



California Environmental Protection Agency
Department of Pesticide Regulation

California's Regulation of Pesticides in Air

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Outline

- Overview of pesticide regulation in California
- Toxic air contaminants
- Volatile organic compounds
- Current pesticides of concern

Department of Pesticide Regulation

- One of 6 boards and departments within Cal/EPA
- DPR protects human health and the environment by regulating pesticide sales and use, and by fostering reduced-risk pest management
- No legal authority over pesticides no longer sold or used (e.g., DDT, dieldrin)

Regulating pesticide sales – registration

- EPA and DPR evaluate and license (**register**) all pesticide products prior to sale and use
- Manufacturers (registrants) are required to provide data under Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)
 - Acute toxicology data on the formulated product
 - Product chemistry data
 - Efficacy data (product performance)
 - Phytotoxicity data if used on a plant
 - Fish and wildlife data, if applicable
 - Chronic toxicology data
 - Environmental fate data
 - Medical management data
- After registration, DPR can request additional data from registrants through **reevaluation** process

Regulating pesticide use

- EPA and DPR approve pesticide **product labeling** that describes legal use requirements, such as
 - Maximum amounts allowed
 - Methods of application
 - Crops/sites allowed
 - Safety requirements
- DPR state regulations (more restrictive than labeling)
 - Use requirements for certain pesticides
 - **Restricted materials** require permit and certified applicator
- County requirements (more restrictive than regulations)
 - Agricultural commissioner issues permits for restricted materials
 - Commissioner evaluates local situations and conditions permits

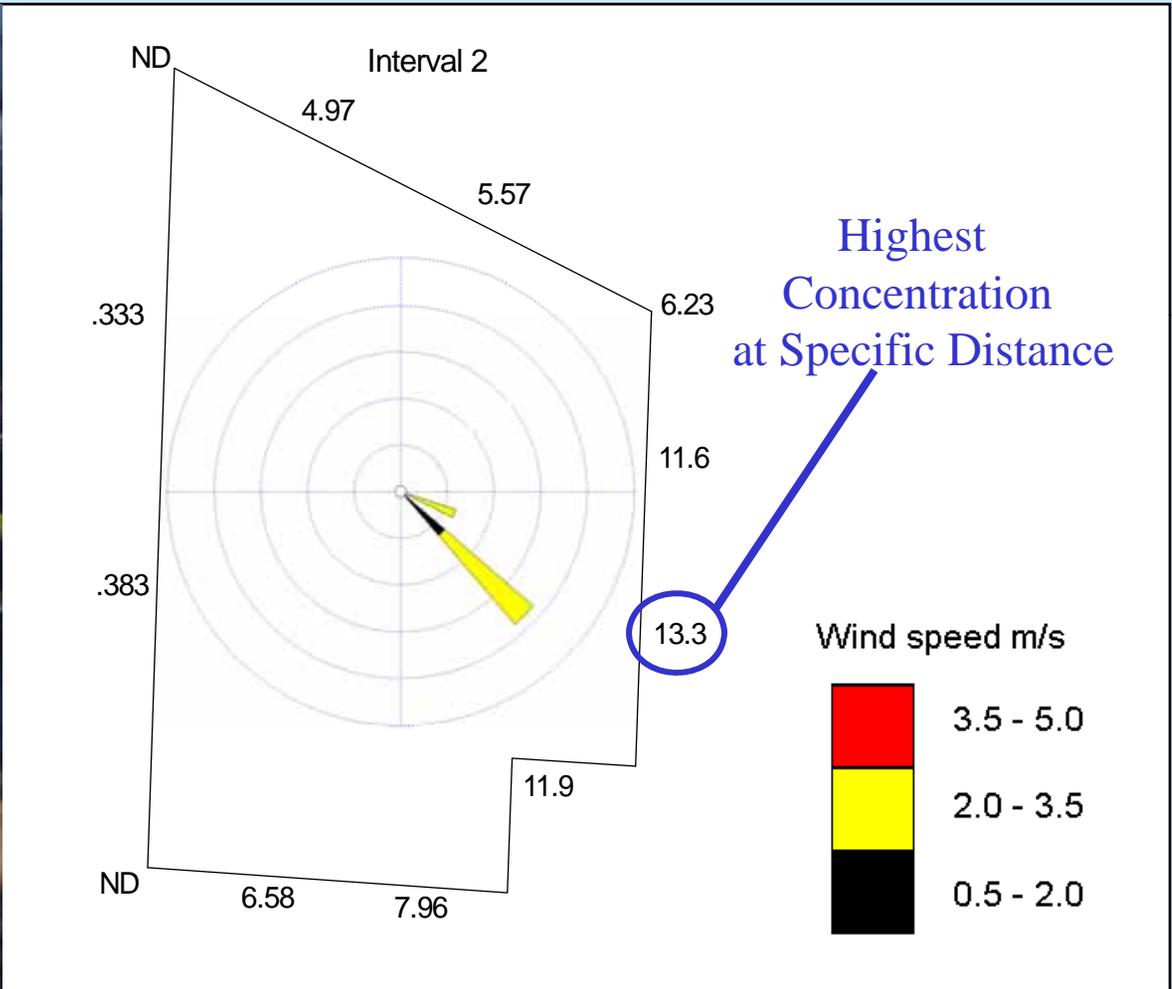
Key laws for air program

- General authority (CA Food and Agricultural Code)
 - State law requires DPR to continuously evaluate pesticides
 - DPR must eliminate use of pesticides that endanger the agricultural or nonagricultural environment
- CA Toxic Air Contaminant (TAC) Act
 - Requires DPR to assess health risks from air exposure
 - Requires DPR to mitigate health risks from air exposure
- Federal Clean Air Act
 - State Implementation Plan requires DPR to track and reduce volatile organic compound (VOC) emissions from pesticide products

Toxic air contaminants

- Identify and mitigate unacceptable air concentrations and emissions
- Conduct air monitoring
- Supplement air monitoring with other data and computer modeling to estimate exposures and emissions
- Assess health risks, based on exposure and toxicology data
- Develop regulatory requirements

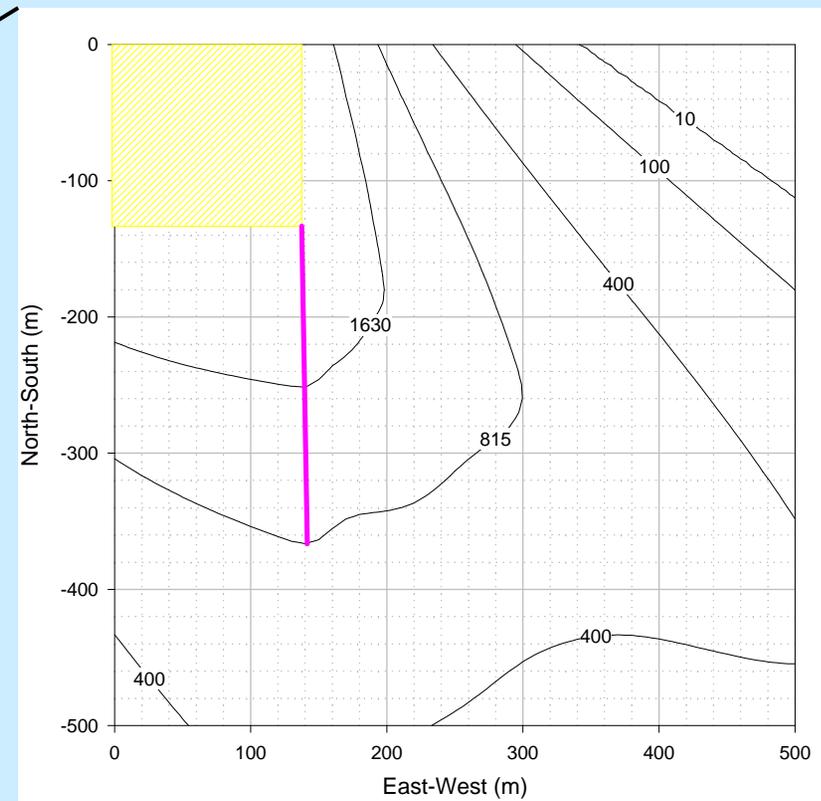
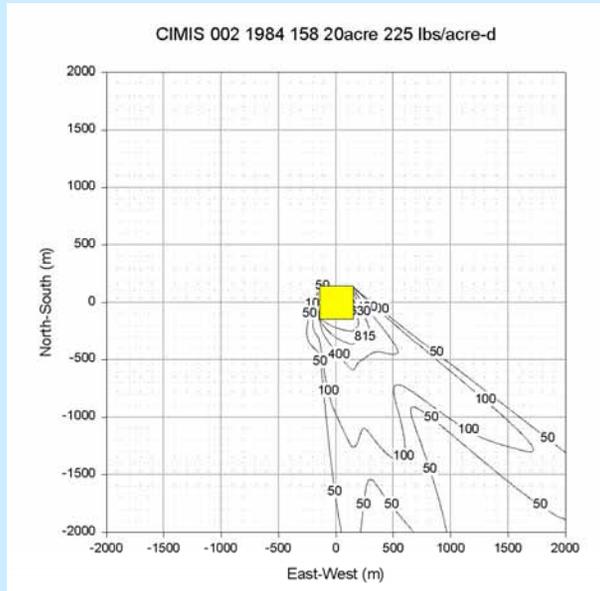
Application-site monitoring



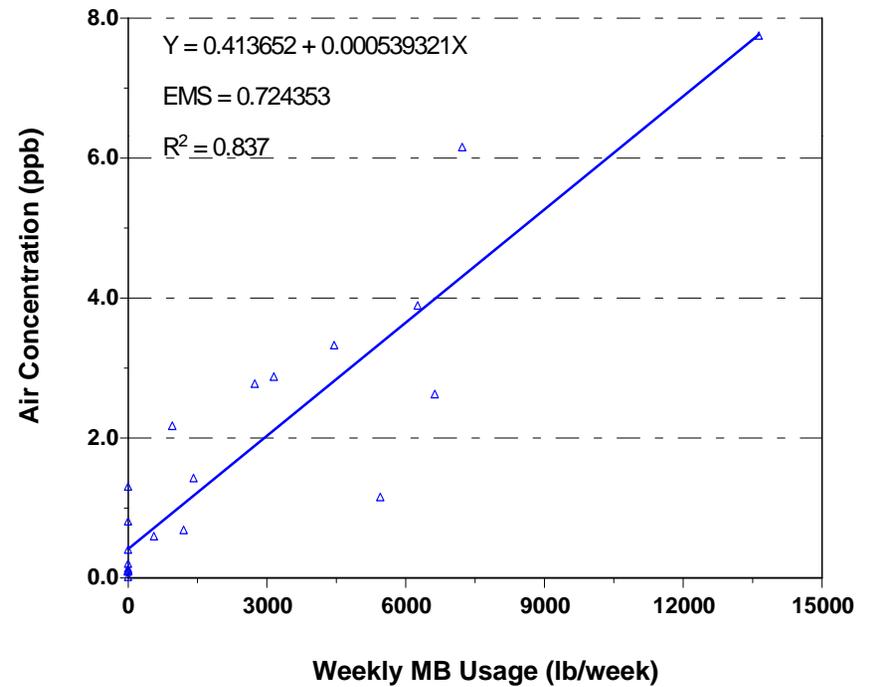
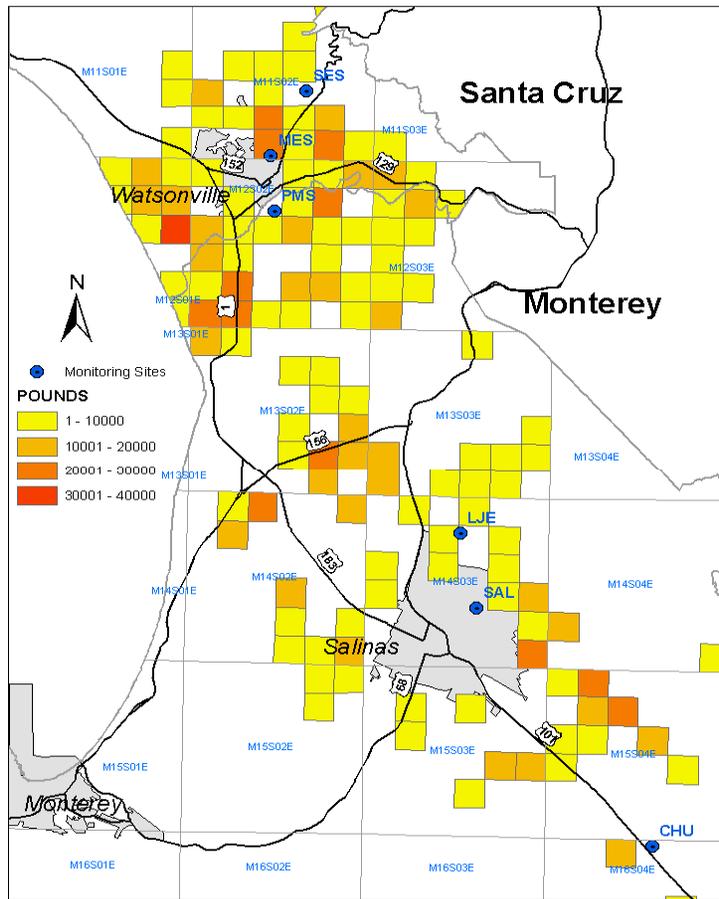
Ambient air monitoring



Analysis of application-site monitoring data – computer modeling



Analysis of ambient monitoring data – correlation of air concentration and use



Regulating toxic exposure – methyl bromide example

- Control exposures with combination of statewide regulations and county restricted material permits
- Buffer zones of 30 – 4600 feet, depending on application method, application rate, acres
- Monthly use limit of 270,000 lbs in a township (6x6 mi)
- Application method restrictions
- Personal protective equipment and work hour limits of 3 – 10 hours, depending on application method and rate

Volatile organic compounds

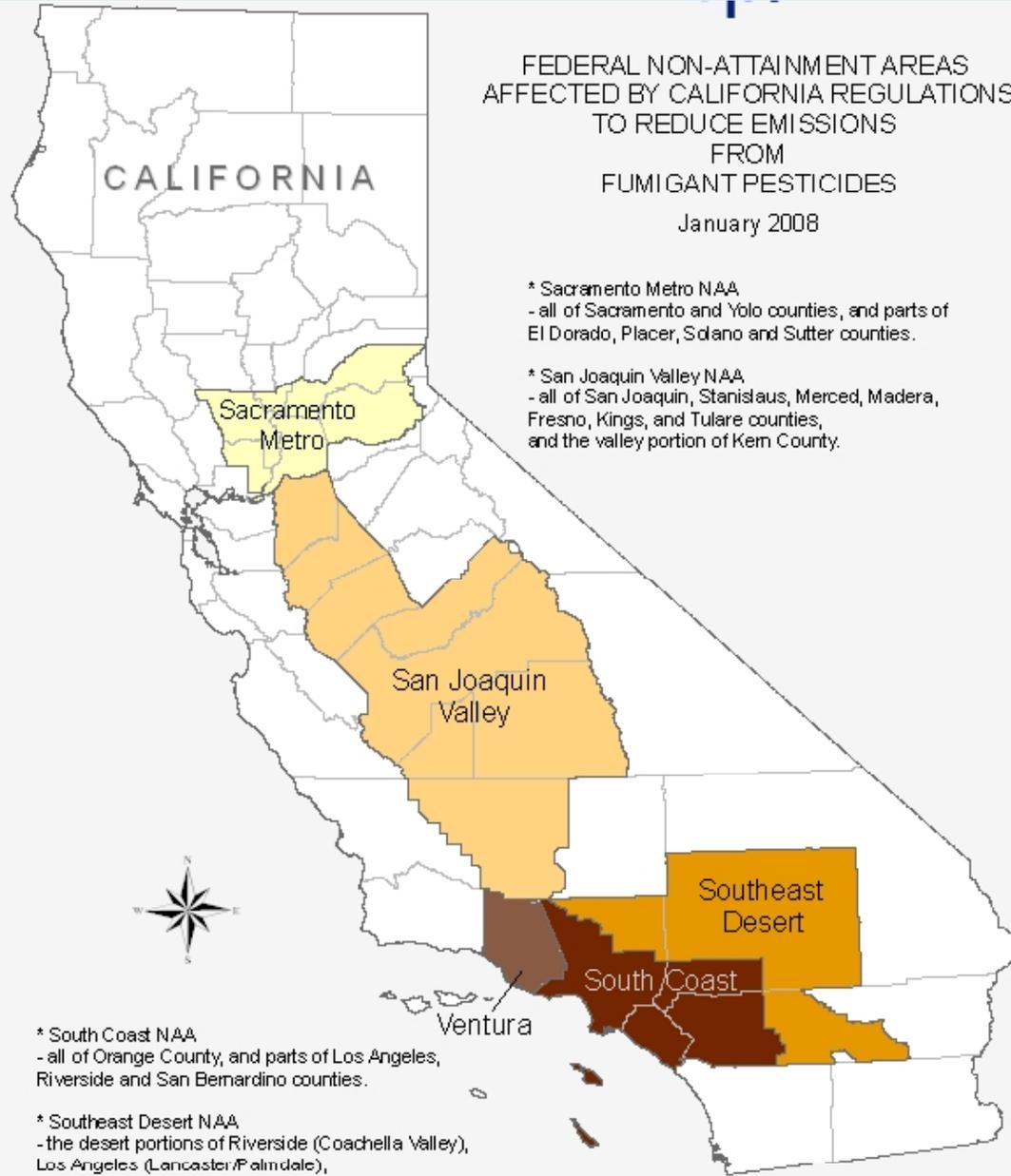
- Volatile organic compounds (VOCs) and nitrogen oxides (NOx) react with sunlight to form ozone, a major air pollutant
- Many pesticide active and inert ingredients are VOCs
- 1994 **State Implementation Plan (SIP)** to achieve ozone standard requires DPR to
 - Develop and maintain an emission inventory to track pesticide VOC emissions
 - Reduce emissions up to 20% from base year in five **nonattainment areas** (May-Oct peak ozone season)

Method for estimating pesticide VOCs

- VOC emission from a pesticide product is calculated by multiplying:
 - Amount of product applied (from pesticide use reports)
 - VOC fraction in product (**emission potential, EP**)
- Fumigants are adjusted by an additional factor to account for emissions under field conditions
 - **Emission rating** varies with fumigant and application method
- Inventory focuses on:
 - May – Oct (peak ozone period) for each year
 - 5 nonattainment areas

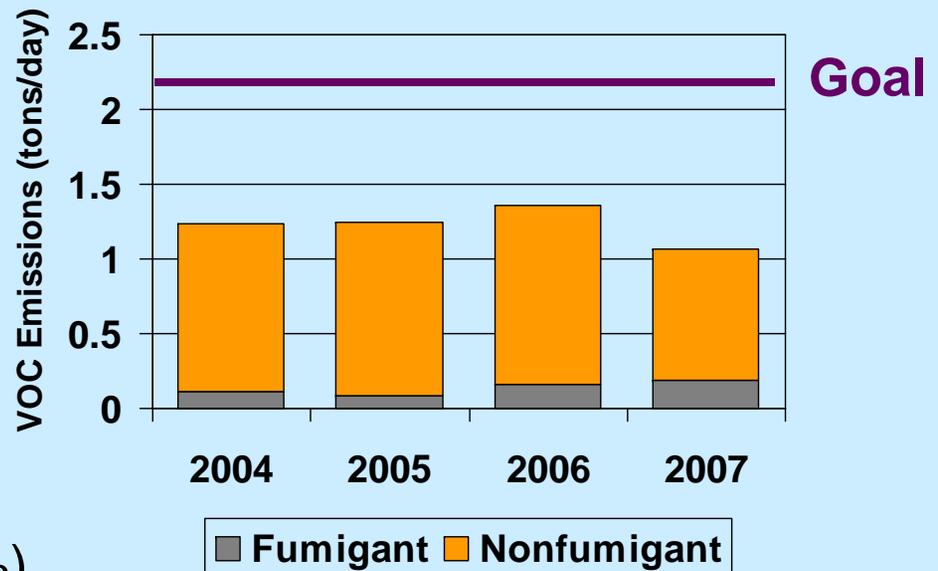
FEDERAL NON-ATTAINMENT AREAS
AFFECTED BY CALIFORNIA REGULATIONS
TO REDUCE EMISSIONS
FROM
FUMIGANT PESTICIDES

January 2008



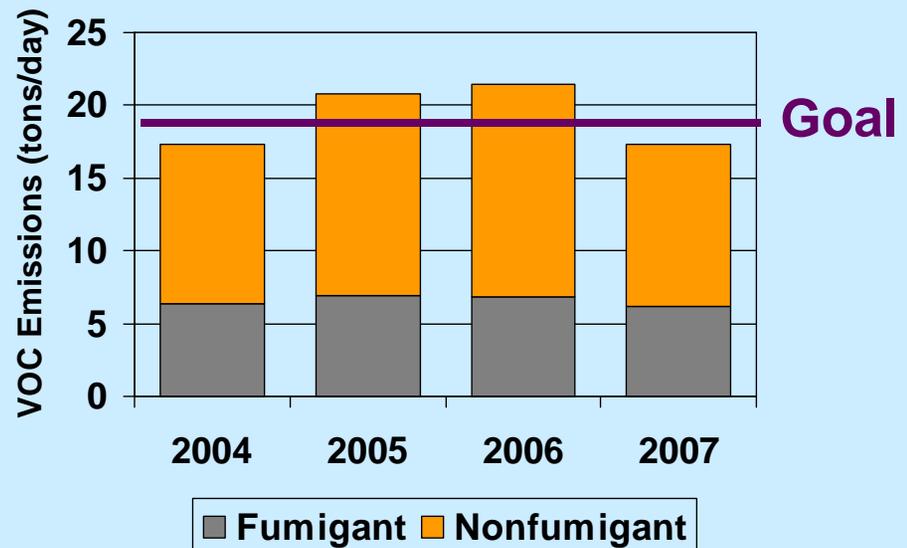
Pesticide VOC inventory for Sacramento Metro (May-Oct)

- Top active ingredients (% of 2007 pesticide emissions)
 - Chlorpyrifos (11.0%)
 - 1,3-dichloropropene (10.3%)
 - Trifluralin (5.4%)
 - Methyl bromide (5.2%)
 - Dimethoate (4.7%)
- Top application sites
 - Walnut (23.9%)
 - Rice (12.7%)
 - Tomato (11.4%)
 - Rights of way (6.0%)
 - Structural pest control (5.3%)



Pesticide VOC inventory for San Joaquin Valley (May-Oct)

- Top active ingredients (% of 2007 pesticide emissions)
 - Chlorpyrifos (13.1%)
 - 1,3-dichloropropene (12.6%)
 - Metam-sodium (12.1%)
 - Methyl bromide (5.8%)
 - Oxyfluorfen (5.5%)
- Top application sites
 - Carrot (15.9%)
 - Almond (15.8%)
 - Grape (5.6%)
 - Orange (5.3%)
 - Nursery-outdoor (4.3%)



Reducing pesticide VOCs

- Fumigants and emulsifiable concentrates contribute the majority of pesticide VOCs
- Regulatory requirements for fumigants
 - Change to lower emission fumigation method
 - Water treatments
 - Tarps
 - Drip chemigation
- Voluntary actions for emulsifiable concentrates
 - Change to lower VOC-containing product
 - Reduce application rate – application technology
 - Shift applications outside May-Oct

Current pesticides of concern

- DPR
 - Exposure and VOC issues: fumigants, organophosphates
 - Environmental issues: organophosphates, pyrethroids, triazines, endosulfan, neonicotinoids
- National Park Service
 - Chlordane: not sold or used
 - Dacthal (DCPA): drift issues
 - DDT: not sold or used
 - Dieldrin: not sold or used
 - Hexachlorobenzene: not sold or used
 - Lindane (☎-HCH): no active registrations, low use

Questions/Additional Information

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