California Department of Pesticide Regulation

1,3-DICHLOROPROPENE REPORT FOR 2024

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Air Program
Environmental Monitoring Branch
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2. EXECUTIVE SUMMARY

Pursuant to Department of Pesticide Regulation (DPR) regulation 22-005 (Title 3, California Code of Regulations [CCR] section 6448.4), this annual report evaluates the effectiveness of the 1,3-dichloropropene (1,3-D) regulation effective January 2024. The report identifies and evaluates the ten highest-use townships in California and evaluates the air concentrations at all six DPR's 1,3-D monitoring stations. This first annual report also checks compliance with the 1,3-D regional use limit (township cap) of 136,00 adjusted total pounds (ATP)[1] temporarily in effect[2].

The townships identified and evaluated in this report represent the highest-use townships in each of the ten counties with the highest 1,3-D use, based on the ATP. The report identifies key factors influencing usage levels and air concentrations within the specified ten townships and includes detailed modeling to estimate the maximum 1,3-D air concentrations over periods of 24 hours, 72 hours, and 1 year average.

In 2024, 7,008,972 pounds of 1,3-D were used on 43,736 acres statewide, corresponding to 4,053,244 ATP and 1,296,684 pounds of emissions. This is the lowest 1,3-D use and acreage since 2009. The crops with the most use were almonds, strawberries, sweet potatoes, and carrots. Applications using field fumigation methods 1206 and 1210 (untarped, 18-inch minimum injection depth methods) largely transitioned to methods 1224 and 1226 (untarped, 24-inch minimum injection depth methods), resulting in a reduction in emissions following implementation of DPR Regulation 22-005, especially in almond crops. All townships complied with the township cap of 136,000 ATP, with the highest township having 113,628 ATP.

Modeling results showed that the highest estimated air concentrations were 26.8 ppb, 15.1 ppb, and 0.41 ppb for the 24-hour, 72-hour, and 1-year time periods, respectively. These concentrations were below DPR's regulatory target concentrations of 55 ppb (72-hour average) and 0.56 ppb (70-year average). Additionally, the highest measured air concentrations at the monitoring stations were 7.19 ppb and 0.21 ppb for the 24-hour and 1-year time periods, respectively. These concentrations were below the thresholds of 55 ppb (24-hour average) and 0.27 ppb (1-year average) that trigger additional evaluation.

DPR posts 1,3-D use and monitoring data on a quarterly basis. Much of the information included in this report has been available on DPR's website for several months and key stakeholders regularly analyze this data.

In summary, DPR's pesticide use report (PUR) data analyses of high-use townships and ambient air concentrations from air monitoring stations within DPR's Air Monitoring Network (AMN) indicate that current regulatory measures are functioning as intended. There is no evidence at this time to suggest that additional actions are necessary to meet regulatory goals of DPR Regulation 22-005.

[1] Adjusted total pounds (ATP) is calculated for each application and refer to the amount of 1,3-D active ingredient multiplied by an application factor (AF) to account for differences in air concentrations due to emission differences between application methods, and weather differences between regions and seasons. ATP is the sum of adjusted pounds for all 1,3-D applications within a township during a calendar year. A township is a 6x6 mile area as defined by the Public Lands Survey System. The township cap is 136,000 ATP.

[2] Pursuant to court order, DPR is maintaining the annual township cap of a maximum of 136,000 ATP and the prohibition on December applications until the formal rulemaking addressing cancer risks from 1,3-D to occupational bystanders is complete.

3. INTRODUCTION

3.1. Background

California is the largest producer of specialty crops in the United States, accounting for 99% of production of almonds and walnuts, and 90% of grapes and strawberries nationwide. Soil fumigants are widely used to control soilborne pests and disease-causing organisms that may reduce agricultural yields and may be preferred over other options due to their broad-spectrum efficacy, simplicity of application, and affordability for growers. One major soil fumigant is 1,3-dichloropropene (1,3-D), sometimes referred to by its trade name Telone. 1,3-D is used to control a wide spectrum of pests, including soil nematodes and other soil pathogens, and is commonly applied as a pre-plant pesticide for trees, strawberries, grapes, carrots, sweet potatoes, and other crops in California.

Registered as a soil fumigant for agricultural use in the United States in 1966 and in California in 1970, 1,3-D is a volatile organic compound listed as a carcinogen under California's Proposition 65. 1,3-D is listed as a toxic air contaminant and exposure above certain thresholds can lead to serious illness, or death at especially high concentrations. 1,3-D is also listed as a restricted material and requires special handling due to its potential toxicity or environmental impact. Restricted materials can only be purchased or used by certified applicators or those under their direct supervision.

Injected into the soil as a liquid, applied 1,3-D rapidly converts into a gas, allowing it to redistribute throughout the soil where it may come into contact with disease-causing organisms. This conversion into the gas phase also results in some 1,3-D emitting from the soil into the ambient air, where it may move away from application sites, increasing the probability of human exposure through inhalation. To protect public health and the environment, DPR established acute (72 hours) and lifetime (70 years) health threshold levels to mitigate the health effects of 1,3-D.

3.2. Regulations and air concentration thresholds

DPR regulation 22-005 (additions and amendments to Title 3, California Code of Regulations, sections 6448-6448.4, 6452, 6624, 6626, 6881) addresses 72-hour acute risk and 70-year lifetime cancer risk to residents and other non-occupational bystanders (adults and children) from 1,3-D (CDPR 2024). Regulation 22-005, hereafter the 2024 regulation, went into effect on January 1, 2024. Using worst-case application scenarios, computer models, and public comments, DPR developed rules and established requirements to minimize the release of 1,3-D in the air after its application in the soil. These mitigation measures include acreage limits, minimum setback distances from an occupied structure to a treated field, totally impermeable films, deeper fumigant injections, an increase in soil moisture requirements, quarterly use summaries, and an annual report, among other requirements.

Per 3 CCR section 6448.4, DPR is required to issue an annual report that identifies and assesses specific high-use townships. High-use townships are selected according to the ten townships with the highest use across the ten counties with the highest total use (Section 6.1). For these townships, DPR analyzes reported use, available emissions data, and local weather conditions using computer modeling to determine if the detected air concentrations are within the

expected range. The modeled air concentrations are compared to the "regulatory target concentrations" specified in DPR's 2016 and 2021 risk management directives (CDPR 2016, CDPR 2021) and shown in Table 1. Air concentrations that exceed a regulatory target concentration may indicate the need for additional mitigation measures.

DPR is also required to assess monitoring stations with measured air concentrations that exceed an "evaluation trigger" specified in 3 CCR section 6448.4(b)(1) and shown in Table 1. The assessment includes monitoring stations for DPR's AMN but could include other monitoring stations that have valid and representative data. The evaluation triggers are more stringent than regulatory target concentrations and provide an additional margin of safety for DPR to evaluate air monitoring data and consider the need for additional mitigation measures prior to exceeding a regulatory target concentration. Monitored air concentrations can also be compared to regulatory target concentrations; however, monitoring data for 72-hour air concentrations is not available and monitored air concentrations would normally exceed a more stringent evaluation trigger before exceeding a regulatory target concentration.

If any of the modeled or monitored air concentrations are higher than expected in comparison to previous data, the report includes a description of action(s) DPR will take to address the high levels and a timeline for taking the actions. A chart illustrating this evaluation process is shown in Appendix 1.

Table 1. DPR air concentration thresholds for 1,3-D. There are separate thresholds for monitored air concentrations and modeled air concentrations, and for different health risks.

Type of Risk	3 CCR 6448.4(b) Evaluation Trigger (for monitored air concentrations)	Regulatory Target Concentration (normally for modeled air concentrations)
Acute (short-term)	55 ppb as 24-hour average	55 ppb as 72-hour average
Cancer (lifetime)	0.27 ppb as 1-year average	0.56 ppb as 70-year average*

*Monitored air concentrations are one or multiple year averages depending on the availability of data. Modeled air concentrations are the most recent one to five-year averages depending on the availability of data. The one or multiple year averages are used as surrogates for lifetime 70-year averages.

4. PESTICIDE USE REPORT

State law requires a pesticide use report (PUR) to be submitted for each pesticide applied for the production of an agricultural commodity, including all 1,3-D applications. DPR's PUR database contains information on the product applied, amount applied, acres treated, crop, application date, application location, and other information. PUR information on 1,3-D use is posted on DPR's website on a quarterly basis and the full year of data and data summary is released annually for all reportable pesticide use in California.

In addition to evaluating 1,3-D use, DPR also calculates and evaluates its emissions primarily for its volatile organic compound (VOC) program and adjusted total pounds (ATP) for its township cap program. DPR tracks and controls the VOC emissions from agricultural and structural pesticide applications because they contribute to the formation of ozone, a major air pollutant.

For 1,3-D, DPR estimates the emissions for each application by multiplying the amount of active ingredient used by an emission ratio that ranges from 9 percent to 52 percent to account the effect of fumigation method on emissions (Brown, 2022).

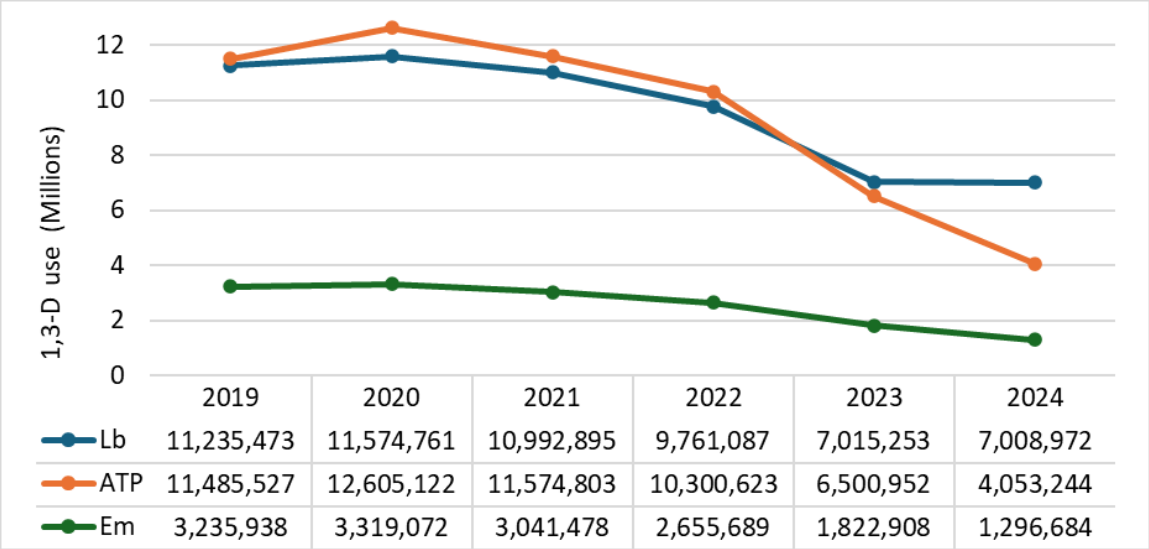
Since the 1990s, DPR has required an annual regional use limit (township cap) for 1,3-D to mitigate cancer risk. The 2024 regulation does not include a township cap because DPR expects the setbacks and other requirements to mitigate both acute and cancer risk. However, due to a court order, the township cap remains in effect until DPR completes rulemaking for the occupational bystander regulation. A township is an area of 6x6 square miles used by the U.S. Bureau of Land Management as a way of subdividing and describing land in the United States as part of the Public Lands Survey System. Currently, the township cap limit is 136,000 ATP of 1,3-D during a calendar year (CDPR 2016). The quantity of ATP accounts for the relative proportion of 1,3-D emitted into the air as a result of the application method used, as well as the impact of those emissions on air concentration based on regional and seasonal differences in meteorology (Luo and Brown 2022 & 2023), hence applications having a greater impact on air concentrations and a greater impact on ATP. For each individual 1,3-D application, the equivalent ATP is calculated as the total mass of 1,3-D applied multiplied by an application factor which varies from 0.21 to 2.93 (Table 2). These application factors were developed using field data and computer models and are defined according to a combination of field fumigation method (FFM), season, and region (Luo and Brown 2022 & 2023).

Table 2. Application factors based on fumigation method, location, and month.

Field fumigation methods (FFM codes)	**Inland Nov-Feb**	**Inland Mar-Oct**	**Coastal Nov-Feb**	**Coastal Mar-Oct**
Standard nontarped and nonTIF tarp shallow 12-inch methods (1201, 1202, 1203, 1204, 1205)	2.93	1.40	2.42	1.78
Standard nontarped and nonTIF tarp deep 18-inch methods (1206, 1207, 1208, 1210, 1211)	1.73	0.83	1.42	1.04
Chemigation (drip)/nonTIF tarp method (1209)	2.15	1.02	1.74	1.21
24-inch injection methods (1224, 1225, 1226, 1227)	1.00	0.48	0.82	0.61
TIF methods - broadcast and strip (1242, 1247, 1249)	0.46	0.21	0.37	0.24
TIF methods - bed and strip (1243, 1245, 1248, 1259)	0.76	0.36	0.62	0.45
40% TIF with 18-inch injection depth method (1250)	1.16	0.56	0.95	0.70
40% TIF with 24-inch injection depth method (1264)	0.71	0.34	0.58	0.43

The use of 1,3-D has decreased in the last several years (Figure 1). In 2024, the unadjusted pounds, adjusted pounds, and pounds of emissions of 1,3-D ATP were the lowest amounts since 2009. While 1,3-D use in 2024 was comparable to 2023, the emissions decreased by 29% and ATP decreased by 38% (Figure 1). Given that fumigation methods and weather conditions affect 1,3-D air concentrations, this report focuses on ATP of 1,3-D and compares 2024 data against

previous years to elucidate changes once the 2024 regulation went into effect. Throughout this report, the year 19-23 represents the annual average for 2019-2023.



	2019	2020	2021	2022	2023	2024
Lb	11,235,473	11,574,761	10,992,895	9,761,087	7,015,253	7,008,972
ATP	11,485,527	12,605,122	11,574,803	10,300,623	6,500,952	4,053,244
Em	3,235,938	3,319,072	3,041,478	2,655,689	1,822,908	1,296,684

Figure 1. Pounds (Lb), adjusted total pounds (ATP), and emissions (Em) of 1,3-D in 2019 -2024.

4.1. Acres treated

In 2024, 43,736 acres of land was treated with 1,3-D, which is the smallest acreage since at least 2019 (Figure 2). From 2019 to 2023, on average, 57,282 acres of land were treated with 1,3-D. Despite the 2024 regulation limiting the application field size to 80 acres, 20 out of 2,774 applications (or 0.7%) reported treated fields greater than 80 acres in 2024. DPR's Enforcement Branch confirmed with the County Agricultural Commissioner's offices that the PUR records exceeding 80 acres are associated with combined records of multiple smaller applications occurring on separate dates. The 1,3-D reporting system will be adding a warning notice so that this error can be avoided in future years.

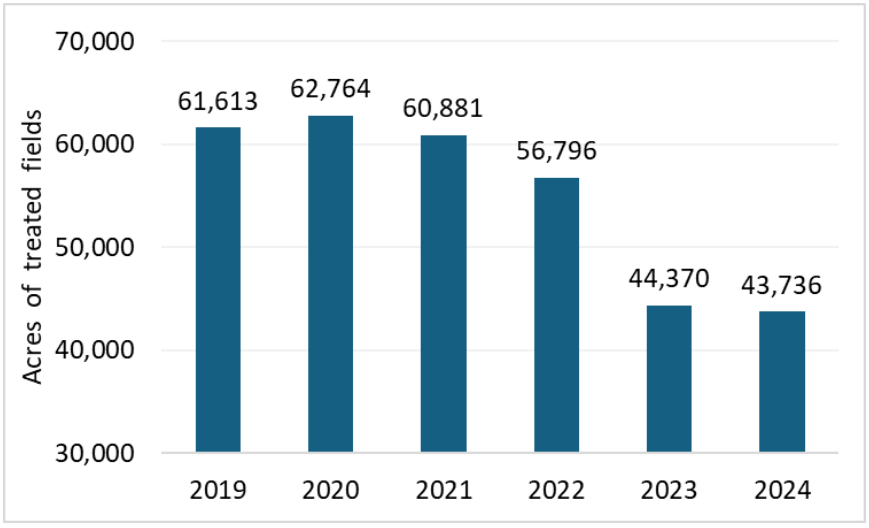


Figure 2. Acres of fields treated with 1,3-D from 2019 to 2024.

4.2. Adjusted pounds by crop and fumigation code

Since 2019, the crops with the most ATP of 1,3-D used were almonds, strawberries, sweet potatoes, carrots, and pre-plant soil applications (Table 3). In 2024, the ATP of 1,3-D decreased for all crops in comparison to the 2019-2023 annual average. The 1,3-D reporting system is working on implementing a warning notice during the reporting process so that pre-plant applications and uncultivated areas report a specific crop type.

Table 3. ATP of 1,3-D for the highest-use crops from 2019 to 2024.

CROP	2019	2020	2021	2022	2023	19-23	2024
Almond	3,241,584	3,696,946	3,301,571	2,195,516	1,147,425	2,716,609	895,456
Carrots	1,077,532	1,025,187	742,446	902,772	582,329	866,053	444,159
Other	3,866,669	4,117,016	4,271,589	4,261,510	2,398,236	3,783,004	1,524,985
Pre-Plant	2,052,571	2,218,897	1,631,600	1,295,120	1,056,099	1,650,857	86,308
Strawberry	506,084	594,669	615,611	634,013	615,959	593,267	586,993
Sweet Potato	741,087	952,405	1,011,985	1,011,692	700,904	883,615	515,342

As of 2024, DPR has established 25 field fumigation methods (FFM) allowed for 1,3-D in California, each with an assigned FFM code. Applicators must select the appropriate FFM based on their region, month of application, acreage, crop type, and other factors. The FFM with the highest ATP of 1,3-D applied since 2019 are:

- 1201: non-tarpaulin, 12 inches deep injection, broadcast or bed
- 1206: non-tarpaulin, 18 inches deep injection, broadcast or bed
- 1210: non-tarpaulin, 18 inches deep injection, strip
- 1224: non-tarpaulin, 24 inches deep injection, broadcast
- 1226: non-tarpaulin, 24 inches deep injection, strip
- 1259: total impermeable film TIF, chemigation (drip)

When the most commonly used FFMs were split by crop type before and after the regulation went into effect, the data shows that applications that previously used FFM 1206 and 1210 switched to 1224 and 1226 (Figure 3 & Table 4), especially almond growers (Figure 4).

Table 4. ATP of 1,3-D for the highest-use FFM from 2019 to 2024.

FFM	2019	2020	2021	2022	2023	19-23	2024
1201	1,357,582	884,654	797,197	793,898	555,658	877,798	273,476
1206	7,148,663	8,199,804	7,582,885	6,571,998	3,728,735	6,646,417	315,671
1210	2,200,131	2,331,729	2,364,725	1,930,873	1,461,629	2,057,817	0
1224	NA	NA	NA	NA	NA	NA	1,685,212
1226	NA	NA	NA	NA	NA	NA	1,066,110
1259	328,044	401,979	421,119	451,479	433,805	407,285	327,360
Other	451,107	786,955	408,876	552,376	321,125	504,088	385,416

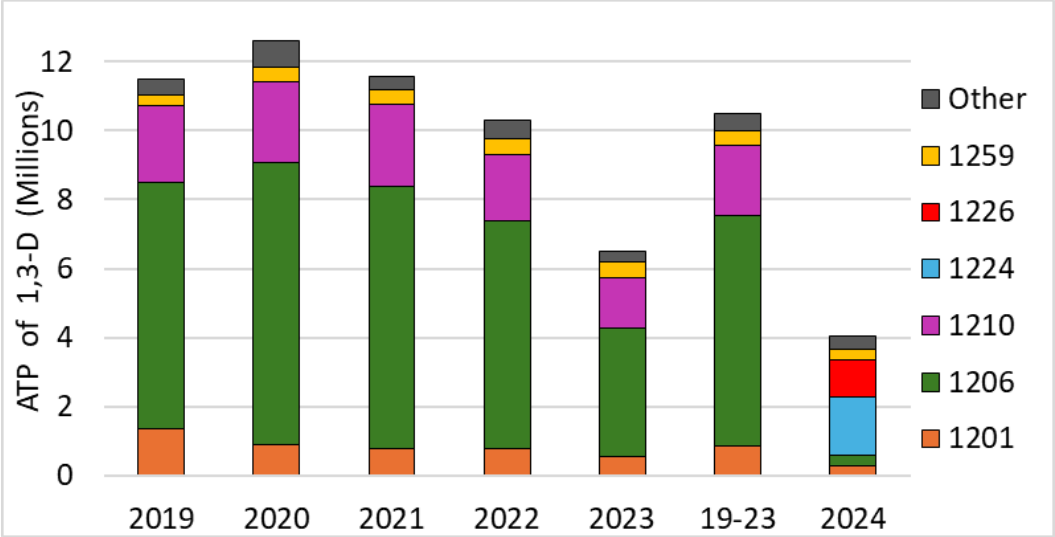


Figure 3. ATP of 1,3-D by year and FFM from 2019 to 2024. The year 19-23 represents the annual average for 2019-2023.

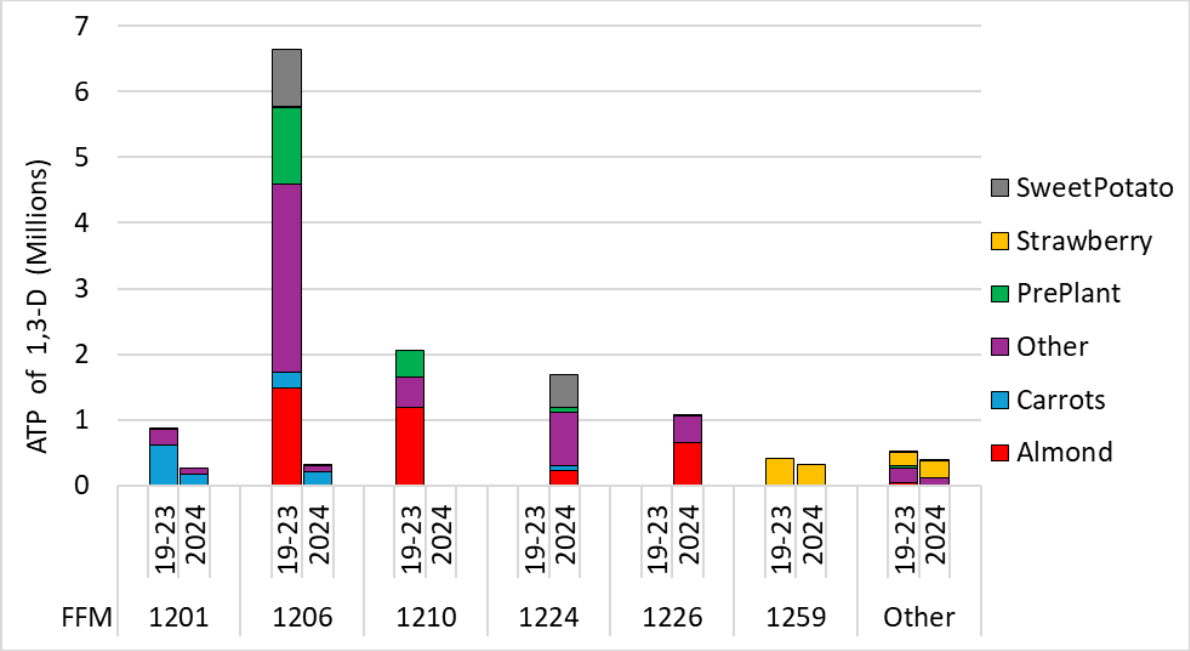


Figure 4. ATP of 1,3-D by FFM, year, and crop from 2019 to 2024. The year 19-23 represents the annual average for 2019-2023.

5. MONITORING STATIONS

DPR has six air monitoring stations deployed across the state that monitors for 1,3-D and other pesticides: Oxnard, Santa Maria, Shafter, and Watsonville are part of the Air Monitoring Network (AMN, study 257), and Delhi and Parlier (1,3-D Monitoring, study 309) (Figure 5).

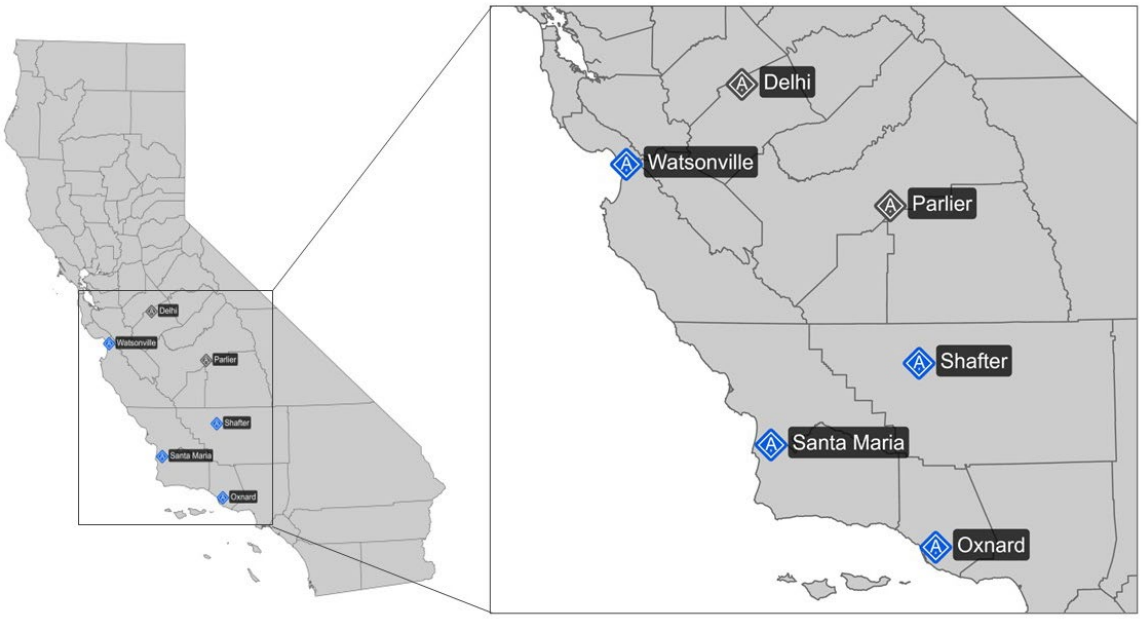


Figure 5. DPR stations monitoring the ambient air for 1,3-D in 2024.

5.1. Highest 24-hour and 1-year concentrations

The air samples collected in 2024 were analyzed by the California Department of Food and Agriculture's Center for Analytical Chemistry (CDFA). CDFA notified DPR that it had identified an error in the analyses conducted on samples collected via air canister which resulted in the underreporting of 1,3-D (CDFA 2025). 1,3-D concentrations in this report were corrected based on the correction factors provided by CDFA (CDPR 2025).

The 2024 regulation requires an assessment of the 24-hour and 1-year average air concentrations of 1,3-D from each of DPR's air monitoring stations that exceed the evaluation triggers shown in Table 1.

In 2024, none of the six air monitoring stations reported a 24-hour concentration exceeding 55 ppb evaluation trigger. The highest 24-hour concentration among all monitoring stations was 7.19 ppb in Shafter, which was 13% of the 55 ppb threshold (Table 5). The highest 24-hour concentrations across the remaining monitoring stations ranged from 1% to 4% of the threshold. Similarly, none of the six air monitoring stations reported an annual average concentration higher than the evaluation trigger of 0.27 ppb. The highest 1-year concentration among all monitoring stations was 0.21 ppb in Shafter, representing 78% of the threshold of 0.27 ppb (Table 5). The 1-year average concentrations at the other five monitoring stations ranged from 10% to 59% of the 0.27 ppb threshold.

Table 5. A comparison of the highest 24-hour and annual (1-year) air concentrations of 1,3-D in parts per billion (ppb) against their respective evaluation trigger values in 2024.

Location	Study	Date	24-hour concentration	% of 24-hour trigger value	1-year concentration	% of 1-year trigger value
Delhi	309	04/02/24	1.42	3 %	0.11	40 %
Oxnard	257	07/25/24	0.96	2 %	0.04	13 %
Parlier	309	11/24/24	2.35	4 %	0.16	59 %
Santa Maria	257	09/30/24	0.40	1 %	0.04	15 %
Shafter	257	02/22/24	7.19	13 %	0.21	78 %
Watsonville	257	09/05/24	0.44	1 %	0.03	10 %

6. MODELING AIR CONCENTRATIONS

6.1. Highest-use townships

6.1.1. Township selection

As specified by 3 CCR section 6448.4(b)(1), the highest-use township in each of the top 10 highest-use counties was selected for evaluation. The selection was made based on the following criteria that provide a range of locations, crops, fumigation methods, and weather conditions for evaluation:

Step 1: To assign a township to one or more counties, calculate the fractional areas of a township in each county and apply a 10% cutoff threshold. For example, if Township X is located in three counties with fractional areas of 50% in County 1, 42% in County 2, and 8% in County 3, then County 3 is excluded, and Township X is considered only to be shared by Counties 1 and 2.

Step 2: Sort counties by 1,3-D ATP use. This list may have up to 58 ranked counties, depending on the number of counties reporting 1,3-D use in the year.

Step 3: To select the highest-use township in each county, three conditions were followed:

- Condition 1: if the highest-use township is located only in one county (not shared), then this township is selected to represent the county.
- Condition 2: if the highest-use township is located in more than one county (shared), then this township represents all the shared counties. The highest township from the next highest county is now included in the top 10 list. Additionally, all involved (shared) counties are removed from the "sorted list" (Step 2) and no longer participate in the township selection.
- Condition 3: if the highest-use township is adjacent to a township previously selected, the township with lower use and its county are removed from the county list. The highest township from the next highest county is now included in the top 10 list.

The above procedures are conducted based on the 1,3-D use data from 2024 in using ATP. The counties with the highest ATP of 1,3-D were Fresno, Merced, and Kern. The 10 selected townships for modeling and their represented counties are listed in Table 6 and Figure 6.

Table 6. Highest-use counties and their highest-use township, crop, and FFM in 2024.

Rank	County Name	County ATP	Township Location	Township ATP	Weather WBAN	Top Crop	Top FFM
1	Fresno	635,345	M14S18E	83,195	93193	Almonds	1226
2	Merced	560,800	M07S12E	113,628	23258	Sweet Potato	1224
3	Kern	407,851	M26S25E	71,283	23155	Almonds	1226
4	Stanislaus	334,060	M03S11E	65,641	23258	Almonds	1226
5	Tulare	295,351	M24S25E	67,422	23155	Grapes	1224
6	Monterey	285,349	M12S02E	73,541	23277	Strawberry	1259
7	Imperial	251,675	S16S16E	79,579	23199	Carrots	1201
8	Santa Barbara	167,289	S10N34W	62,861	23273	Strawberry	1259
9	San Joaquin	149,810	M02S08E	24,793	23237	Almonds	1226
10	Tehama	146,652	M26N03W	66,740	24216	Soil pre-plant	1224

Weather-Bureau-Army-Navy (WBAN) is an identifier for stations operated by National Weather Service

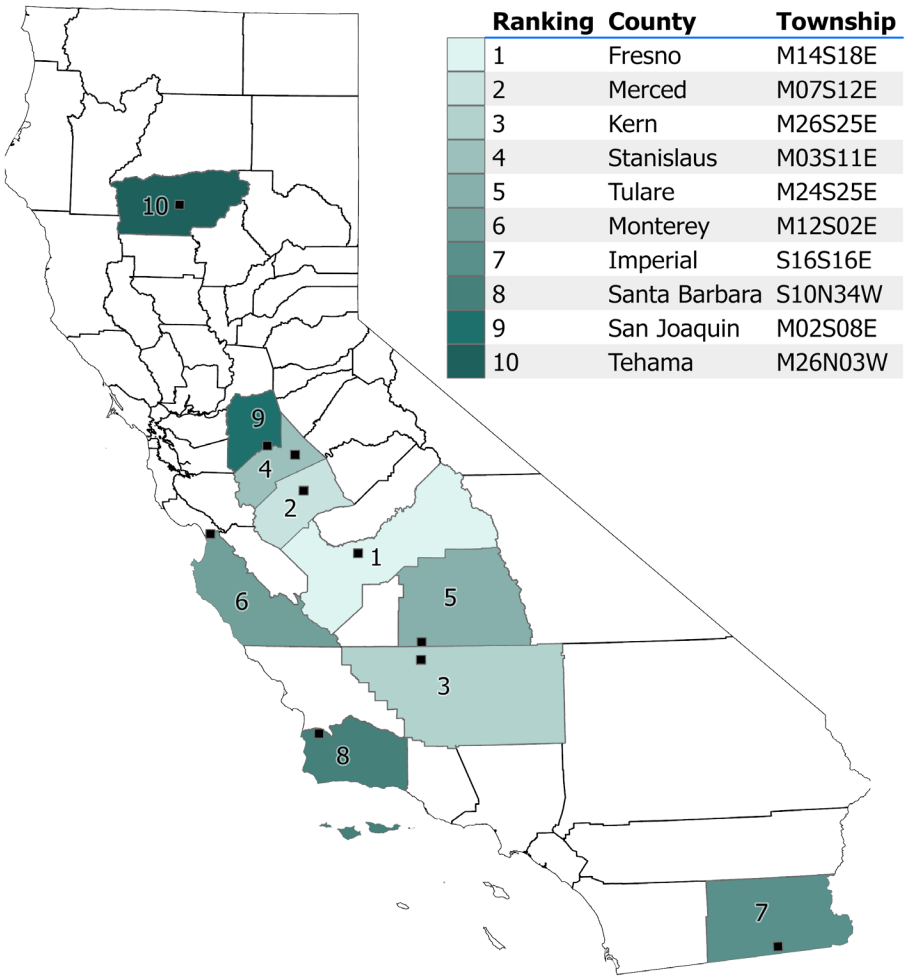


Figure 6. Map of California and the 10 highest-use counties of 1,3-D ATP in 2024. Black squares indicate the location of the highest-use townships in the county.

6.1.2. Modeling approach and results

Air concentrations of 1,3-D were simulated in AERFUM, an integrated air dispersion modeling system for soil fumigants developed by DPR (Luo, 2019). The current version of AERFUM uses the latest AERMOD v24142 (USEPA, 2024a). Meteorological data for 2024 are processed by the MetProc program (Luo, 2024) based on the latest data processor, AERSURFACE version 2024 (USEPA, 2024b), and the latest land use data, National Land Cover Dataset (NLCD) version 2021.

This study uses the same approach developed in the previous township cap modeling (Luo, 2022). The modeling results are presented as the 95th percentiles of the predicted annual average air concentration, the highest 24-hour and 72-hour moving average air concentrations for each township. Using the highest-use townships along with weather data, modeling estimates show that the highest estimated 24-hour, 72-hour, and 1-year air concentrations of 1,3-D are 26.8, 15.1, and 0.41 ppb, respectively (Table 7). None of the estimated air concentrations approached nor exceeded DPR's regulatory target concentrations of 55 ppb as a 72-hour average or 0.56 ppb as a 70-year average (only one year of data is available for comparison to the 70-year target).

Table 7. Highest-use townships and their estimated 95th percentile air concentrations in parts per billion (ppb) for the highest 24-hour, 72-hour average, and annual averages in 2024.

Rank	County	Township	1-year	72-hour	24-hour
1	Fresno	M14S18E	0.21	12.9	21.9
2	Merced	M07S12E	0.41	15.1	26.8
3	Kern	M26S25E	0.21	8.1	12.6
4	Stanislaus	M03S11E	0.12	7.2	13.6
5	Tulare	M24S25E	0.15	9.0	15.7
6	Monterey	M12S02E	0.18	4.8	8.3
7	Imperial	S16S16E	0.12	8.0	12.0
8	Santa Barbara	S10N34W	0.14	5.9	12.0
9	San Joaquin	M02S08E	0.09	5.6	10.7
10	Tehama	M26N03W	0.11	6.6	12.8

6.2. Monitoring stations

The 2024 regulation requires modeling the ambient air concentrations at the monitoring stations with 24-hour and 1-year exceedances. In 2024, no monitoring station exceeded either the 24-hour evaluation trigger of 55 ppb nor the 1-year evaluation trigger of 0.27 ppb (Table 5). Therefore, modeling of ambient air concentrations at monitoring stations is not included as part of this report.

7. CONCLUSIONS

In accordance with Title 3 CCR §6448.4, this annual report evaluates the effectiveness of DPR Regulation 22-005 by identifying and assessing selected high-use townships and monitoring stations. Key findings from 2024 include:

- 7,008,972 pounds of 1,3-D were used on 43,736 acres statewide, resulting in 4,053,244 ATP and 1,296,684 pounds of emissions. These are the lowest amounts since 2009.
- The commodities with the highest 1,3-D usage were almonds, strawberries, sweet potatoes, and carrots.
- A majority of applications that historically used FFM 1206 and 1210 transitioned to FFM 1224 and 1226, especially among almond growers.
- Using computer modeling, estimated township concentrations for 1-year, 72-hours, and 24-hours did not exceed DPR's regulatory target concentrations.
- No monitoring station exceeded the evaluation triggers of 55 ppb for a 24-hour period or 0.27 ppb as a 1-year average.

DPR regulation 22-005 addresses 72-hour acute risk and 70-year lifetime cancer risk to residents/non-occupational bystanders by implementing setback distances, requiring deeper injection, soil with higher moisture, and introducing new fumigation methods and tarp requirements.

DPR's PUR data analyses on high-use townships and ambient air concentrations from air monitoring stations indicate that current regulatory measures are effective. There is no evidence at this time to suggest that additional actions are necessary to meet the regulatory goals of DPR Regulation 22-005.

8. REFERENCES

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APPENDIX 1

Chart illustrating process to evaluate 1,3-D high-use townships and air monitoring data