



August 29, 2022

Julie Henderson, Director, julie.henderson@cdpr.ca.gov Minh Pham, Environmental Monitoring Branch Chief, minh.pham@cdpr.ca.gov Maziar Kandelous, Air Program Supervisor, maziar.kandelous@cdpr.ca.gov California Department of Pesticide Regulation *Via email*

RE: Comments on preliminary 1,3 D soil fumigation regulation proposal

Dear Director Henderson, Dr. Pham and Dr. Kandelous,

Thank you for the opportunity to review and comment on components of the preliminary draft regulation for 1,3-dichloropropene. We have grave concerns that the proposed regulatory requirements will fail to control both short-term spikes in soil fumigant emissions and cancer risk from chronic exposure. Relying exclusively on <u>predicted</u> emission levels from new fumigation methods that have only been evaluated on tiny test plots, and increased soil moisture in the face of ever scarcer water supplies, is reckless and leaves farmworkers and other rural residents in harm's way. There is no legitimate reason to exclude agricultural occupational bystanders from this regulation. Analysis of the pilots has not yet been finalized or made public, making it impossible to evaluate the efficacy of the studied methods on which the regulation's proposed measures are based. Eliminating annual use caps may even lead to increased use and higher air levels. We need to be working rapidly towards reducing and eliminating use of this carcinogenic soil fumigant which has already been banned in 34 countries¹ and poses an acute health risk for infants, children and possibly the elderly. We urge DPR to include measurable and enforceable 1,3 D emissions and use reduction targets in the regulation in order to meet the ozone reduction goals of the <u>draft 2022 State Strategy for the</u>

¹ PAN International Consolidated List of Banned Pesticides, <u>https://pan-international.org/pan-international-consolidated-list-of-banned-pesticides/</u>

<u>State Implementation Plan (SIP)</u>, in which the proposed 1,3 D regulation is cited as a measure, as well as to take a concrete step towards achieving the use reduction goals of the Sustainable Pest Management Roadmap.

Acute and Cancer Endpoints set in DPR's Risk Management Directives (RMDs) are not adequately health protective

The acute regulatory endpoint should be 55 ppb averaged over 24 hours because effects could have occurred before 72 hours when the first measurements were taken in the study utilized to establish this endpoint. Failing that, as recommended by the California Air Resources Board (CARB), DPR needs to work with the Office of Environmental Health Hazard Assessment (OEHHA) to set a 24 hour regulatory target to compare to 24 hour air monitoring data.

The regulatory endpoint for cancer prevention should at minimum be based on the cancer potency factor for a systemic mode of action as recommended by OEHHA and acknowledged by DPR scientists in the 1,3 D 2015 RCD as a mode of action supported by the data. To be truly protective, the regulatory endpoint should be the Proposition 65 No Significant Risk Level which is 3.7 micrograms per day, equivalent to an average annual air concentration of 185 ng/m3 or 0.04 ppb. In any event, OEHHA's concurrence on regulatory endpoints should be requested prior to DPR's issuance of its notice of rulemaking.

DPR should adopt an additional uncertainty factor for setbacks since 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 fumigations², 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 underestimation of air concentrations is very concerning since AERFUM is utilized in determining required setbacks from fumigations. Have any modifications been made to the model to address these concerns? If not, an additional uncertainty factor should be used in determining required setbacks.

Peer reviewers commented about other uncertainties. For example, multiple reviewers stated that DPR's "annual averages" from weekly air monitoring data, aren't true annual averages and likely miss peak air levels because data were not collected daily. In addition, peer reviewers

² External Peer Review of the Methodology to develop a township cap for 1,3 Dichloropropene. 2019.

commented that evaluations of AERMOD were based on inputs that had a high degree of uncertainty around source strength, location, and meteorology.

How did DPR select 100-foot to 500-foot setbacks when a previous proposal indicated much greater setbacks up to 3,540 feet were needed to protect human health?

At the workshop conducted in 2019, DPR estimated buffer zone distances up to 3,540 feet would be required to achieve an acute exposure target of 55 ppb.³ Then at a webinar over a year ago (June 28, 2021) CDFA presented preliminary results of a spatial analysis of acreage impacted by 200-ft and 500-ft occupied structure distances as part of an "Economic and Pest Management Evaluation of 1,3-Dichloropropene Pilot Mitigation Project Report" prepared for the Department of Pesticide Regulation by the California Department of Food and Agriculture's Office of Pesticide Consultation and Analysis in collaboration with the University of California, Davis. How and on what basis was 500 feet chosen as the maximum setback well before data was available from the pilot tests? What is the justification for only requiring setbacks to occupied structures rather than fencelines?

Occupational bystanders must not be excluded from this pesticide regulation

DPR must not take the historically-unprecedented step of proposing a pesticide regulation that is expressly designed to protect residential bystanders only and excludes from its scope lowincome Latinx people who work around treated fields. DPR's 2015 Risk Characterization Document (RCD) includes estimates of occupational bystander exposure and risk, and identifies acute and chronic exposures of concern. The Risk Management Directive (RMD) for 1,3 D cancer risk includes occupational bystander in the scope to be addressed in mitigations, and the Township Cap Program the regulation is intended to replace was designed to protect agricultural occupational bystanders. There is no legitimate basis for DPR to adopt setbacks between treated fields and structures occupied by residential bystanders while at the same time allowing occupational bystanders to work for full days, even multiple workdays, up to the very edge of the treated field in adjoining fields immediately after and even during the fumigation. Setbacks or buffer zones between treated fields and nearby fields where work could be taking place should be included in the regulation. The Vasquez Judgement compels DPR to include occupational bystanders in the regulation.

Reducing maximum application size and requiring distance and time between applications will lead to a greater number of applications to smaller field areas. This may reduce peak acute exposure levels but will increase the number of days of possible exposure especially for bystander workers who will be more likely to work near or even adjacent to fumigated fields.

³ Options to Mitigate Acute Exposures to 1,3 Dichloropropene. Public Workshop. October 17, 2019

Increasing use restrictions over all winter months has merit but the proposed restrictions are inadequate

We recognize that restricting 1,3 D use throughout winter months makes sense because the prohibition of 1,3 D fumigations in December with no restrictions in other winter months contributed to high air concentrations in November and January. The proposed restrictions, however, are inadequate.

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 application⁴ lists the injection depth as 36 inches rather than 18 inches. Air modeling predicted even higher levels⁵, up to 220 ppb closer to the treated field. Even if new application methods reduce emissions 50%, levels above 110 ppb would therefore be expected adjacent to a 30 acre field treated at the maximum application rate (332 lb/ac), and the current proposal would allow winter applications under these conditions with farm work and other outdoor work right at the field border.

The township cap must be retained but should be refined

The previous annual cap of around 90,500 adjusted total pounds per township should be reinstated but modified, especially if 1,3 D use is going to be permitted in December. The current prohibition on use in December was also part of the justification for raising the township cap to 136,000 adjusted total pounds per township. Therefore, the township cap should be reduced, not eliminated, if applications are going to be allowed in December again. Further, to prevent spikes in 1,3 D air levels there should be added restrictions on adjusted total pounds allowed in a given section or set of adjacent sections to prevent 1,3 D hot spots, at least in the Central Valley where the very high spikes have occurred and untarped applications are common.

1,3 D use reports should be required to be submitted to both counties and DPR on the date of fumigant application. Any business with the technical expertise to conduct fumigations is clearly capable of submitting use reports online. DPR can then use spreadsheets to keep running tabs of adjusted total pounds and total pounds used per township and hot spots within townships.

⁴ Notice of Intent to Apply Restricted Materials. See Appendix for copy

⁵ DPR Air modeling of air levels downwind from the January 20,2018 application. See Appendix for diagram

Assuming emission reductions from application of new methods that have only been tested on small field pilot plots and removing the township use cap at the same time is reckless 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? What method or methods will be required for checking soil moisture levels and how has their reliability been evaluated? How will injection depth be verified in inspections and investigations?

Why is DPR planning to continue to allow all existing methods, including the deep/strip untarped method linked to the highest level ever measured (111 ppb at the Parlier site in October of 2018)? This method should be eliminated. What are the more stringent requirements that will be required for use of the 18" broadcast untarped method? Will more stringent requirements also be required for other methods?

Soil fumigation inspections are sparse in some high use counties

It is concerning that in 2019 in some of the highest use counties, 10% or less 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 highest recent 1,3 D exceedances were measured. We are also concerned rather than reassured to note that no violations were found in 98.7% of soil fumigation inspections statewide. Such a high rate of compliance suggests that inspections may not be thorough enough. See the following table for more details.

County	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	328	60	27	18%	100%
Imperial	91	22	19	24%	100%
<mark>Kern</mark>	<mark>197</mark>	<mark>9</mark>	<mark>7</mark>	<mark>5%</mark>	<mark>100%</mark>
<mark>Merced</mark>	<mark>313</mark>	<mark>25</mark>	<mark>33</mark>	<mark>8%</mark>	<mark>93.9%</mark>
Monterey	351	251	172	72%	98.3%
S. Joaquin	115	26	15	23%	100%
SLO	116	47	26	41%	100%
S. Barbara	152	49	50	32%	
<mark>S. Cruz</mark>	<mark>157</mark>	<mark>9</mark>	<mark>18</mark>	<mark>6%</mark>	<mark>88.9%</mark>
<mark>Stanislaus</mark>	<mark>223</mark>	<mark>22</mark>	7	<mark>10%</mark>	<mark>100%</mark>
Tulare	208	42	21	20%	100%
Ventura	75	51	85	68%	97.6%
Statewide	2759	922	768	33%	98.7%

*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.

Source: DPR Pesticide Use Enforcement Profiles and Preliminary 2019 PUR data

DPR's proposed restrictions in the draft rule are inadequate and would not have prevented the air level spikes measured at Parlier and Shafter air monitors in 2018 and 2020

As already mentioned, in January of 2018, a 24 hour air level of 50.5 ppb was measured at the Shafter air monitoring station with the likely source an untarped application to a 25 acre field 650 feet from the air monitoring site at a rate of 297.3 lb/acre. The use report records the injection depth as 36 inches rather than 18 inches. Air modeling predicted higher levels, up to 220 ppb closer to the treated field. Even if new application methods reduce emissions 50%, levels above 110 ppb would be expected adjacent to a 30 acre field treated at the maximum application rate (332 lb/ac) and the current proposal would allow bystander farm work and other outdoor work right at the field border.

In October of 2018, a 24 hour air level of 111 ppb was measured at the Parlier air monitoring station. The closest reported 1,3 D applications were 5 small (1.45 – 2.6 acre) applications using the deep/strip/untarped method (method 1210) near the maximum application rate of 332 lb/ac. They ranged from 0.1 to 1.1 miles (528 feet to 5,808 feet) from the monitoring site.⁶ Proposed setbacks and acreage limitations for this field fumigation method have not been disclosed yet.

In October of 2020, a 24 hour air level of 37.5 ppb was measured at the Shafter air monitoring station. The closest 1,3 D application was an untarped 18" shank application to an 80 ac field 3 miles to the northeast at a low application rate of 80 lb/ac. Modeling predicted a concentration of 21 ppb at the air monitoring station, so presumably a much higher concentration at the field edge or at a setback of 100 to 500 feet. If deeper 24" injection or other mitigation reduced emissions by 50% the air level would still have been significant and could have been much higher at higher application rates.

DPR's proposed maximum size of 80-acre application blocks is too large and the regulation needs to include significant distance and time intervals between fumigated blocks

We oppose the proposal to continue allowing very large applications of 80 acres and note that, in contrast, in 2019 DPR was considering capping the maximum size of application blocks at 40 acres. We cannot evaluate isolated block provisions since they have not been proposed yet. In 2019 DPR proposed requiring a distance of 800 feet between applications made within 96 hours and a combined acreage of 40 acres.⁷ This is the bare minimum that should be required.

DPR should adopt its earlier 2019 proposal to delay cutting and removal of TIF tarps from 9 to 14 days

We support the proposed requirement to delay cutting and removal of TIF tarps beyond the current 9 days after 1,3 D application and to increase soil moisture requirements, but also note that in 2019 DPR presented a recommended change in tarp cutting time from 9 to 14 days to reduce acute exposure before the level of concern. What is the justification for scaling back from 14 days to 10 days? ⁸

⁶ Tao, Jing. Modeling 1,3 Dichloropropene Applications at Parlier, CA on October 9, 2018. CDPR Report. March 15, 2019.

⁷ Options to Mitigate Acute Exposures to 1,3 Dichloropropene. Public Workshop. October 17, 2019

⁸ Options to Mitigate Acute Exposures to 1,3 Dichloropropene. Public Workshop. October 17, 2019

Annual report with comment period

Requiring an annual report with a public comment period and including the fumigation method in pesticide use reporting will improve transparency. However, the scope of the report needs to be extended beyond 10 townships in 10 separate counties. At minimum it must include all highest use townships even if multiple townships are in the same counties or townships span one or two counties. The regulation also needs to include clear requirements for increased mitigations if 1,3 D use, levels documented in air monitoring or predicted by modeling exceed action levels rather than a vague obligation to determine if additional restrictions are needed. These types of regulatory triggers have precedence in the field fumigation VOC emission limits (CCRT3 section 6452.2).

The 1,3 D Cancer Risk Management Directive⁹ contains an action level of 0.27 ppb. That cancer risk action level of 0.27 ppb has been exceeded at the Parlier and Shafter air monitoring stations since 2018 and yet DPR has failed to implement any additional use restrictions in response, and if the draft regulation is adopted as proposed it would likely not prevent future exceedances.

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. 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,

Romer ACAte

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Jane Sellen, Co-Director Californians for Pesticide Reform

⁹ https://www.cdpr.ca.gov/docs/whs/pdf/1,3-d_directive_mitigation.pdf

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cc:

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Appendix of Documents Obtained from DPR by request:

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

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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. PCA Name & License Date/Time Submitted By Chad Mattock 073410 2018-01-19 11:38:55 **Chad Mattock** Box # Date Received By 119/18 Approved or Declined EP Created 2018-01-19 11:38:55 Converted From REC-4302143 Copyright 2018, Agrian Inc. All Rights Reserved. Shared With - SGS Bakersfield

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2) 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. 3) August 31, 2021 email from Minh Pham, CDPR to Anne Katten, CRLAF This document provides our final findings on the detections observed in January and October of 2020 and concludes the Air Programs evaluation of the detections observed:

A summary of notable detections at Shafter AMN site in 2020

The California Department of Pesticide Regulation's (DPR's) Air Program monitors ambient air for multiple pesticides within the Air Monitoring Network (AMN). Through an established procedure, staff in the Air Program closely monitor results and perform evaluations of sources potentially behind anomalous detections and scrutinize them whether or not they results in exceedance established acute, sub-chronic, and chronic exposure thresholds for the pesticide of interest.

During the calendar year 2020, two separate abnormal detections of 1,3-Dichloropropene (1,3-D) were observed at the Shafter AMN station located at the Sequoia Elementary School.

January 2020

Monitoring results of our routine weekly 24-h sampling indicated 1,3-D concentrations of 4 parts per billion (ppb) for 01/11/2020 and 20 ppb for 01/12/2020. Neither concentrations resulted in exceedance of the DPR's acute human health screening level, sub-chronic human health screening level (13-week rolling average), or chronic screening level.

DPR's Air Program reviewed applications from the Pesticide Use Reporting (PUR) database and from Notice of Intent (NOI) records obtained from the Kern County Agricultural Commissioner's office to isolate potential applications of 1,3-D that occurred near the Shafter monitoring station and around the timeframe of the observed detections. This evaluation resulted in the identification of a possible source: a 40-ac field located roughly 7.5 miles southwest of the AMN station. The application was reported as an un-tarped, shank application at 18-inch depth (Field Fumigation Method (FFM) 1206) for the pre-planting of almonds with an application rate of 330 lb/ac. The Air Program performed air dispersion modeling using AMS/EPA Regulatory Model (AERMOD) to simulate the effects of an application with similar input parameters as those found for the identified application. Modeling parameters included application rate, application method, and available on-site meteorological data.

Due to the limitations of the AERMOD model, the Air Program could not precisely correlate and link the observed detections at the Shafter AMN station to the application identified 7.5 miles away. The Air Program continues to refine the model to aid in future investigations. However, the AERMOD model is most reliable when used to predict air concentrations and behavior of soil fumigants emitting from a treated field and localized scale, and has its limitations when used as an investigatory tool to identify a source(s) based on a singular measurement of time, space, etc.

October 2020

Monitoring results of our routine weekly 24-h sampling indicated a 1,3-D concentration of 37.5 ppb. Although this 24-h concentration did not exceed DPR's acute human health screening level, it did result in exceedance of the sub-chronic human health screening level on a 13-week rolling average. The chronic screening level was not exceeded as a result of this observed concentration.

DPR's Air Program reviewed applications from the PUR database and from NOI records obtained from the Kern County Agricultural Commissioner's office to isolate potential applications of 1,3-D that occurred near the Shafter monitoring station and around the timeframe of the observed detection. This evaluation resulted in the identification of a potential source: an 80-ac field located approximately 3 miles away northeast of the Shafter AMN station. The application was reported as an un-tarped, shank application at 18-inch depth (FFM 1206) for the pre-planting of potatoes with an application rate of 80 lb/ac.

The Air Program performed air dispersion modeling using AERMOD to simulate the effects of an application with similar input parameters as those found for the identified application. Modeling parameters included application rate, application method, and available on-site meteorological data.

Modeling resulted in an estimated concentration of 21 ppb, which was within a factor of two of the measured concentration of 37.5 ppb at the monitoring station. Although the AERMOD model was able to simulate a concentration of 21 ppb, the Air Program could not precisely correlate and link the observed detection at the Shafter AMN station to the application identified 3 miles away, due to the limitations of the AERMOD model. The Air Program will continue to refine the model to aid in future investigation, but realize the limitation of the AERMOD model as it is not intended for use as an investigatory tool to identify a source of a detection.

The Air Program has completed its evaluation of these monitoring results. DPR is currently working to develop mitigation options (e.g., those being tested in DPR's 1,3-D mitigation pilot project) to address acute and chronic exposures of 1,3-D to bystanders. These options, once implemented, are also expected to result in lower and less frequent ambient air detections at each AMN station.