



Shafter Pesticide Monitoring

Department of Pesticide Regulation Air Program

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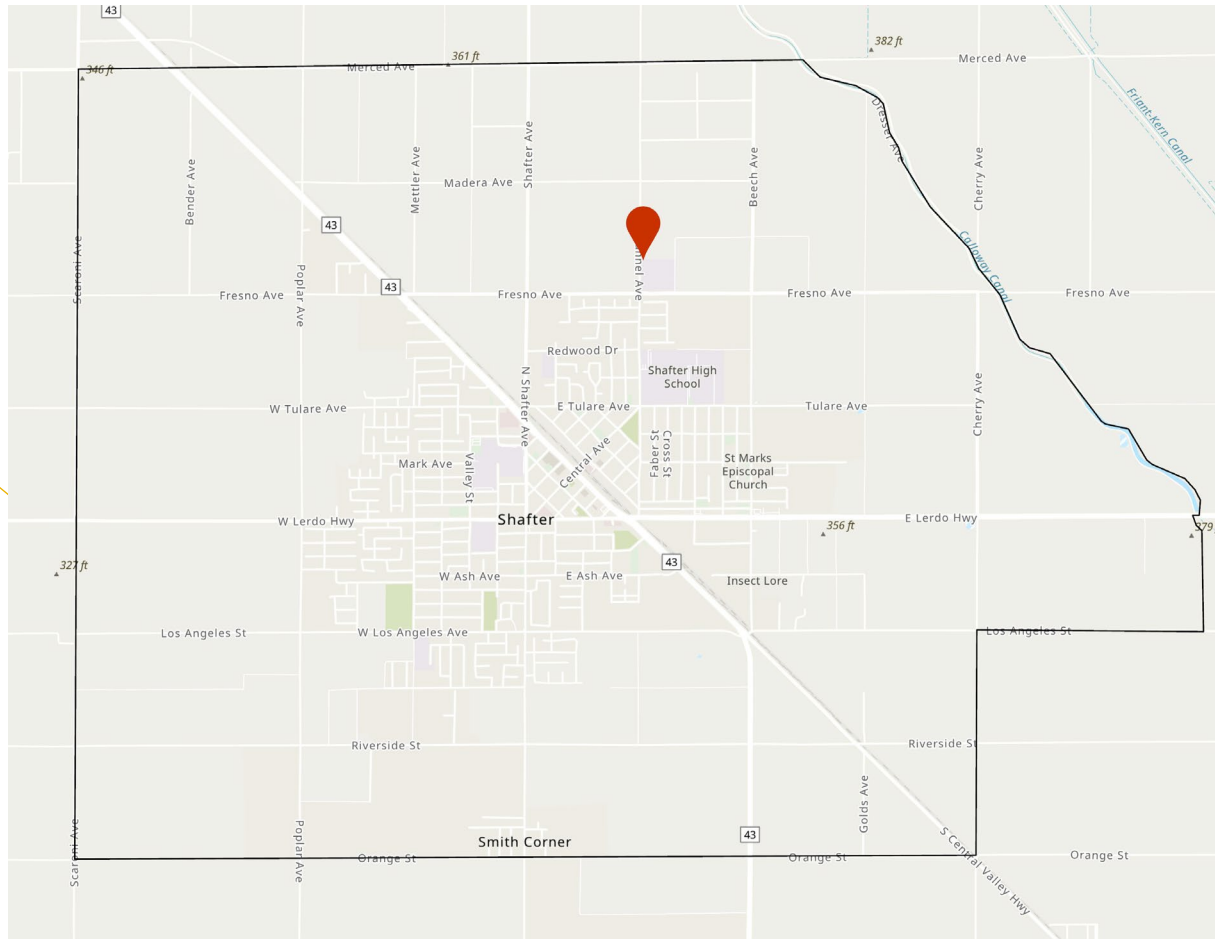
Background Information

- In 2011, the Department of Pesticide Regulation (DPR) implemented a multi-year statewide Air Monitoring Network (AMN) to measure pesticide concentrations in the ambient air in various California agricultural communities.
 - In 2023, DPR monitored the air in the vicinities of four communities across California: Oxnard, Santa Maria, Shafter, and Watsonville.
- AMN objectives are to collect data that assist in:
 - Assessing potential health risks
 - Evaluating the effectiveness of existing mitigation measures
 - Developing measures to mitigate risk
 - Evaluating the effectiveness of regulatory requirements

Background Information

- DPR's Air Program is responsible for assessing pesticide concentrations in air and mitigating adverse risk associated with pesticides applications.
- The Air Program collects weekly 24-hr air samples from several monitoring stations across California.
 - The Air Program monitors for 35 pesticides and 5 breakdown products.
 - The Air Program has been monitoring in Shafter since 2011.

Shafter Monitoring Site



Shafter Monitoring Site



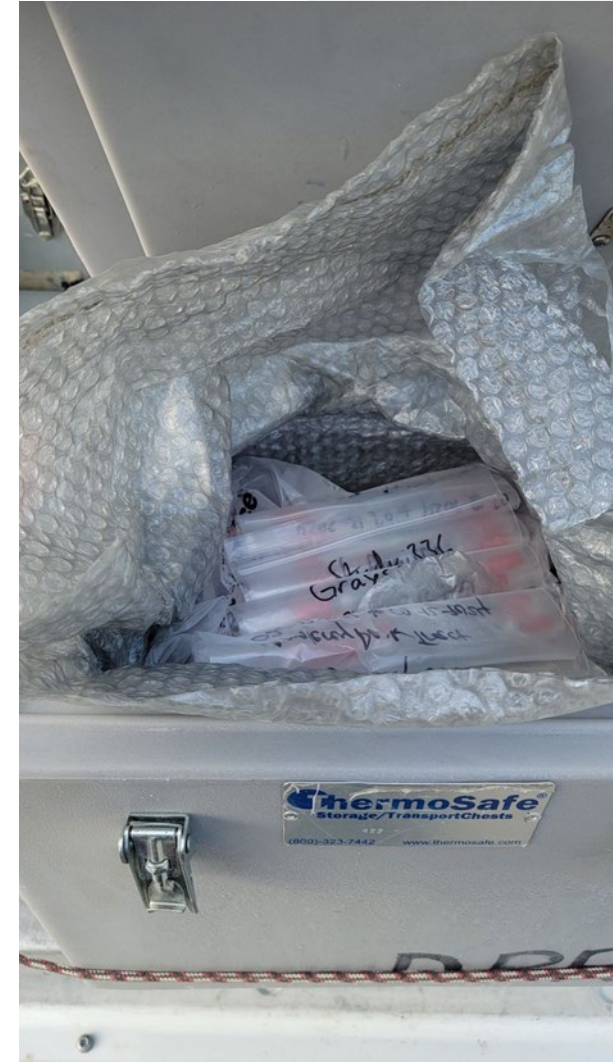
How Do We Monitor?

- Collect samples using pumps to trap air into canisters or sorbent tubes.



How Do We Monitor?

- Store samples on dry ice to ensure no pesticides escapes.
- Transport samples to an analytical laboratory for analysis.
- The analysis and uploading the data can take anywhere from 6-9 months.



Mitigation Implementation

- Mitigations are methods of reducing pesticide concentrations.
- Mitigations are in the form of:
 - Buffer zones or setbacks
 - A set distance between the point of application and bystanders/buildings.
 - Changes to application methods
 - For example, requiring deeper injection of a pesticide.
 - Use limits
 - Limits on what areas the pesticide can be used, when the pesticide can be used, and what regions the pesticide can be used.
- Mitigations are implemented via:
 - Pesticide label changes
 - Statewide regulations
 - Restricted materials permits

How Does DPR Use The Data?

- DPR develops two kinds of health screening targets.
 - Screening levels (SLs) which are developed based on early or preliminary assessment of possible health effects.
 - Regulatory targets (RTs) which are established based on a complete assessment of possible health or environmental risks.
- Measured air concentrations are compared to established targets to assess possible exposures:
 - 8-hr, 24-hr, or 72-hr = Acute Targets
 - 4-wk or 13-wk = Subchronic Targets
 - 1-year = Chronic Targets
- If any of the values are exceeded, DPR conducts a detailed evaluation and determines if mitigation is needed.

Acute, Sub-Chronic, and Chronic Definitions

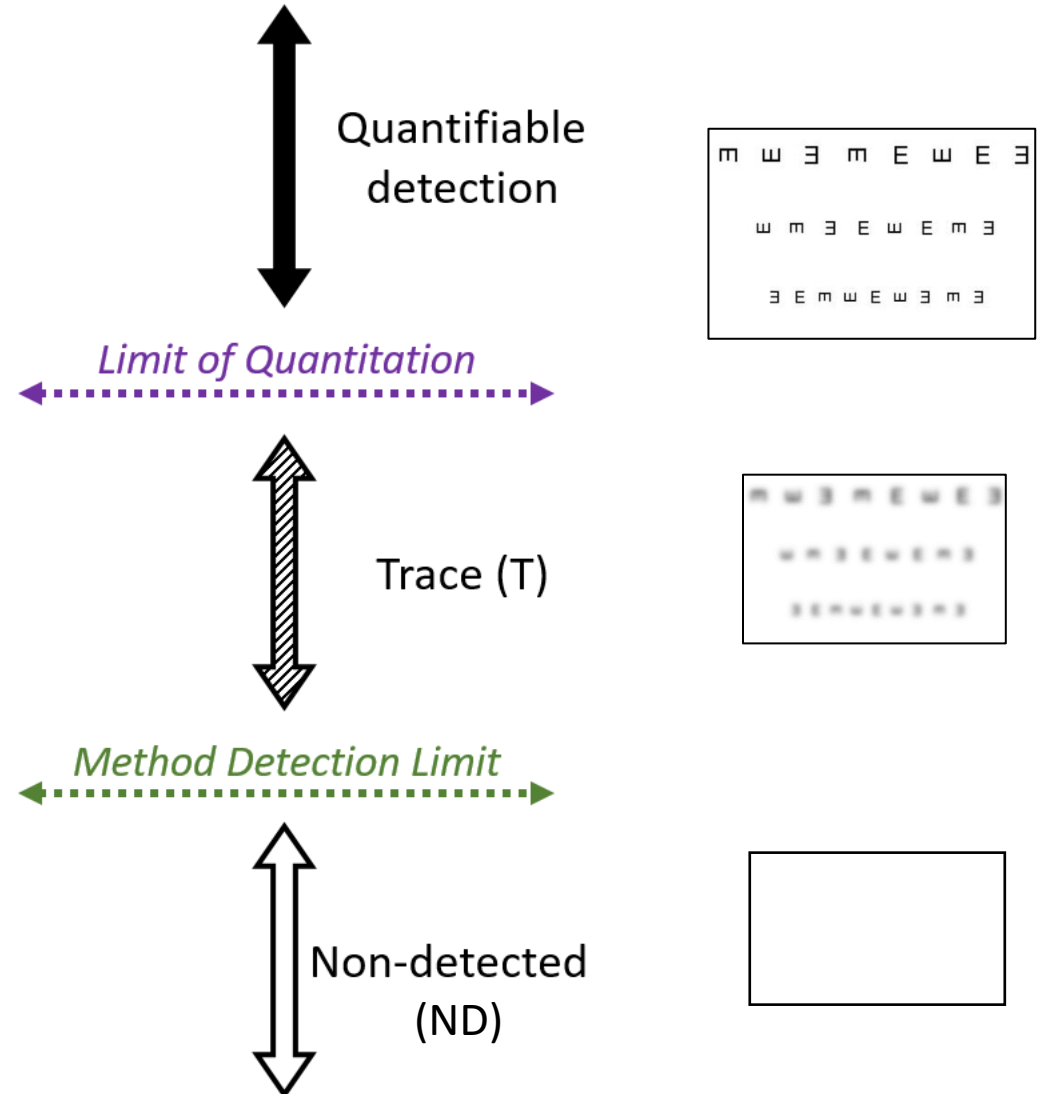
- Acute (Short-term): Health effects are more severe and sudden in onset. This is based on short-term contact with a chemical.
 - Example: Carbon monoxide poisoning due to 20 minutes of intense smoke exposure
- Sub-Chronic (Medium-term): Health effects that develop over a month to 90 days
 - Example: Smoke-induced bronchitis after two weeks of smoke exposure
- Chronic (Long-term): Long-developing syndrome, over a year to years. This is based on continued or repeated contact with a chemical.
 - Example: Black-lung disease after a 35-year career of firefighting

Detection levels

Three terms are used to describe detections:

- 1. Quantifiable** detection: The pesticide is there, and the value is reliable to be used in data analysis.
- 2. Trace** detection: The pesticide is there at a low level, but the value is not reliable.
- 3. Non-detect (ND)** below the method detection limit

Only values in the quantifiable range (>LOQ) can be compared to SLs and RTs.



Pesticide Detections (and %) by Year as Individual Samples

Year	Analyzed Samples	Quantifiable or Trace detections	Quantifiable detections
2022	2,009	136 (7%)	75 (4%)
2023	1,040	48 (5%)	23 (2%)
Total	3,049	184 (6%)	98 (3%)

*2023 Shafter Data for January 2023 – June 2023 Only

Quantifiable Pesticide Detections by Year

Pesticide	2022	2023
1,3-dichloropropene	27 (36%)	4 (17%)
EPTC	1 (1%)	0
Fenpyroximate	1 (1%)	0
Methyl Bromide	26 (35%)	7 (30%)
MITC	12 (16%)	4 (17%)
Pendimethalin	8 (11%)	8 (35%)

*2023 Shafter Data for January 2023 – June 2023 Only

Highest Measured Concentrations (ppb) and Percent of Screening Levels 2022

Pesticide	24-hour (Acute)	SL %	4-week (Subchronic)	SL %	1-year (Chronic)	SL %
1,3-dichloropropene (36%)	1.16	2*	0.11‡	4	0.06	3
EPTC (1%)	0.01	< 1	0.0008	<1	0.0002	<1
Fenpyroximate (1%)	0.01	NA	0.0008	NA	0.0003	NA
Methyl Bromide (35%)	0.07	< 1*	0.05	1	0.01	1
MITC (16%)	0.18	< 1*	0.01	10	0.02	17
Pendimethalin (11%)	0.003	NA	0.002	NA	0.0004	NA

*Regulatory target

‡ 13-week average

Highest Measured Concentrations (ppb) and Percent of Screening Levels 2023

Pesticide	24-hour (Acute)	SL %	4-week (Subchronic)	SL %	1-year (Chronic)	SL %
1,3-dichloropropene (17%)	5.06	9*	0.42‡	14	0.21	11
Methyl Bromide (30%)	0.02	< 1*	0.01	<1	0.007	<1
MITC (17%)	0.20	< 1*	0.06	6	0.01	12
Pendimethalin (35%)	0.002	NA	0.002	NA	0.0006	NA

*2023 Shafter Data for January 2023 – June 2023 Only

* Regulatory target
‡ 13-week average

Potential Acute Health Effects

- Chloropicrin
 - Has a strong odor.
 - Irritating to the eyes, skin, nose, throat, and upper respiratory tract.
 - Inhalation may lead to vomiting.
 - Eye irritation is the most sensitive effect.
- 1,3-D
 - Irritating to the skin, eyes, and mucous membranes.
 - This can cause chest pain or breathing difficulties.
- MITC
 - Irritating to the eyes, skin, lungs, and mucous membranes of the gastrointestinal tract.
 - Respiratory symptoms include burning or irritation of the nose and throat, cough, laryngitis, chest pain, and an asthmatic type response.
 - Exposure may also cause headache, vomiting, or abdominal pain.

What to do if 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.
- National Pesticide Information Center (NPIC) is a helpful resource for 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 available.

Reporting Pesticide Incidents

Contact the Kern County Agricultural Commissioner (CAC)

(661) 868-6300

agcomm@kerncounty.com

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

Next Steps

- All measured air concentration is available to the public via DPR's Pesticide Air Monitoring Results (PAMR) database.
 - The data is published every quarter.
- DPR uses the data to assess potential health risks, develop measures to mitigate risks, and measure the effectiveness of regulatory requirements.
- DPR publishes air monitoring reports yearly and presents results at public meetings yearly.
- DPR will continue community engagement and keep the community informed of regulations and developments that are relevant to the community beyond monitoring data.
- DPR plans on continuing to sample weekly in Shafter.

Questions

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