

# Overview of Pesticide Regulation and Pesticide Air Monitoring

July 2020



# Descripción general de la reglamentación de pesticidas y el monitoreo de pesticidas en el aire

Julio 2020



# Presentation Outline

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- Overview of pesticide regulation process
- Toxic Air Contaminant (TAC) Program
- Overview of pesticide air monitoring
- How to access pesticide air monitoring results



# Resumen de la presentación

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- Resumen del proceso de reglamentación de pesticidas
- Programa de contaminantes tóxicos del aire (TAC, por sus siglas en inglés)
- Descripción general del monitoreo de pesticidas en el aire
- Cómo acceder a los resultados de monitoreo de pesticidas en el aire



# Toxic Air Contaminant Program

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- DPR and Air Resources Board (CARB) monitor for pesticides in air due to:
  - Primary drift (aerosols and vapor)
  - Secondary drift and volatilization (particulates and vapor)
- DPR assesses health risks for potential TACs
  - California Code of Regulations specifies the criteria to list a pesticide as a TAC
- DPR mitigates risks from TACs
  - 48 pesticide TACS; 9 have active registrations and use in CA



**Aircraft**  
from FreshFruitPortal.com



**Ground-rig sprayer**  
from theecologist.com



**Airblast sprayer**  
from Virginia Tech



# Programa de contaminantes tóxicos del aire

- El Departamento de Reglamentación de Pesticidas (DPR) y la Junta de Recursos del Aire (CARB) monitorean los pesticidas en el aire debido a:
  - Deriva primaria (aerosoles y vapor)
  - Deriva secundaria y volatilización (partículas y vapor)
- El DPR evalúa los riesgos para la salud en busca de Contaminantes Tóxicos del Aire potenciales
  - El Código de Regulaciones de California especifica los criterios para enumerar un pesticida como un Contaminante Tóxico del Aire
- El DPR mitiga los riesgos de los Contaminante Tóxicos del Aire
  - 48 pesticidas TACS; 9 tienen registros activos y uso en CA



**Aeronave de**  
from FreshFruitPortal.com



**Pulverizador de plataforma de**  
from theecologist.com



**Pulverizador de chorro de aire de**  
from Virginia Tech

# Health Risk Assessments for Potential Toxic Air Contaminants

- DPR risk assessments include
  - Potential health effects
  - Levels that have little or no risk – **reference concentrations**
  - Exposure levels
- Office of Environmental Health Hazard Assessment (OEHHA) and scientific review panel (SRP) review
- If criteria met, DPR must follow formal rulemaking process to list pesticide as a toxic air contaminant

# Evaluaciones de riesgos para la salud de posibles contaminantes tóxicos del aire

- Las evaluaciones de riesgo del DPR incluyen
  - Efectos potenciales sobre la salud
  - Niveles que tienen poco o ningún riesgo – **concentraciones de referencia**
  - Niveles de exposición
- Oficina de Evaluación de Riesgos para la Salud Ambiental (OEHHA) y revisión del panel de revisión científica (SRP)
- Si se cumplen los criterios, el DPR debe seguir un proceso formal de reglamentación para enumerar los pesticidas como contaminantes tóxicos del aire



# Risk Reduction for Toxic Air Contaminants

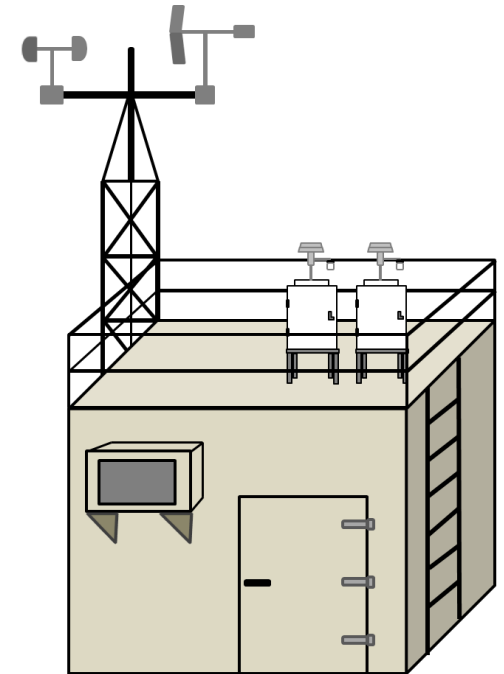
- DPR must determine the need to reduce risk – **regulatory target concentration**
- If needed, DPR must implement measures to reduce exposures within 2 years, such as
  - Application method restrictions
  - Buffer zones (distance to a target concentration)
  - Limits on amount applied
- DPR must develop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

# Reducción de riesgos de contaminantes tóxicos del aire

- El DPR debe determinar la necesidad de reducir el riesgo – **concentración objetivo regulatorio**
- Si es necesario, el DPR debe implementar medidas para reducir las exposiciones dentro de 2 años, como
  - Restricciones de métodos de aplicación
  - Zonas de amortiguamiento (distancia a una concentración objetiva)
  - Límites en la cantidad aplicada
- El DPR debe desarrollar medidas de reducción de exposición en consulta con ciertas agencias, incluyendo el ARB y distritos de control de contaminación del aire.

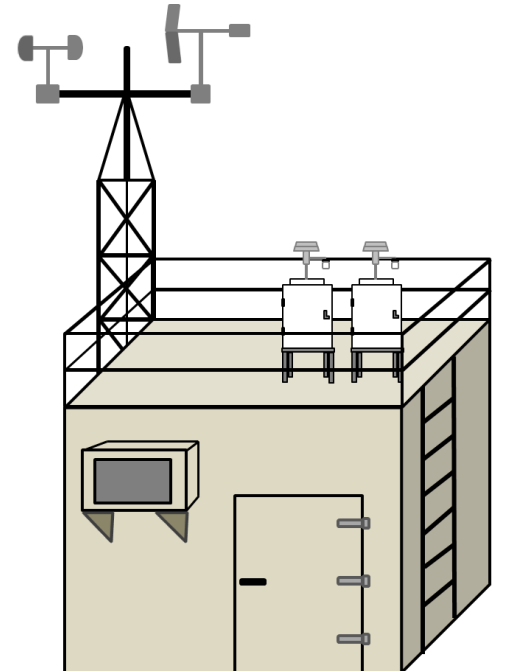
# Monitoring for Toxic Air Contaminants

- DPR performs air monitoring to:
  - Identify pesticides in air
  - Determine acute, seasonal, or annual concentrations and exposures
  - Track trends in air concentrations over time
  - Develop risk reduction measures
  - Determine if mitigation measures are working



# Monitoreo de contaminantes tóxicos del aire

- El DPR realiza monitoreo del aire para:
  - Identificar pesticidas en el aire.
  - Determinar concentraciones y exposiciones agudas, estacionales o anuales
  - Investigar las tendencias en las concentraciones de aire a lo largo del tiempo
  - Desarrollar medidas de reducción de riesgos.
  - Determinar si las medidas de mitigación están funcionando



# Types of Pesticide Air Monitoring

- **Long-term monitoring:** Continuous weekly sampling in communities with higher use of multiple pesticides relative to other communities
  - Examples:
    - DPR's Air Monitoring Network: Year-round monitoring for 31 pesticides @ 8 communities
    - DPR's Study #309: Year-round monitoring for 1,3-dichloropropene @ 2 communities
  - One 24-hour sample per week at each site
  - Data best used to assess maximum exposures for multiple pesticides over years



# Tipos de monitoreo de pesticidas en el aire

- **Monitoreo a largo plazo:** Muestreo semanal continuo en comunidades con mayor uso de múltiples pesticidas en comparación con otras comunidades
  - Ejemplos:
    - Red de monitoreo de aire del DPR: Monitoreo durante todo el año de 31 pesticidas en 8 comunidades
    - Estudio del DPR # 309: Monitoreo durante todo el año de 1,3-dicloropropeno en 2 comunidades
  - Una muestra de 24 horas por semana en cada sitio
  - Los datos se utilizan mejor para evaluar las exposiciones máximas de múltiples pesticidas durante años



# Types of Pesticide Air Monitoring

- **Application-site monitoring** occurs near specific applications for several days
  - Data best used to estimate maximum exposures over hours or days
- **Seasonal monitoring** is conducted in communities of higher pesticide use relative to other communities. Monitoring for 1-2 pesticides is conducted for the 8-12 week period that coordinates with the historical use season for those pesticides.
  - Data best used to estimate maximum exposures over weeks or months



# Tipos de monitoreo de pesticidas en el aire

- **El monitoreo en el sitio de la aplicación** ocurre cerca de aplicaciones específicas durante varios días.
  - Datos que se utilizan para estimar las exposiciones máximas en horas o días
- **El monitoreo estacional** se realiza en comunidades de mayor uso de pesticidas en relación con otras comunidades. El monitoreo de 1-2 pesticidas se lleva a cabo durante el período de 8-12 semanas que se coordina con la temporada de uso histórico de esos pesticidas.
  - Datos que se utilizan para estimar las exposiciones máximas durante semanas o meses





# Air Monitoring Considerations

- Monitoring for ambient airborne pesticides using “real-time” approaches is not currently possible for most pesticides; therefore, air samples are collected using pumps and trapped in canisters or sorption tubes.
- Upon collection, 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 transported to an analytical laboratory for analysis.
- Process is labor intensive and can take anywhere from 2-4 months to obtain results.

# Consideraciones de monitoreo de aire

- El monitoreo de pesticidas en el aire del ambiente utilizando enfoques de "tiempo real" no es posible actualmente para la mayoría de los pesticidas; por lo tanto, las muestras de aire se recolectan usando bombas y quedan atrapadas en botes o tubos de sorción.
- Luego de la recolección, las muestras de pesticidas en el aire deben colocarse inmediatamente a bajas temperaturas (-109.3 ° F) para evitar la pérdida de muestras debido a la volatilización / degradación.
- Las muestras de aire recolectadas deben transportarse a un laboratorio analítico para su análisis.
- El proceso requiere mucha mano de obra y puede tomar de 2 a 4 meses para obtener resultados.

# Evaluation of Air Monitoring Data

- **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 designed 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

# Evaluación de datos de monitoreo del aire

- **Niveles de detección de salud del DPR:** Una concentración que está por encima del nivel de detección indica la necesidad de una evaluación adicional y más refinada.
- **Concentraciones objetivo reguladoras del DPR:** Concentraciones diseñadas para proteger contra efectos adversos para la salud. Exceder una concentración objetivo reguladora no significa necesariamente que ocurra un efecto adverso en la salud, pero indica que es posible que sea necesario modificar las restricciones en el uso de pesticidas.
- La evaluación de los datos de monitoreo y el modelado por computadora pueden llevar al DPR a desarrollar medidas adicionales para reducir las exposiciones

# DPR's 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](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

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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
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# Base de datos de resultados de monitoreo de pesticidas del DPR

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

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# Contact information and additional resources



**Minh Pham**

Air Program

Environmental Monitoring Branch

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Minh.Pham@cdpr.ca.gov



**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](http://www.cdpr.ca.gov/docs/emon/airinit/air_network.htm)

# Información de contacto y recursos adicionales

**Minh Pham**

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Grupo de Monitoreo Ambiental  
(916) 445-0979  
Minh.Pham@cdpr.ca.gov

**Información adicional está disponible:**

Página del Programa de Aire del CDPR  
<http://www.cdpr.ca.gov/docs/emon/airinit/airmenu.htm>

Red de Monitoreo de Aire

[http://www.cdpr.ca.gov/docs/emon/airinit/air\\_network.htm](http://www.cdpr.ca.gov/docs/emon/airinit/air_network.htm)



# Questions



# Preguntas

