



Eastern Coachella Valley's 2023 Fumigant Monitoring Study and Analysis



Community Presentation

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Overview



Why it was done



How it was done



What was found



What it means



What is next

Why it was done

- Study Background
- Fumigant Use



Study Background

- Eastern Coachella Valley (ECV) Community Steering Committee (CSC) identified pesticides and pesticide monitoring as one of the top air quality priorities in the Community Emissions Reduction Plan.
- At the request of the CSC, the California Air Resources Board (CARB) conducted seasonal air monitoring and published the results in its [2022-2023 ECV Ambient Air Monitoring Report](#).
- California Department of Pesticide Regulation (DPR) and Office of Environmental Health Hazard Assessment (OEHHA) evaluated the monitoring data to assess potential community health risks and impacts and potential next steps if needed.



Study Background

Table 1 – Goal: Gather Information and Conduct Air Monitoring for Pesticides					
	Action	Responsible Entity	Metric	Timeline	
				Start	Complete
A	<ul style="list-style-type: none"> Identify pesticides used in ECV (e.g., frequency, amount, and ingredients) Share information on statewide efforts for a pesticide notification system Provide consultation on field activities Support data analysis and interpretation 	DPR and Ag. Commissioner	<ul style="list-style-type: none"> Data collected on pesticide use in ECV Updates provided to the CSC 	4 th quarter, 2021	1 st quarter, 2022
B	<ul style="list-style-type: none"> Develop a screening approach for agricultural pesticides commonly used in ECV Support prioritization of pesticides for potential air monitoring based on screening criteria and other relevant information 	OEHHA	<ul style="list-style-type: none"> Updates provided to the CSC 	2 nd quarter, 2022	1 st quarter, 2023
C	<ul style="list-style-type: none"> Support protocol development for pesticide sampling and analysis Coordinate sampling and analysis of pesticides 	CARB and South Coast AQMD	<ul style="list-style-type: none"> Development of protocols for pesticide sampling and analysis 	1 st quarter, 2022	1 st quarter, 2023
D	<ul style="list-style-type: none"> Participate in field activities Analyze pesticide samples Support data analysis and interpretation 	CARB, South Coast AQMD, and DPR	<ul style="list-style-type: none"> Data collected through air sampling Samples analyzed Updates provided to the CSC 	2 nd quarter, 2023	TBD



MITC, 1,3-D, and Chloropicrin

- MITC (ranked first in use in ECV), 1,3-D (ranked 5th in use in ECV), and chloropicrin (ranked 29th in use in ECV) were selected for the study.
- All three pesticides are Toxic Air Contaminants
 - An air pollutant that may cause or contribute to an increase in mortality, illness, or pose a potential hazard to human health
- All three pesticides are Restricted Materials
 - Restricted materials are considered to have a higher potential to cause harm to human health and the environment
- MITC is the byproduct of metam sodium, metam potassium, or dazomet fumigation
- 1,3-D, metam sodium and metam potassium are known to cause cancer if exposed



How it was done

- Study Design and Location
 - Sampling and Analysis
 - Evaluating Exposures
- Reference Concentrations

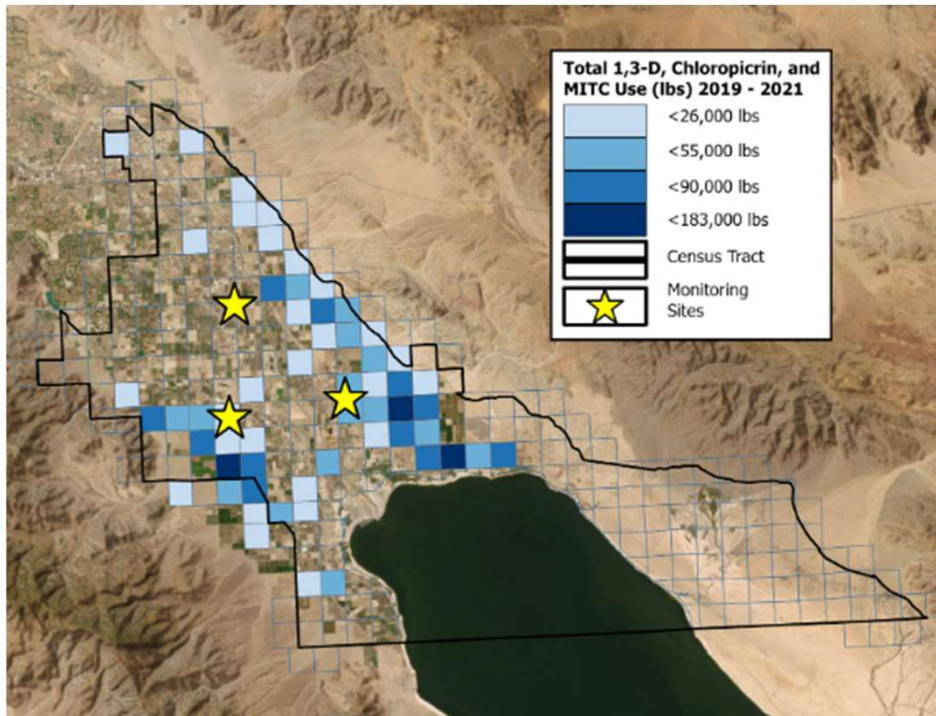


Study Design Details

- Seasonal air monitoring study in winter
 - Winter weather patterns lead to higher concentrations of fumigants in the air
 - Historically, winter is a high use season for all 3 fumigants
- Air samples were collected from November 28, 2022 through February 24, 2023
 - Four 24-hour samples were collected each week
 - Samples were collected over 13-weeks
- Study was developed in coordination with the CSC.



Sample Locations



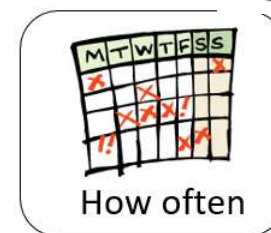
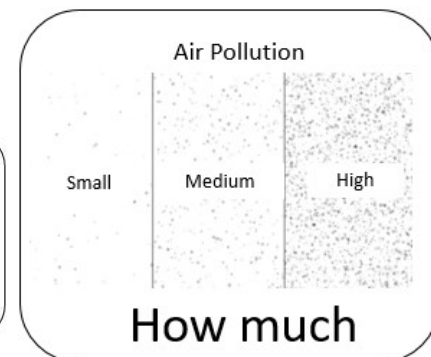
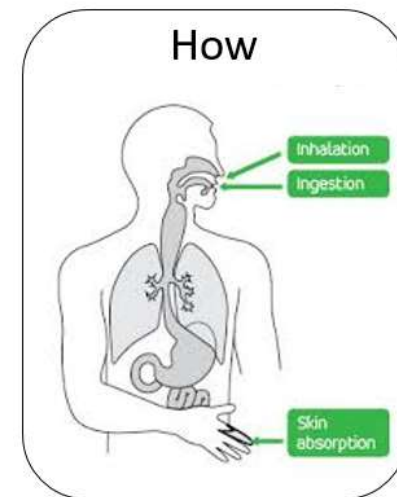
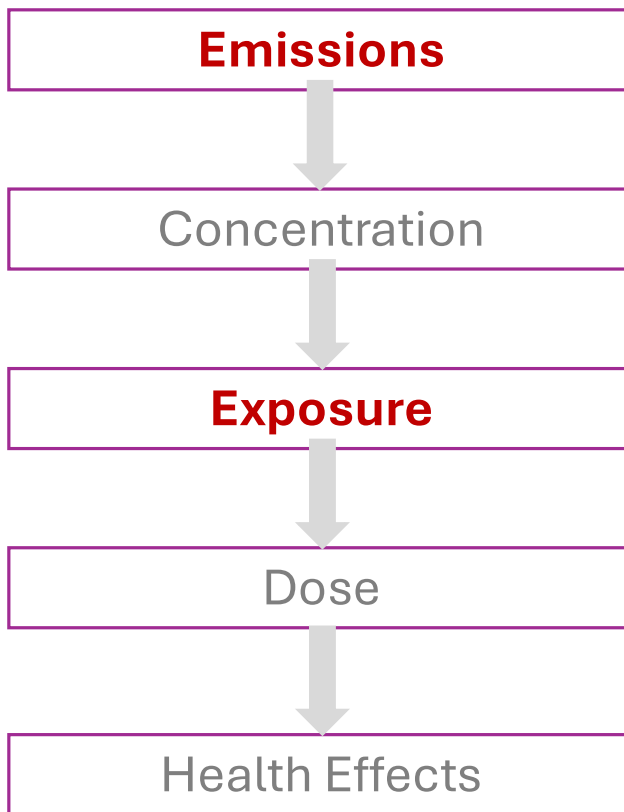
- Sites selected were:
 - Mecca Fire Station (MFS)
 - Torres Martinez Monitoring Station (TM)
 - Thermal Fire Station (TFS)
- Locations were selected by CARB based on a process that the CSC provided input on.

Minimum Detection Levels

- Detections indicate the presence of a pesticide in the air.
- Detections may be at different levels or concentrations of pesticides in the air.
- The minimum concentration that we can detect for each pesticide in this study is:
 - MITC: 0.01 parts per billion (ppb)
 - Chloropicrin: 0.009 ppb
 - 1,3-D: 0.055 ppb



Emissions ≠ Exposure



OEHHA Health Guidance Values

Reference Exposure Levels (RELs):

These are the levels of chemicals in air, or the amounts of chemicals that people can be exposed to without expecting any harmful noncancer health effects.

These levels consider sensitive groups like infants and children.



DPR Screening Levels and Regulatory Targets

- DPR estimates the potential for health effects by comparing the air concentrations to health **screening levels** or **regulatory targets**.
- Screening levels are air concentrations at which no health effects are expected to occur for all populations with an additional conservative factor included to account for uncertainties.
- Regulatory targets are like screening levels but are associated with regulatory actions.



Exposure Durations and Types

Acute (brief, hours to days)

- One hour (OEHHA)
- 8-, 24- or 72 hours (DPR)
- Example: Cough and respiratory tract irritation due smoke exposure from a fire that started nearby.



Sub-chronic (short-term or seasonal, weeks to months)

- 4- or 13-weeks (DPR)
- Example: Smoke-induced bronchitis after four weeks of poor air quality due to a wildfire burning nearby.



Exposure Durations and Types

Chronic (yearly to lifetime)

- 1-year (non-cancer, both agencies)
- Example: Exacerbation of asthma and other lung diseases due to years of living in a community with poor air quality
 - Lifetime (cancer risk, both agencies)
- Example: Lung cancer after a career in firefighting

*Chronic exposures and cancer risks cannot be evaluated from a seasonal monitoring study



Data Comparisons

- A sample represents potential exposures during a 24-hour period.
 - One sample represents 24-hours because the sampling pumps sampled the air for 24-hours.
- This sample is compared to the acute target.
- For the sub-chronic screening level comparisons, concentrations are averaged over 4- or 13-weeks depending on the pesticide.



What Was Found

- Individual Fumigant Results
- Concentration Comparisons
 - Key Findings



MITC Results

Site	# of Samples	Detections	Max. 24-Hour Conc. (ppb)	Max. 4-Week Conc. (ppb)	Average concentration during study (ppb)
MFS	49	30 (61%)	0.52	0.09	0.06
TM	46	24 (52%)	0.73	0.20	0.08
TFS	46	16 (35%)	0.19	0.05	0.03

Reporting limit = 0.01 ppb
ppb = parts per billion



MITC Concentration Comparisons

Site	DPR Acute Target (ppb)	OEHHA Acute REL (ppb)	Max. 24-Hour Conc. (ppb)	DPR Subchronic Level (ppb)	Max. 4-Week Conc. (ppb)	Average concentration during study (ppb)
MFS	220	22	0.52	1	0.09	0.06
TM			0.73		0.20	0.08
TFS			0.19		0.05	0.03

MITC Chronic Screening Level = 0.1 ppb



MITC Key Findings

The highest **24-hour concentration** was **300 times lower** than the acute regulatory target, and **30 times** lower than the acute REL.

Based on the **low concentrations found**, health effects related to MITC exposure **during the study period** are unlikely.



Chloropicrin Results

Site	# of Samples	Detections	Max. 24-Hour Conc. (ppb)	13-week Average Conc. (ppb)
MFS	49	0	ND	ND
TM	42	0	ND	ND
TFS	40	2 (4%)	0.06	0.006

Reporting limit = 0.009 ppb

ND = Not detected



Chloropicrin Concentration Comparisons

Site	DPR Acute Target (ppb)	OEHHA Acute REL (ppb)	Max. 24-Hour Conc. (ppb)	DPR Subchronic Level (ppb)	Max. 13-Week Conc. (ppb)	Average concentration during study (ppb)
MFS	73	4.3	ND	0.35	ND	ND
TM			ND		ND	
TFS			0.06		0.006	0.006



1,3-D Results

Site	# of Samples	Detections	Max. 24-Hour Conc. (ppb)	Max. 13-Week Conc. (ppb)	Average 13-Week Conc. (ppb)
MFS	49	0	ND	ND	ND
TM	46	0	ND	ND	ND
TFS	46	0	ND	ND	ND

Reporting limit = 0.055 ppb
ND = Not detected



What it means

- Study Limitations
 - Key Take Aways
- Mitigation Measures



Key Takeaways

- The data show no exceedances of MITC, 1,3-D, or chloropicrin reference concentrations during the 13 weeks monitored.
- There **were** some community exposures to MITC, but health effects related to MITC exposures during the study period **are not likely** based on the low concentrations detected.
- Due to low or no detections of chloropicrin and 1,3-D, health effects related to chloropicrin and 1,3-D exposures during the study period **are not likely**.



A reminder about study design parameters

Design Limitations

- This study represents a snapshot in time, as it was only carried out for 13-weeks.
- In collaboration with the CSC, this study focused on three pesticides prioritized by the CSC.

Exposure Limitations

- Chronic and lifetime exposures are not addressed in a seasonal air monitoring study.
- Historical fumigant use not addressed.



Mitigation measures

Mitigation measures are already **required** for all fumigants.

While methods vary by pesticide, they can include:

- Buffer zones (area between the field and bystanders where the pesticide cannot be applied).
- Setbacks (a distance from the field to an occupied structure where the pesticide cannot be applied).
 - Occupied structures = houses, apartment buildings, schools, day cares, hospitals, etc.
- Limits on application size, timing, and amounts.



Mitigation measures

- Minimum soil moisture (this keeps the fumigant in the soil).
- Use of post-application water treatments.
- Use of Totally Impermeable Film (TIF) tarps.
- Monitoring of wind direction and potential worker sensory irritation during and after the application.
- Evaluation and tracking of pesticide use and monitoring data.
- 1,3-D annual report, use tracking and modeling of high use areas.
- Enforcement of all these mitigation measures is conducted by the CAC and DPR



1,3-D Regulations

- DPR's new residential bystander regulations became effective on January 1, 2024.
- DPR is developing additional restrictions on the use of 1,3-D. DPR proposed new regulations, developed jointly and mutually with the Office of Environmental Health Hazard Assessment, on November 15, 2024.
- The proposed regulations are focused on reducing chronic (long-term) exposure to 1,3-D for persons that might be working near where an application is occurring (occupational bystanders).



What is Next

- Next Steps
- Reporting Exposures



Next Steps

- This study fulfilled the CERP commitment for a seasonal monitoring study.
- DPR will conduct modeling of historic annual average air concentrations based on pesticide use and weather data from 2019 – 2024.
 - Results will be provided in a report to be shared with the CSC.
- Additionally, DPR will evaluate pesticide use reporting data in the ECV, provide updates on pesticide use in the area, and evaluate any significant changes in pesticide use.
 - Results will be provided in a report to be shared with the CSC.



What to do if you are exposed

- If you are experiencing a pesticide-related emergency, such as having trouble breathing, **please dial 911 for help.**
- Get help from a local hospital or healthcare provider as soon as possible.
- Let the health providers know you may have been exposed to a pesticide.
 - If possible, take a picture of the pesticide container or label.



What to do if you are exposed

- National Pesticide Information Center (NPIC) is a helpful resource for information on pesticide health impact.
- Poison Control Center: **1-800-222-1222** for free, immediate first-aid information and advice on what to do next.
 - Available 24 hours a day, 7 days a week.
 - Interpretation services are available.



Reporting Pesticide Incidents

Contact the Riverside County Agricultural Commissioner (CAC)

(951) 955-3045

PUE@rivco.org

1-87PestLine (1-877-378-5463) will connect you to your local County Agricultural Commissioner

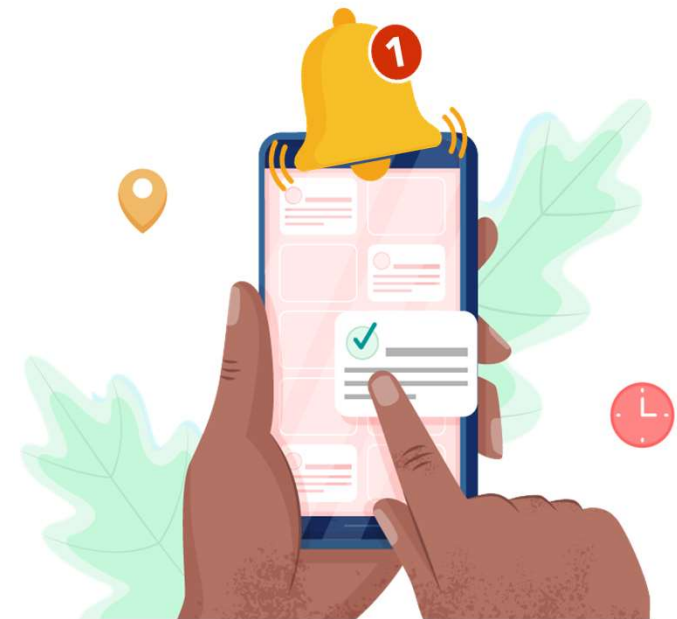
All reports submitted to the CAC are investigated to see if any laws or regulations were violated and to determine whether the illness is related to a pesticide exposure.



Statewide Pesticide Application Notification Systems

- The SprayDays notification system provides information 24-48 hours before restricted materials pesticide applications on farms (production agriculture) across California.
- It launches statewide on March 24, 2025.
- The system will feature a web-based map and an option to sign-up for email and/or text message notifications in multiple languages.
- The SprayDays website also provides information on pesticide safety and how pesticides are regulated in California.

SprayDays
California



Statewide Pesticide Application Notification Systems

- Please visit the following link for a demo on SprayDays:
- [SprayDays Demo - English](#)
- [SprayDays Demo - Spanish](#)

