



Ambient Air Monitoring in California

Air Program | Environmental Monitoring Branch

March 25, 2021

Eastern Coachella Valley Community Steering Committee





Today's Agenda

March 25, 2021

Background



Why Do We Monitor?
How Do We Monitor?



Where Are We Monitoring?
Results, Reports, and Outreach



What does this mean for the Eastern Coachella Valley Community?
Questions



Background:

What is the Air Program?

- ❖ As part of the Environmental Monitoring Branch at the Department of Pesticide Regulation (DPR), the Air Program is responsible for **assessing** pesticide concentrations in air and **mitigating** adverse risks associated with pesticide applications.
 - Collecting air monitoring samples are needed for this goal.
 - Air monitoring data is supplemented with computer modeling and other data to estimate concentrations and emissions.

Background:

What governs the Air Program?

- ❖ Key laws for Air Program:
 - California Food and Agricultural Code - Continuous evaluation
 - California Toxic Air Contaminant (TAC) Act
 - Requires DPR to assess and mitigate risks from air exposure
 - Requires ARB to monitor at DPR's request

Background:

Pesticide Use in California

- ❖ All pesticides must be registered in California before it can be used.
 - DPR's Registration and Evaluations Branches reviews all available scientific reports to determine if products can be used in California without adverse effects to human health and the environment.
 - Those approved for use by US EPA must also be approved by DPR before it can be used.
 - Pesticide usage in California is reported to DPR
 - "The Label is the Law" - Pesticide usage is govern by the label language on the product.
 - For specific pesticides (e.g., restricted materials), DPR and County Agricultural Commissioners may require additional conditions are met for use in specific conditions/locations.
 - Example: Prohibit application during specified months, alter application method due to geographical constraints or pesticide pressures.

Background:

How are Pesticides Regulated?

❖ Assessing the Risk of a pesticide

- DPR risk assessments process includes the study and identification of:
 - Potential health effects
 - Levels that have little or no risk – **reference concentrations**
 - Exposure levels
- DPR and the Office of Environmental Health Hazard Assessment (OEHHA) collaborate to perform reviews on preliminary assessment.
- For pesticides classified as Toxic Air Contaminants, risk assessment findings are also presented for review by the Scientific Review Panel (SRP).

Background:

Mitigating Exposure Risks of TACs

❖ TAC – Toxic Air Contaminants

- DPR must determine the need to reduce risk
- If needed, DPR must implement measures to reduce exposures within 2 years, such as
 - Application method restrictions
 - Buffer zones (distance to a target concentration)
 - Limits on amount applied
- DPR must develop exposure reduction measures in consultation with other agencies, including CARB and air pollution control districts.

Background:

Screening Levels and Regulatory Targets

DPR health screening levels – A concentration that is above the screening level indicates the need for a further and more refined evaluation.

DPR regulatory target concentrations – concentrations designated to protect against adverse health effects. Exceeding a regulatory target concentration does not necessarily mean an adverse health effect occurs, but it indicates restrictions on the pesticide use may need to be modified.

Evaluation of monitoring data and computer modeling may lead DPR to develop additional measures to reduce exposures.

Background:

Why Do We Monitor?

Depending on the study, DPR performs air monitoring to:

- Identify pesticides in air
- Determine acute, sub-chronic, or annual concentrations
- Assess subchronic, chronic, and/or cumulative exposures
- Track trends in air concentrations over time
- Determine efficacy of mitigation measures
- Determine pesticide emission rate (flux)
- Validate and refine air computer models

Background:

Available Technologies and Challenges

- Monitoring for ambient airborne pesticides using “real-time” approaches is not currently possible for most pesticides.
 - Current air samples are collected using pumps and trapped into canisters or sorption tubes.
- The pesticide of interest must have a developed analytical method and a mechanism to capture it from the ambient air.
- Sample collection is detailed and labor intensive.
 - Pesticide air samples need to be immediately placed under low temperatures (-109.3 °F) to prevent sample loss due to volatilization/degradation.
 - Collected air samples need to be stored and transported under low temperature to an analytical laboratory for analysis.
- Laboratory extraction is difficult and can take anywhere from 2-4 months to obtain results.

How Does DPR Monitor For Pesticides in Air

**Application-site
Monitoring**

**Seasonal
Monitoring**

**Long-term
Monitoring**

How Does DPR Monitor For Pesticides in Air



Application-site Monitoring

- Monitoring occurs on or at the edge of the application field
- Monitoring occurs for several days after the application
- Data best used to estimate maximum exposures over hours or days

How Does DPR Monitor For Pesticides in Air



Seasonal Monitoring

- Monitoring is conducted in communities of higher pesticide use relative to other communities.
- 1-2 pesticides is targeted for the 8-12 week period that coordinates with the historical use season.
- Data best used to estimate maximum exposures over weeks or months

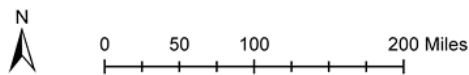
How Does DPR Monitor For Pesticides in Air



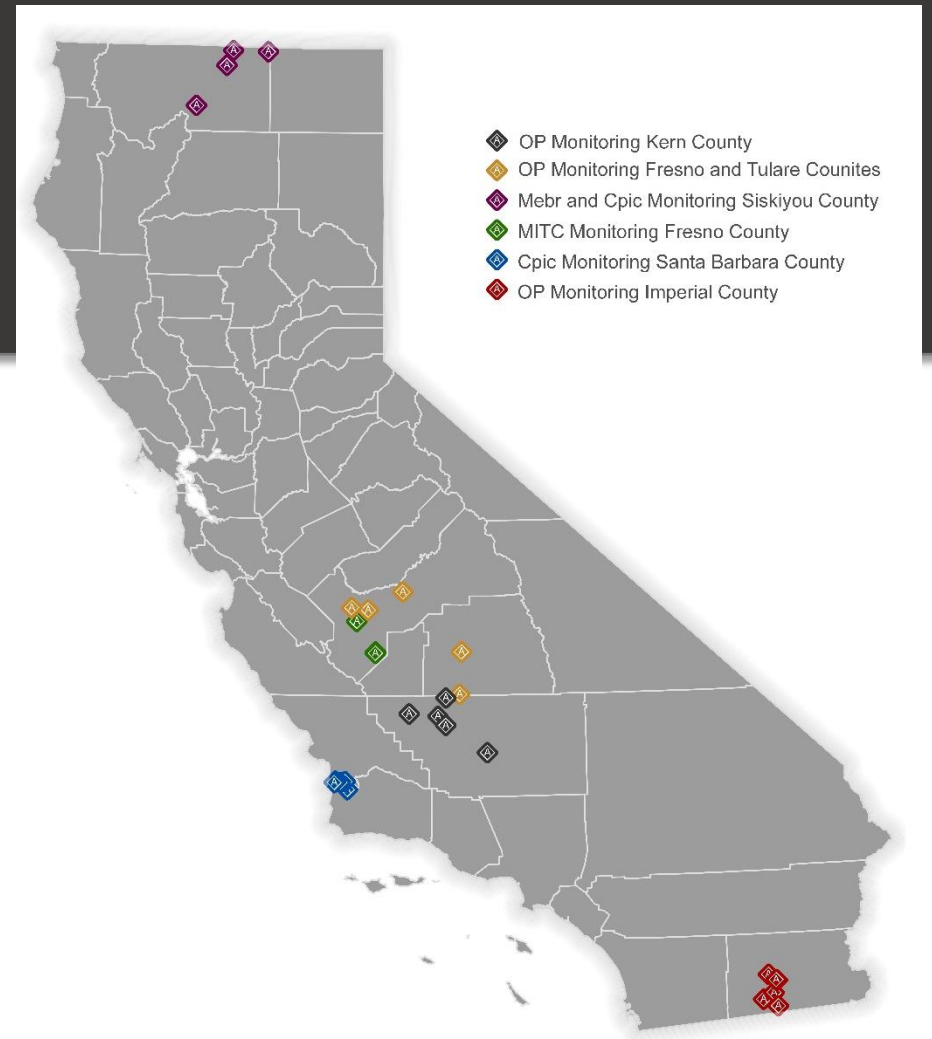
Long-term Monitoring

- Continuous weekly air sampling is performed in communities with high use of multiple pesticides
- Data best used to assess maximum exposures for multiple pesticides over years

Where Do We Monitor?



Long-Term Air Sampling Sites



Recent Seasonal Air Monitoring Sampling Sites

Results, Reports, & Outreach



DPR makes all air monitoring results available to the public via

DPR's Pesticide Air Monitoring Database (PAMR)



The Air Program is committed to providing Annual Reports including:

Annual Air Monitoring Network Monitoring

Individual study results and analysis

Annual VOC Inventory



The Air Program regularly participates in:

Scientific conferences

Public workshops

Community meetings

The Raw Numbers: Pesticide Air Monitoring Results Database

Pesticide Air Monitoring Results Database

Last Updated January 31, 2019
CDPR - Edited on 2019 January 31

https://www.cdpr.ca.gov/docs/emon/airinit/pesticide_air_monitoring_database.htm

File Edit Tools Help | Monitoring Results | Site Location Map



Filter Study_Number = 993. Sorted by Concentration_ppb

1-100 of 2333

Sample_Year	Data_Type	Study_Type	Sampling_Agency	Study_Number	Site_Status	Site_Code	Site_Name	Latitude_WGS84	Longitude_WGS84	Sample_ID	Start_Date	Runtime_min	Flow_ccm	Chemical_Name	Concentration_ppb	Concentration_ng/m3	LOQ_ppb
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-28	2/25/2018	1434	1052	Malathion	0.016	212	0.0021
2018	Published	Seasonal	ARB	993	Inactive	993-S	Seeley	32.795417	-115.691639	993-SE-3	1/18/2018	1416	1034	Dimethoate oa	0.013	109	0.003
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Dimethoate	0.005	45.87	0.0018
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-28	2/25/2018	1434	1052	Malathion oa	0.005	62.311	0.0015
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Malathion oa	0.004	46.575	0.0015
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Malathion	0.004	48.693	0.0021
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Phosmet	0.004	50.81	0.001
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Dimethoate oa	0.003	30.345	0.003
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Diazinon	0.003	32.462	0.0015
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Diazinon oa	0.003	33.873	0.0013
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	DEF	0.003	38.107	0.0009
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Chlorpyrifos	0.003	38.813	0.0011
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-25	2/20/2018	1380	1007	Dimethoate oa	0.002	18.719	0.003
2018	Published	Seasonal	ARB	993	Inactive	993-I	Imperial	32.8553	-115.571618	993-FW-42	3/19/2018	1434	1038	Dimethoate oa	0.002	18.811	0.003
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-25	2/20/2018	1380	1007	Diazinon	0.002	19.439	0.0015
2018	Published	Seasonal	ARB	993	Inactive	993-H	Heber	32.726592	-115.528285	993-HE-39	3/14/2018	1482	1044	Dimethoate oa	0.002	20.046	0.003
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-28	2/25/2018	1434	1052	Chlorpyrifos	0.002	23.201	0.0011
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-28	2/25/2018	1434	1052	Diazinon oa	0.002	26.515	0.0013
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-1	1/16/2018	1392	1018	Chlorpyrifos oa	0.002	33.873	0.0009
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-22	2/14/2018	1416	1029	Malathion	0.001	12.36	0.0021
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-18	2/7/2018	1410	1031	Malathion	0.001	13.076	0.0021
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-28	2/25/2018	1434	1052	Diazinon	0.001	13.92	0.0015
2018	Published	Seasonal	ARB	993	Inactive	993-W	Westmorland	33.032417	-115.623694	993-WM-25	2/20/2018	1380	1007	Phosmet	0.001	14.399	0.001

What is used here?

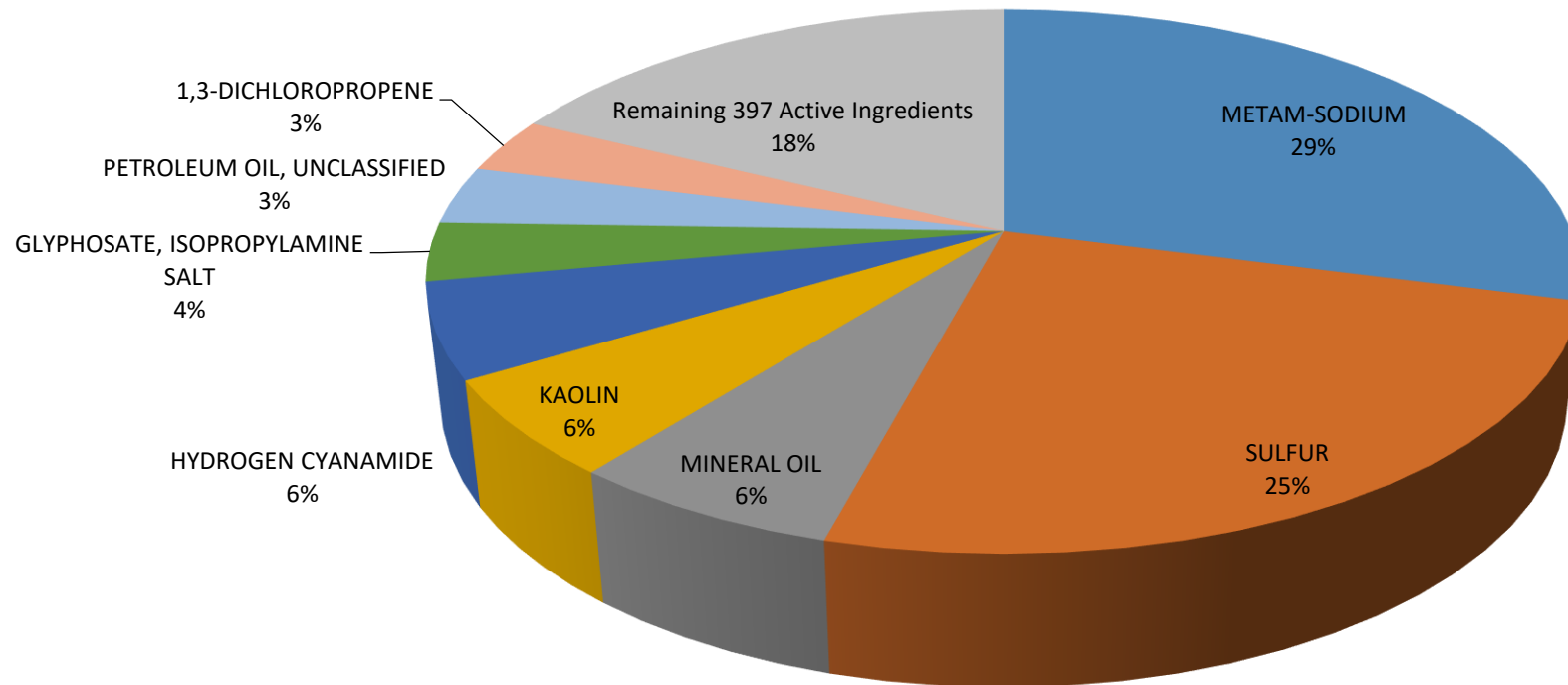
Pounds of Active Ingredients used in ECV

Active Ingredients	Pounds of Use per Calendar Year					Average Pounds per year	Average %
	2015	2016	2017	2018	2019		
 METAM-SODIUM	337684	324946	344102	490101	635070	426380	29%
SULFUR	403630	404672	405936	306323	318632	367838	25%
MINERAL OIL	75332	62836	79295	119151	137719	94867	6%
KAOLIN	49818	73529	55322	110710	130940	84064	6%
HYDROGEN CYANAMIDE	100348	81558	84421	80195	67532	82811	6%
GLYPHOSATE, ISOPROPYLAMINE SALT	69331	49693	50816	37811	47409	51012	3%
PETROLEUM OIL, UNCLASSIFIED	70070	48938	42586	40671	50938	50641	3%
 1,3-DICHLOROPROPENE	85728	58964	30725	18988	47444	48370	3%

What is used here?

Pounds of Active Ingredients used in ECV

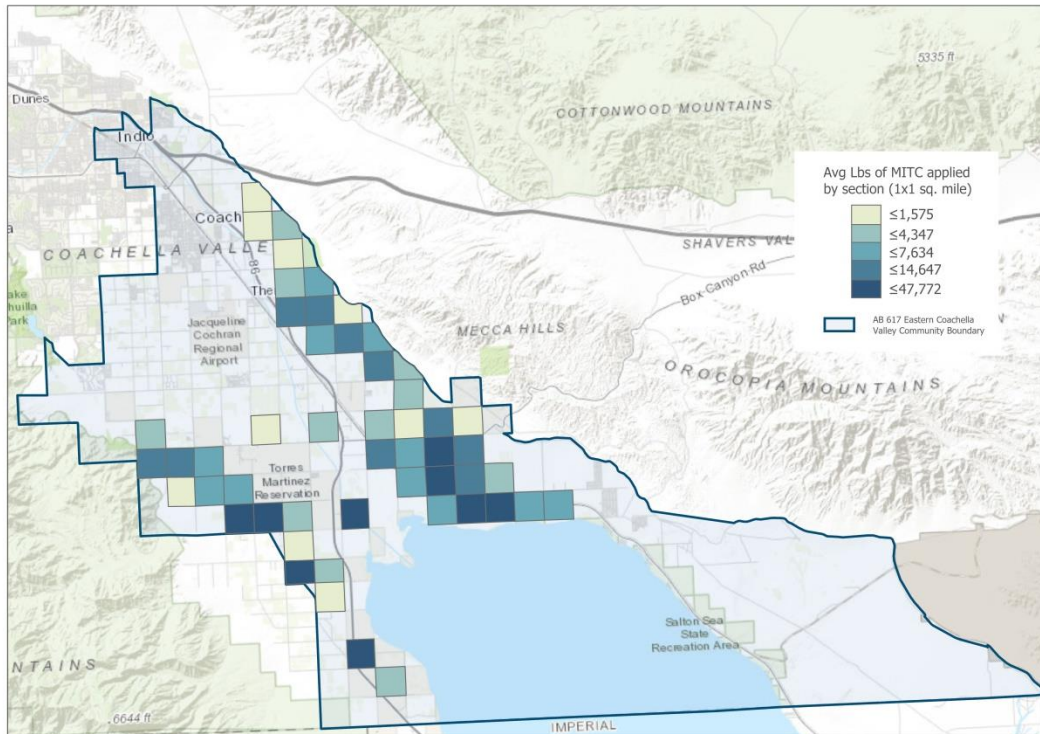
Percentage of Annual Use Within Eastern Coachella Valley



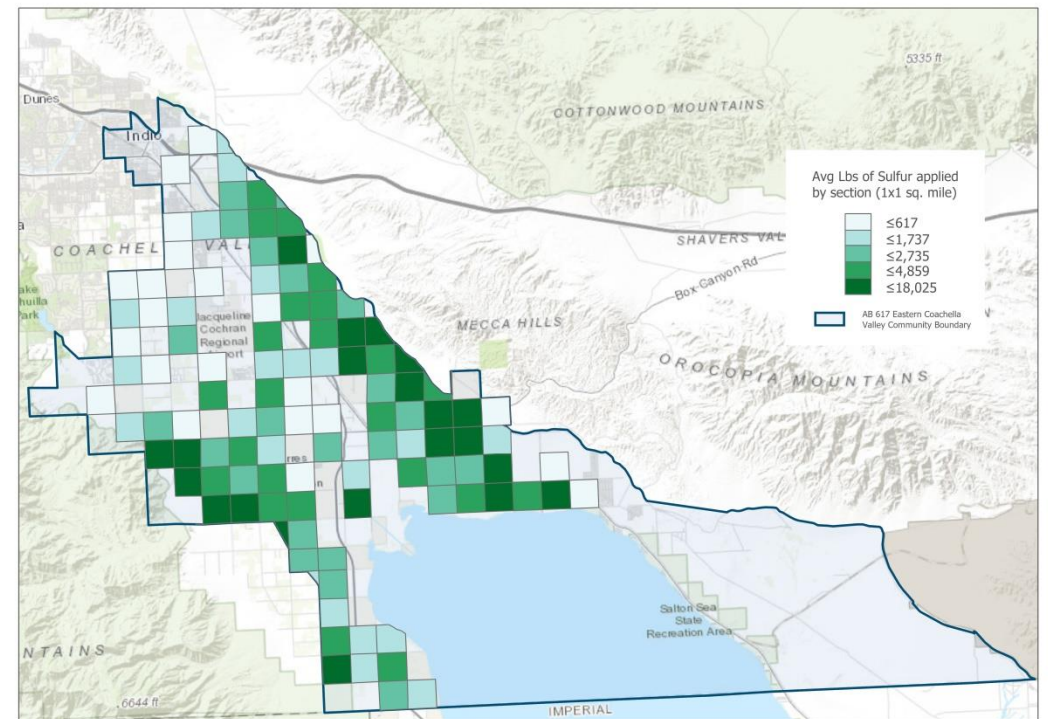
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Usage Maps

MITC use in 2015-2019, Eastern Coachella Valley



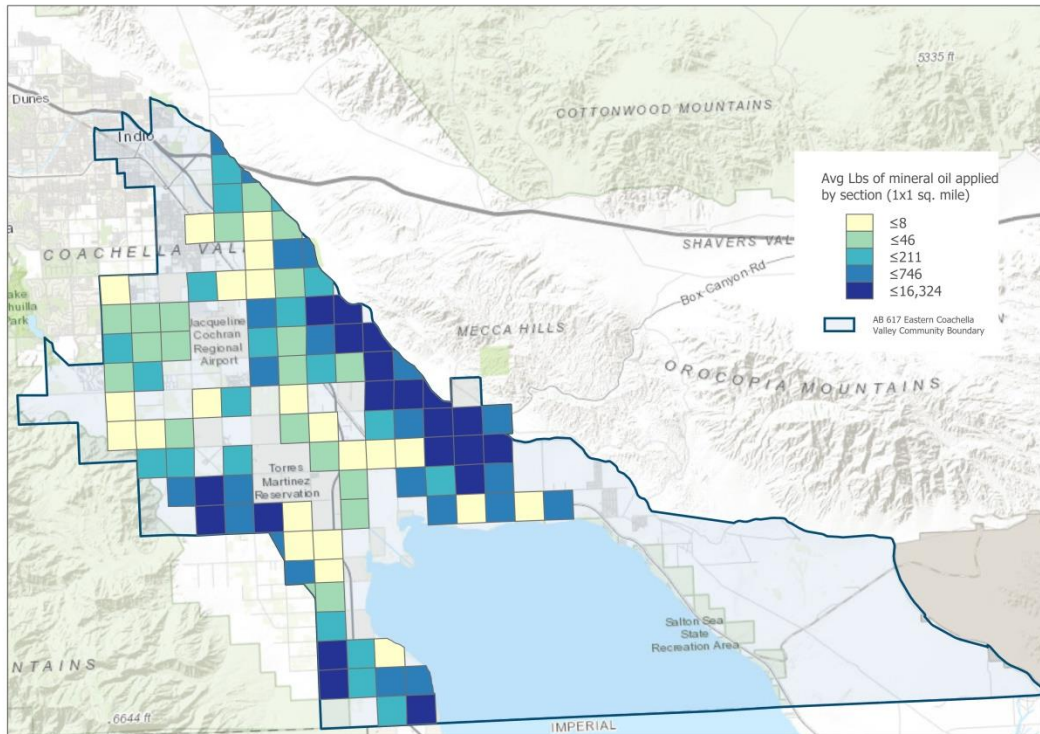
Sulfur use in 2015-2019, Eastern Coachella Valley



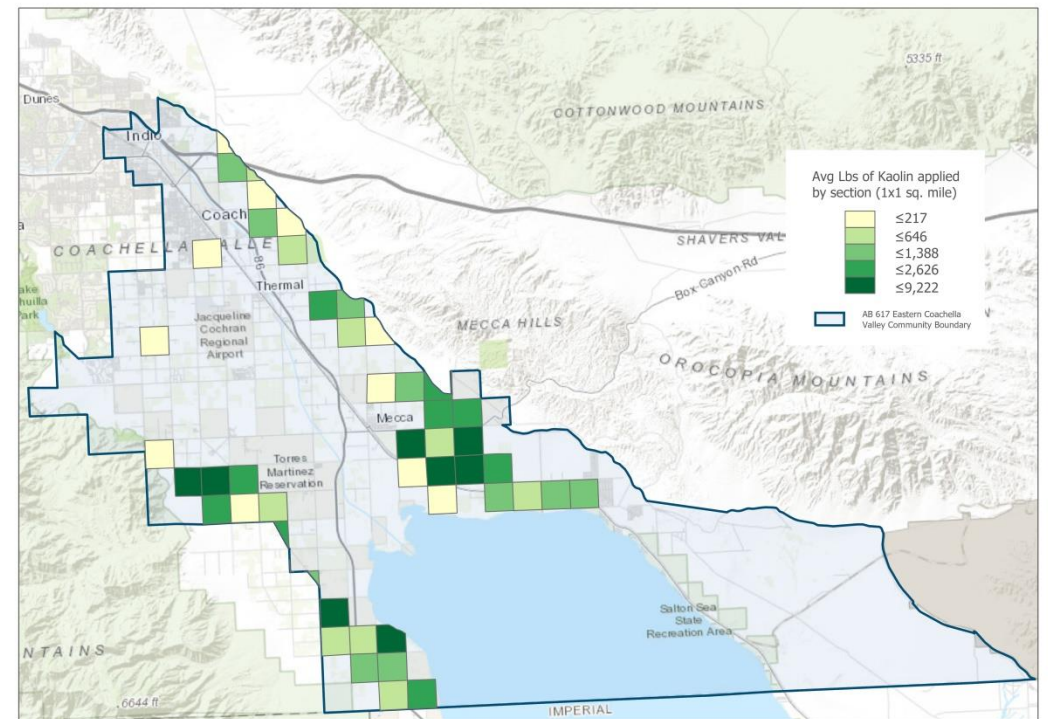
What is used here?

Usage Maps

Mineral oil use in 2015-2019, Eastern Coachella Valley



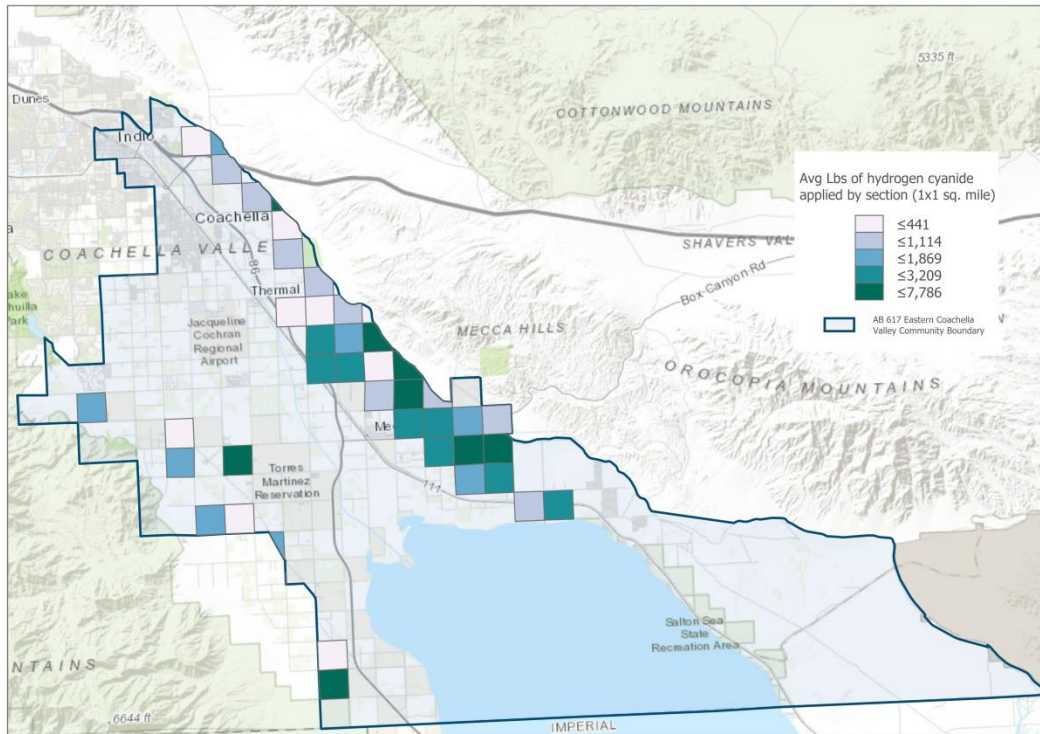
Kaolin use in 2015-2019, Eastern Coachella Valley



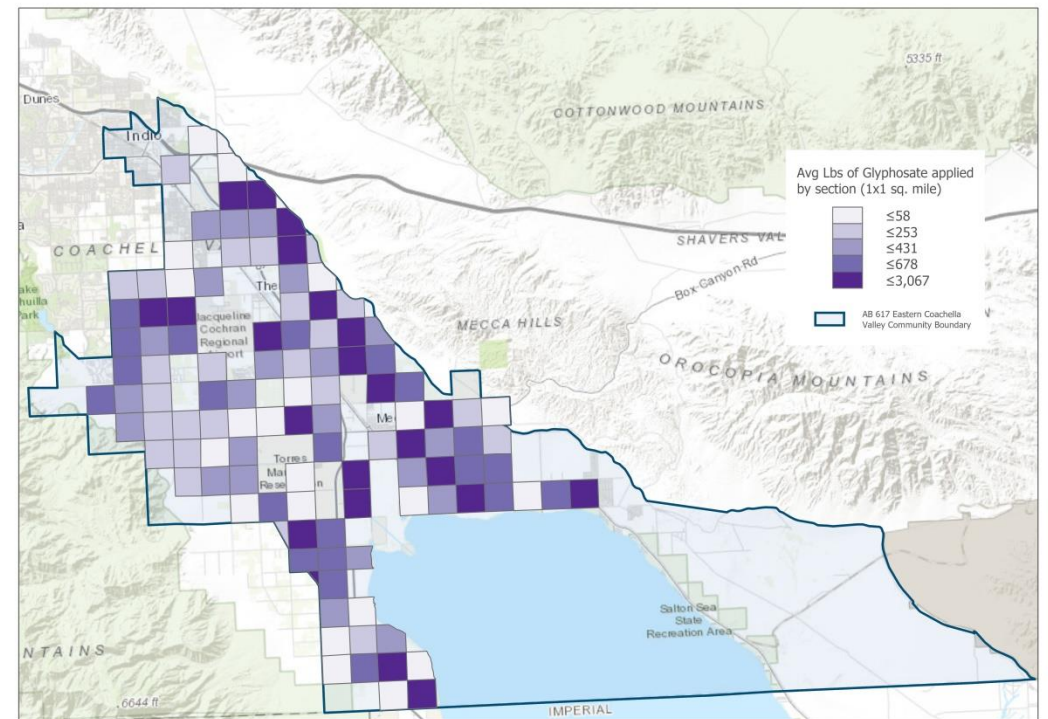
What is used here?

Usage Maps

Hydrogen cyanide use in 2015-2019, Eastern Coachella Valley



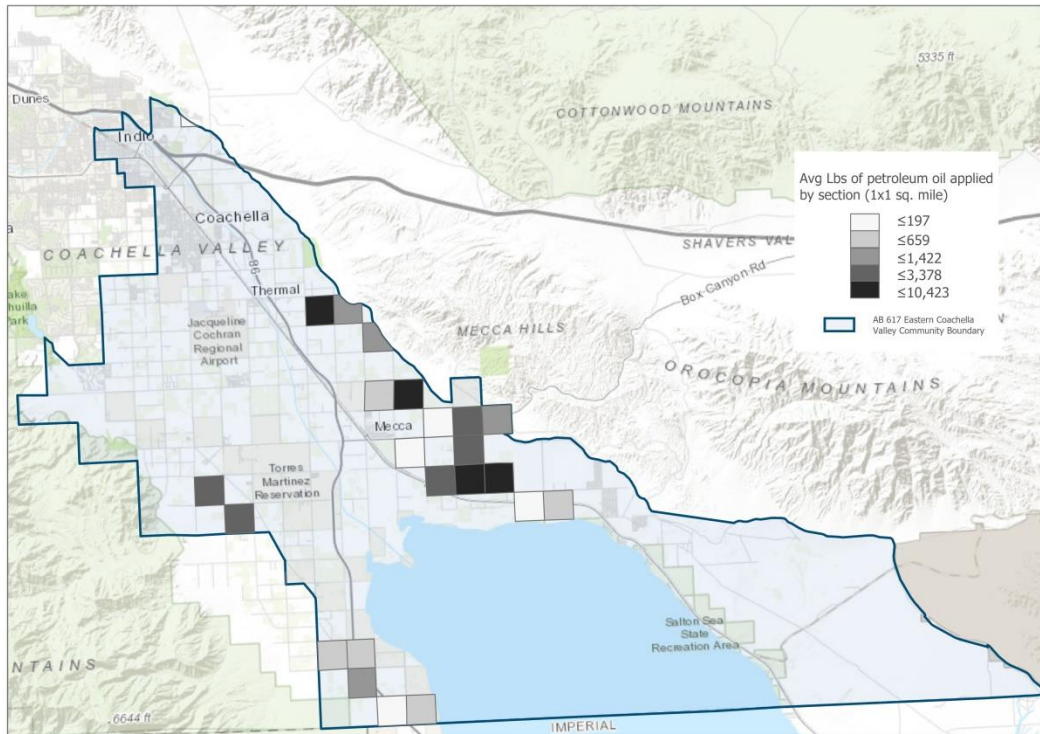
Glyphosate use in 2015-2019, Eastern Coachella Valley



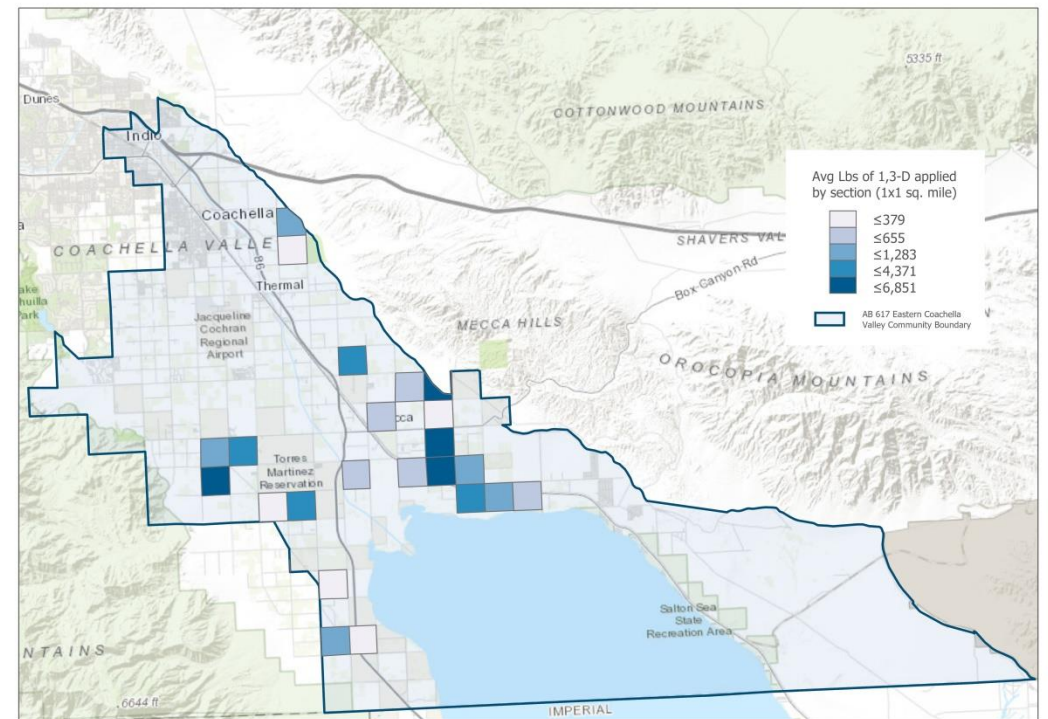
What is used here?

Usage Maps

Petroleum oil use in 2015-2019, Eastern Coachella Valley



1,3-Dichloropropene use in 2015-2019, Eastern Coachella Valley



Other Activities

Notification

❖ Notification Project

- Working with the Shafter community, Kern CAC, and other stakeholders to develop a potential local pilot notification system.
 - What is the current status of the project?
 - What challenges have we encountered?
 - Statewide notification vs Local notification?
- DPR is committed to learn from this pilot project as we explore feasible approaches that could provide the framework for a statewide notification system.

Other Activities

Field Studies and Rulemaking

- ❖ 1,3-Dichloropropene Pilot Study
 - Currently identifying new application methods that could result in greater emissions reduction.
 - Collaborating with County Agricultural Commissioners, Applicators, Trade and Industry Groups, and Growers for field studies of these proposed methods.
 - Results could be used as part of statewide rulemaking in the future.
- ❖ Other rulemaking activities can be tracked on the 2021 rulemaking calendar at: https://www.cdpr.ca.gov/docs/legbills/rule_calendar_2021.pdf



Contact information and additional resources



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Additional Information is available:

CDPR's Air Program Site
<http://www.cdpr.ca.gov/docs/emon/airinit/airmenu.htm>

Air Monitoring Network
http://www.cdpr.ca.gov/docs/emon/airinit/air_network.htm

Questions

