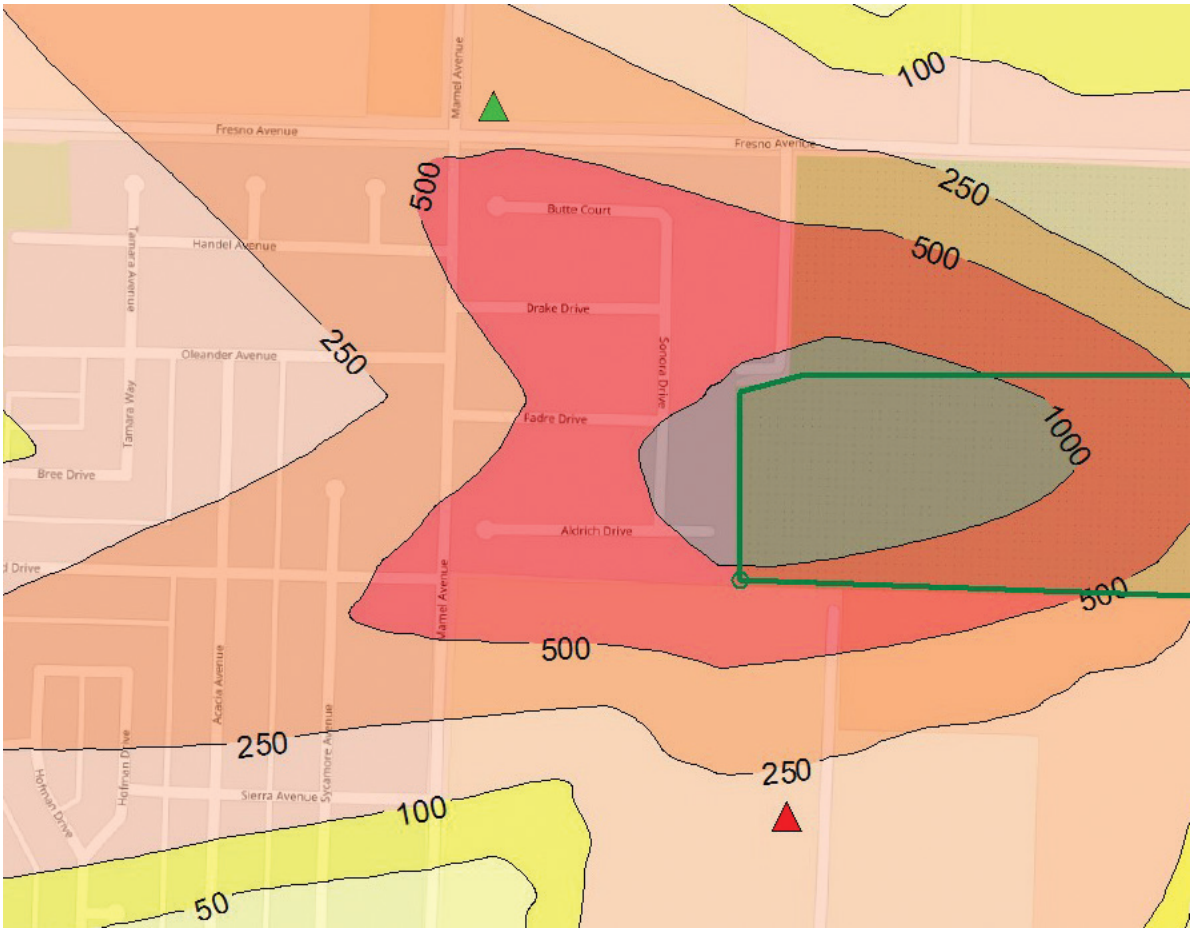
Submitted By	Date/Time	PCA Name & License
Chad Mattock	**2018-01-19 11:38:55**	**Chad Mattock 073410**

Received By	Box #	Date	Approved or Declined
EP		1/19/18	

Converted From REC-4302143 Created 2018-01-19 11:38:55
Shared With - SGS Bakersfield

* childcare center not within 1/4 mile per Monica W. (EP)

DPR Modeling of air levels predicted near Shafter High School air monitor on 1/20/18:



1,3 D air levels shown in map in ug/m3. 1 ug/m3 = 0.22 ppb

Red triangle indicates air monitor location and green shaded area is field treated with 1,3 D.