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## MEMORANDUM

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SUBJECT: **Updating 1,3-Dichloropropene and Methyl Bromide Detections from 2011 to 2023**

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The California Department of Pesticide Regulation (DPR) conducts an Air Program that monitors ambient air concentrations of 40 pesticides at four locations throughout the state, and monitors for 1,3-dichloropropene (1,3-D) at two additional sites. The California Department of Food and Agriculture's laboratory, the Center for Analytical Chemistry (CDFA-CAC), performs the analysis of air samples collected by DPR, and DPR publishes the results of these analyses. CDFA notified DPR that it had identified an error in the lab analyses conducted on samples collected via air canister (lab method EMON-SM-05-019) that the laboratory analyzed between February 16, 2011, and November 27, 2024 ([view CDFA memorandum](#)). The lab error resulted in underreporting the presence of two pesticides, 1,3-D and methyl bromide (MeBr) over this period. This error affects detections above the limit of quantitation (quantifiable); hence trace detections and non-detects were unaffected.

### **Error Correction Factor from 2011-2023**

DPR's Air Program has established long-term monitoring studies to monitor the ambient air for pesticides, including 1,3-D and MeBr. These studies include the Air Monitoring Network (AMN, Study 257) and the 1,3-D Monitoring study (Study 309) established in 2011 and 2016, respectively. Over the course of these monitoring programs, individual canister samples have been analyzed by either CDFA-CAC or the California Air Resources Board's Northern Laboratory Branch (ARB-NLB). The samples analyzed by the ARB-NLB are not impacted by CDFA-CAC error described in this memo.

The CDFA-recommended correction factors vary from 1.12 to 1.58 on samples analyzed from 02/16/2011 to 11/27/2024 (Table 1). Samples analyzed after 11/27/24, which correlates with a collection date of 11/21/2024, are not impacted. The adjustment factors listed in Table 1 were applied to all 1,3-D and MeBr quantifiable concentrations detected using the air canister method EMON-SM-05-019 in the Pesticide Air Monitoring Results (PAMR) database. Of the 4,737 1,3-D and 4,040 MeBr analyses reported to DPR in the PAMR database by CDFA-CAC and ARB labs, 2,488 and 1,793 samples of 1,3-D and MeBr, respectively, were analyzed by CDFA-CAC. Of these, 990 (21%) 1,3-D samples and 337 (8%) MeBr samples were detected at quantifiable levels and were affected.

Table 1. Sample dates, correction factor, total number of samples, and number of affected quantifiable detections analyzed by CDFA-CAC from 2011 to 2024.

From	To	Correction factor	1,3D Analyzed samples	1,3-D Quantifiable detections	MeBr Analyzed samples	MeBr Quantifiable detections
02/02/2011	08/18/2011	1.12	85	0	85	0
08/19/2011	03/15/2023	1.26	2,155	928	1,544	331
03/16/2023	05/11/2023	1.36	53	10	35	3
05/12/2023	11/21/2024	1.58	195	52	129	3

As of February 24, 2025, the PAMR database has been updated to apply the appropriate correction factor to the impacted sample analyses. Of all short-term and long-term studies reported in the PAMR database, only studies 257 (AMN) and 309 (1,3-D Monitoring) used canisters and were sent to CDFA-CAC for analysis; therefore, these are the only studies impacted by the laboratory error described in this memo.

#### **Adjustments to DPR’s Air Monitoring Network and 1,3-D Monitoring Reports**

The main objective of the AMN and 1,3-D Monitoring studies is to evaluate long-term and multi-year pesticide concentrations in the air. The AMN and 1,3-D Monitoring annual reports discuss the highest 24-hour (acute), 4-week or 13-week (subchronic) concentrations, and the 1-year (chronic) average concentration for all pesticides monitored from January 1 to December 31 every year. These concentrations are compared to screening levels (SL) and regulatory targets (RT) set by DPR. As of February 2025, the most recent AMN and 1,3-D Monitoring reports were for the monitoring year 2023; therefore, this memo provides a summary of revisions applied to data from 02/02/2011 to 12/31/2023. This memo highlights (A) the highest acute (24-hour), subchronic (13-week), and chronic (1-year) concentrations of 1,3-D (Table 2) and MeBr (Table 3) in each of the 13 AMN and the eight 1,3-D monitoring reports, and (B) the highest new exceedances after correction factors were applied (Table 4). The percentage of SL or RT in Table 4 was calculated based on current screening levels (acute RT has been 55 ppb since 2022, and subchronic SL has been calculated using 13-week rolling averages since 2017).

List of affected reports:

1. Air Monitoring Network Results for years 2011-2023 (a total of 13 reports)
2. Air Monitoring Network Report: A Comprehensive Evaluation of Results (2011-2016)
3. Monitoring of 1,3-Dichloropropene in Fresno and Merced Counties: Results for years 2016-2023 (a total of eight reports)

Table 2. Highest acute (24-hour), subchronic (13-week), and chronic (1-year) concentrations in parts per billion (ppb) of 1,3-dichloropropene in the AMN and 1,3-D Monitoring reports. Revised concentrations are shown on top and previously reported concentrations are shown in parentheses.

Station	Screening Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Delhi	Acute	/	/	/	/	/	0.80 (0.63)	1.34 (1.06)	2.27 (1.80)	2.57 (2.04)	4.72 (3.75)	11.81 (9.37)	3.52 (2.79)	0.35 (0.26)
Parlier	Acute	/	/	/	/	/	0.90 (0.71)	20.11 (15.96)	140.3 (111.3)	2.61 (2.07)	13.37 (10.61)	31.41 (24.93)	13.63 (10.82)	1.09 (0.69)
Oxnard	Acute	0.05 (0.05)	6.40 (6.40)	3.00 (3.00)	2.20 (2.20)	8.70 (8.70)	2.90 (2.90)	1.22 (1.22)	0.35 (0.35)	0.51 (0.51)	0.05 (0.05)	0.72 (0.57)	0.59 (0.47)	1.57 (0.99)
Santa Maria	Acute	2.40 (2.40)	1.36 (1.36)	5.00 (5.00)	2.40 (2.40)	1.13 (1.13)	1.06 (1.06)	0.54 (0.54)	0.48 (0.48)	0.13 (0.13)	1.41 (1.12)	1.00 (0.80)	0.26 (0.21)	0.55 (0.35)
Shafter	Acute	0.50 (0.50)	1.01 (0.80)	11.10 (8.81)	2.57 (2.04)	2.70 (2.14)	12.59 (9.99)	0.94 (0.75)	63.62 (50.49)	3.20 (3.20)	47.25 (37.50)	2.89 (2.30)	1.46 (1.16)	7.99 (5.06)
Watsonville	Acute	0.21 (0.21)	2.80 (2.80)	1.51 (1.51)	0.78 (0.78)	0.90 (0.90)	0.45 (0.45)	0.41 (0.41)	0.27 (0.27)	0.29 (0.29)	1.04 (0.83)	0.50 (0.40)	0.45 (0.36)	0.35 (0.22)
Delhi	Subchronic	/	/	/	/	/	/	0.37 (0.29)	0.61 (0.48)	0.48 (0.38)	1.26 (1.00)	2.89 (2.29)	0.78 (0.62)	0.39 (0.31)
Parlier	Subchronic	/	/	/	/	/	/	2.31 (1.83)	13.27 (10.53)	0.98 (0.78)	2.03 (1.61)	4.15 (3.30)	3.00 (2.38)	2.64 (2.10)
Oxnard	Subchronic	/	0.79 (0.79)	0.57 (0.57)	0.22 (0.22)	0.76 (0.76)	0.28 (0.28)	0.20 (0.20)	0.07 (0.07)	0.09 (0.09)	0.05 (0.05)	0.09 (0.07)	0.03 (0.02)	0.17 (0.11)
Santa Maria	Subchronic	0.64 (0.64)	0.60 (0.60)	0.77 (0.77)	0.31 (0.31)	0.32 (0.32)	0.30 (0.30)	0.17 (0.17)	0.09 (0.09)	0.06 (0.06)	0.36 (0.28)	0.28 (0.23)	0.08 (0.06)	0.08 (0.05)
Shafter	Subchronic	0.50 (0.50)	0.15 (0.13)	2.55 (2.03)	2.81 (2.23)	0.60 (0.48)	1.30 (1.03)	1.34 (1.06)	7.06 (5.61)	0.45 (0.45)	5.72 (4.54)	5.69 (4.52)	0.14 (0.11)	0.66 (0.42)
Watsonville	Subchronic	/	0.59 (0.59)	0.43 (0.43)	0.24 (0.24)	0.35 (0.35)	0.09 (0.09)	0.18 (0.18)	0.07 (0.07)	0.08 (0.08)	0.45 (0.36)	0.24 (0.19)	0.16 (0.13)	0.09 (0.06)
Delhi	Chronic	/	/	/	/	/	0.35 (0.28)	0.17 (0.13)	0.25 (0.20)	0.19 (0.15)	0.59 (0.47)	0.86 (0.68)	0.34 (0.27)	0.04 (0.03)
Parlier	Chronic	/	/	/	/	/	0.55 (0.43)	0.78 (0.62)	3.71 (2.94)	0.34 (0.27)	0.64 (0.51)	1.95 (1.55)	0.98 (0.77)	0.10 (0.07)
Oxnard	Chronic	0.05 (0.05)	0.19 (0.19)	0.17 (0.17)	0.09 (0.09)	0.21 (0.21)	0.11 (0.11)	0.11 (0.11)	0.06 (0.06)	0.06 (0.06)	0.05 (0.05)	0.03 (0.03)	0.03 (0.03)	0.04 (0.03)
Santa Maria	Chronic	0.16 (0.16)	0.19 (0.19)	0.19 (0.19)	0.11 (0.11)	0.11 (0.11)	0.12 (0.12)	0.08 (0.08)	0.06 (0.06)	0.05 (0.05)	0.14 (0.11)	0.10 (0.08)	0.04 (0.03)	0.03 (0.02)
Shafter	Chronic	0.23 (0.23)	0.09 (0.08)	0.71 (0.57)	0.25 (0.20)	0.22 (0.18)	0.43 (0.34)	0.13 (0.11)	1.88 (1.52)	0.13 (0.13)	2.12 (1.80)	0.21 (0.16)	0.07 (0.06)	0.24 (0.15)
Watsonville	Chronic	0.08 (0.08)	0.16 (0.16)	0.13 (0.13)	0.09 (0.09)	0.12 (0.12)	0.07 (0.07)	0.08 (0.08)	0.05 (0.05)	0.06 (0.06)	0.15 (0.12)	0.07 (0.06)	0.04 (0.03)	0.03 (0.02)

Table 3. Highest acute (24-hour), subchronic (4-week), and chronic (1-year) concentrations in parts per billion (ppb) of Methyl bromide in the AMN report in 2011-2023. Revised concentrations are shown on top and previously reported concentrations are shown in parentheses.

Station	Screening Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Oxnard	Acute	0.47 (0.47)	3.40 (3.40)	0.17 (0.17)	8.70 (8.70)	0.47 (0.47)	0.61 (0.61)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.04 (0.03)	0.04 (0.03)	0.01 (0.01)
Santa Maria	Acute	3.80 (3.80)	0.77 (0.77)	0.77 (0.77)	0.58 (0.58)	1.70 (1.70)	1.70 (1.70)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03 (0.02)	0.10 (0.08)	0.43 (0.34)	0.02 (0.01)
Shafter	Acute	0.95 (0.76)	0.69 (0.55)	0.07 (0.05)	0.31 (0.25)	0.09 (0.07)	0.04 (0.03)	<0.01 (<0.01)	0.10 (0.10)	0.01 (0.01)	0.05 (0.05)	0.06 (0.05)	0.09 (0.07)	0.02 (0.02)
Watsonville	Acute	0.08 (0.08)	1.50 (1.50)	1.80 (1.80)	0.08 (0.08)	0.20 (0.20)	0.70 (0.70)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03 (0.02)	1.20 (0.95)	0.04 (0.04)	0.02 (0.02)
Oxnard	Subchronic	0.17 (0.17)	1.11 (1.11)	0.06 (0.06)	2.91 (2.91)	0.29 (0.29)	0.22 (0.22)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03 (0.02)	0.04 (0.03)	0.01 (0.01)
Santa Maria	Subchronic	1.90 (1.90)	0.56 (0.56)	0.31 (0.31)	0.38 (0.38)	1.16 (1.16)	0.70 (0.70)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.06 (0.05)	0.13 (0.11)	0.01 (0.01)
Shafter	Subchronic	0.50 (0.50)	0.21 (0.18)	0.05 (0.05)	0.12 (0.10)	0.06 (0.05)	0.03 (0.02)	<0.01 (<0.01)	0.04 (0.04)	0.02 (0.02)	0.02 (0.02)	0.04 (0.03)	0.06 (0.05)	0.01 (0.01)
Watsonville	Subchronic	0.01 (0.01)	0.80 (0.80)	1.00 (1.00)	0.07 (0.07)	0.14 (0.14)	0.08 (0.08)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.30 (0.24)	0.04 (0.03)	0.01 (0.01)
Oxnard	Chronic	0.06 (0.06)	0.10 (0.10)	0.02 (0.02)	0.19 (0.19)	0.05 (0.05)	0.03 (0.03)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	<0.01 (<0.01)
Santa Maria	Chronic	0.18 (0.18)	0.09 (0.09)	0.06 (0.06)	0.05 (0.05)	0.14 (0.14)	0.09 (0.09)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.02)	0.03 (0.02)	<0.01 (<0.01)
Shafter	Chronic	0.28 (0.27)	0.07 (0.06)	0.04 (0.04)	0.02 (0.02)	0.01 (0.01)	<0.01 (<0.01)	<0.01 (<0.01)	0.02 (0.02)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)
Watsonville	Chronic	0.03 (0.03)	0.12 (0.12)	0.15 (0.15)	0.02 (0.02)	0.04 (0.04)	0.04 (0.04)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03 (0.03)	0.01 (0.01)	0.01 (0.01)

Table 4. Reported and revised quantifiable detections in parts per billion (ppb) that exceed current 1,3-D screening levels: 55 ppb for 72 hours (acute), 3 ppb for 13 weeks (subchronic), 2 ppb for 1 year (chronic), and 0.56 ppb for 70 years (lifetime). New exceedances are shown in bold.

Year	Station	Chemical	Screening Type	Reported	% SL/RT	Revised	% SL/RT
2018	Parlier	1,3-D	Acute	111.30	202 %	140.20	255 %
2018	Parlier	1,3-D	Subchronic	10.53	351 %	13.27	442 %
2018	Parlier	1,3-D	Chronic	2.94	147 %	3.71	186 %
2021	Parlier	1,3-D	Subchronic	3.30	110 %	4.15	139 %
<b>2022</b>	<b>Parlier</b>	<b>1,3-D</b>	<b>Subchronic</b>	2.38	79 %	<b>3.00</b>	<b>100 %</b>
2016-2023	Parlier	1,3-D	Lifetime	0.95	169 %	1.20	215 %
<b>2018</b>	<b>Shafter</b>	<b>1,3-D</b>	<b>Acute</b>	50.50	92 %	<b>63.60</b>	<sup>†</sup> <b>116 %</b>
2018	Shafter	1,3-D	Subchronic	5.61	187 %	7.06	235 %
2020	Shafter	1,3-D	Subchronic	4.54	151 %	5.72	191 %
<b>2020</b>	<b>Shafter</b>	<b>1,3-D</b>	<b>Chronic</b>	1.80	90 %	<b>2.12</b>	<b>106 %</b>
2021	Shafter	1,3-D	Subchronic	4.52	151 %	5.69	190 %
2011-2023	Shafter	1,3-D	Lifetime	0.43	77 %	0.53	94 %

†The 55-ppb regulatory target was not in place until 2022. Calculation reflects 55 ppb, however at the time of sampling the screening level was 110 ppb.