



California Environmental Protection Agency
Department of Pesticide Regulation

Pesticide Air Monitoring Network

November 19, 2009

Pesticide Registration and Evaluation Committee

Email during meeting: precomments@cdpr.ca.gov

Background

- State law requires DPR to
 - Continuously evaluate pesticides
 - Protect public health
 - Protect the environment
- Air network will provide data to evaluate (risk assessment) and, as necessary, reduce pesticide hazards to the public (risk management)
- Air network will supplement toxic air contaminant monitoring for individual pesticides

Proposed objectives

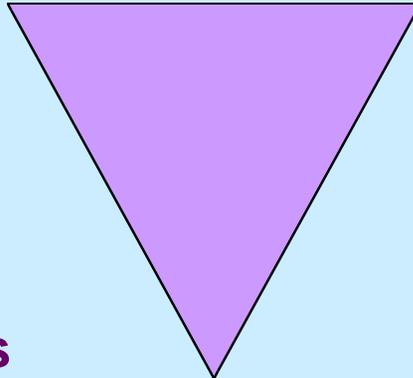
- Identify common pesticides in air and determine seasonal, annual, and multiple-year concentrations
- Compare concentrations to subchronic and chronic health screening levels
- Track trends in air concentrations over time
- Estimate cumulative exposure to multiple pesticides with common modes of action
- Attempt to correlate concentrations with use and weather patterns

Other objectives considered, but not proposed

- Monitor urban or other control community
- Address unrelated environmental justice issues
- Estimate cumulative exposure to pesticides with different modes of action
- Correlate pesticide concentrations and disease rates

Key technical issues

**How many samples?
How often should we sample?**



**Which communities
should we monitor?**

**Which pesticides
should we monitor?**

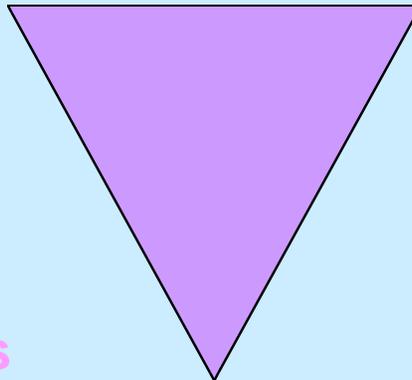
How many samples – proposed sampling plan

- DPR conducted 1-year monitoring study in Parlier
- Based on analysis of Parlier data
 - One monitoring location in each community
 - One or two 24-hour samples collected each week



Key technical issues

How many samples?
How often should we sample?



Which communities
should we monitor?

Which pesticides
should we monitor?

How should we select pesticides?

- Evaluated top 100 pesticides used in 5 high-use areas, except inorganics, oils, antimicrobials
- Propose to prioritize pesticides based on
 - **Use**: indicator of exposure, rated 0 – 4
 - **Volatility**: indicator of exposure, rated 1 – 4
 - **DPR risk assessment priority**: indicator of toxicity, rated 1 – 4
 - Total rating 2 – 12
 - Feasibility of including several pesticides in single method

Options for number of pesticides

- Monitoring Method 1 (Modified Parlier Method):
Revise Parlier method to include 21 – 26 pesticides
- Monitoring Method 2 (VOC Method):
4 pesticides included in volatile organic compound method
- Monitoring methods that detect a single pesticide
 - Methyl isothiocyanate (MITC)?
 - Chloropicrin?

21 proposed pesticides in original Parlier method

- Chlorothalonil (Bravo)-11
- Chlorpyrifos (Lorsban) + OA-11
- Cypermethrin-9
- Diazinon + OA-11
- Dicofol (Kelthane)-9
- Dimethoate (Cygon) + OA-10
- Diuron (Karmex)-10
- Endosulfan (Thiodan)-9
- EPTC (Eptam)-11
- Malathion + OA-11
- Naled as dichlorvos (DDVP)-10
- Norflurazon (Solicam)-7
- Oryzalin (Surflan)-9
- Oxyfluorfen (Goal)-9
- Permethrin-9
- Phosmet (Imidan)-10
- Propargite (Omite)-11
- S,S,S-tributyl phosphorotrithioate (DEF)-8
- Simazine (Princep)-9
- S-metolachlor (Dual)-8
- Trifluralin (Treflan)-10

4 proposed pesticides in VOC method

- 1,3-dichloropropene (Telone, Inline)-12
- Acrolein (Magnacide)-11
- Methyl bromide-12
- Sodium tetrathiocarbonate (Enzone) as carbon disulfide breakdown product-12

Possible additional pesticides

- Single pesticide methods under consideration
 - Chloropicrin-12
 - Metam-sodium, metam-potassium, and dazomet (Vapam, Sectagon, Basamid) as methyl isothiocyanate (MITC)-12
- Attempt to add to Parlier method if high use community selected
 - Acephate (Orthene)-10
 - Bensulide (Prefar)-10
 - Iprodione (Rovral)-10
 - Methidathion (Supracide)-10
 - Oxydemeton-methyl (Metasystox-R)-11

Proposed pesticides dropped from Parlier method

- Azinphos-methyl (registration [sale] ends in 2012)-not rated
- Formaldehyde (difficult to include in VOC method)-9
- Molinate (registration [sale] ends in 2009)-7
- Propanil (low use in selected areas)-6
- Thiobencarb (low use in selected areas)-6

Suggested pesticides not included

- Aminopyralid (low use, low volatility)-not rated
- Chlorthal-dimethyl (cannot be included in proposed methods)-10
- Clopyralid (low use, low volatility)-not rated
- Mancozeb (cannot be included in proposed methods)-10
- Maneb (cannot be included in proposed methods)-10

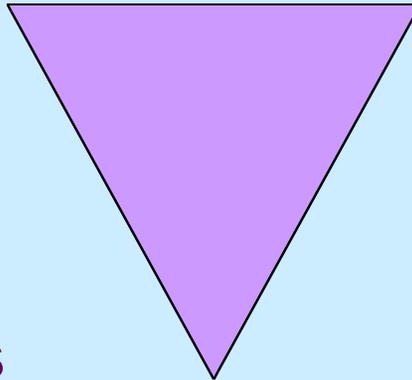
High rated pesticides not included

The following pesticides cannot be included with the proposed monitoring methods

- Sulfuryl fluoride-11
- Propylene oxide-10
- 2,4-D - 10
- Paraquat-10
- Maneb-10
- Captan-10
- Ziram-10
- Mancozeb-10
- Dicloran-10
- Aldicarb-10
- Chlorthal-dimethyl-10
- Methomyl-10
- Thiram-10
- Propyzamide-10
- Aluminum phosphide-10

Key technical issues

How many samples?
How often should we sample?



Which communities
should we monitor?

Which pesticides
should we monitor?

How should we select communities?

- Propose 2-tier process to select community
- Areas suggested for monitoring
 - San Joaquin Valley
 - Sacramento Valley
 - Salinas Valley
 - Watsonville/Pajaro area
 - Napa Valley
 - Imperial Valley
 - Coachella Valley
 - San Diego County
 - Ventura County

Community selection tier 1: select areas

- Five areas include top 10 counties and 17 of top 20 counties for reported use, 2005-2007
- All areas except North Central Coast do not comply with some federal air quality standards
- Napa Valley and San Diego not high use areas



Select 1 – 3 areas based on 2005-7 pesticide use

Region	Use of Pesticides in Parlier Method (lbs/mi²-yr)	Use of Pesticides in VOC Method (lbs/mi²-yr)
North Central Coast	117	2,280
Sacramento Valley	121	190
Salton Sea	83	297
San Joaquin Valley	305	1,084
Ventura	75	3,562

Community selection tier 2: select communities

- Evaluate 226 communities within
 - North Central Coast air basin (48 communities)
 - San Joaquin Valley (161 communities)
 - Ventura County (17 communities)
- Select a total of 2 to 5 communities for monitoring based on
 - Use of 34 pesticides included in monitoring
 - Characteristics of people in community
 - Other criteria

Proposed factors for selecting communities – pesticide use

- 2006-8 average use of 34 proposed pesticides
 - Use within community (community zone)
 - Use between border to 1 mile of community (local zone)
 - Use between 1 to 5 miles of community (regional zone)
- Determine use density (lbs/sq mi) for each community, pesticide, and zone (102 use subcategories)
- Rank from highest to lowest community (226 to 1) for each use subcategory
- Determine quartile rating: top 56 = 4, next 56 = 3, etc.
- Each pesticide assigned average rating of 3 zones

Proposed factors for selecting communities – demographic factors

- Select groups considered in risk assessments
 - People less than 18 yrs old
 - People greater than 65 years old
 - People greater than 5 yrs old with disabilities
 - People employed in farming, fishing, forestry (indicator of farmworkers)
- Determine population density (number/sq mi) for each subcategory
- Rank from highest to lowest (226 to 1) for each demographic subcategory
- Determine quartile rating: top 56 = 4, next 56 = 3, etc.

Additional considerations for community selection

- Must select communities that have a suitable monitoring location
- Greater consideration for communities with existing monitoring, related studies
- Need geographic distribution of communities to monitor different cropping and pesticide use patterns

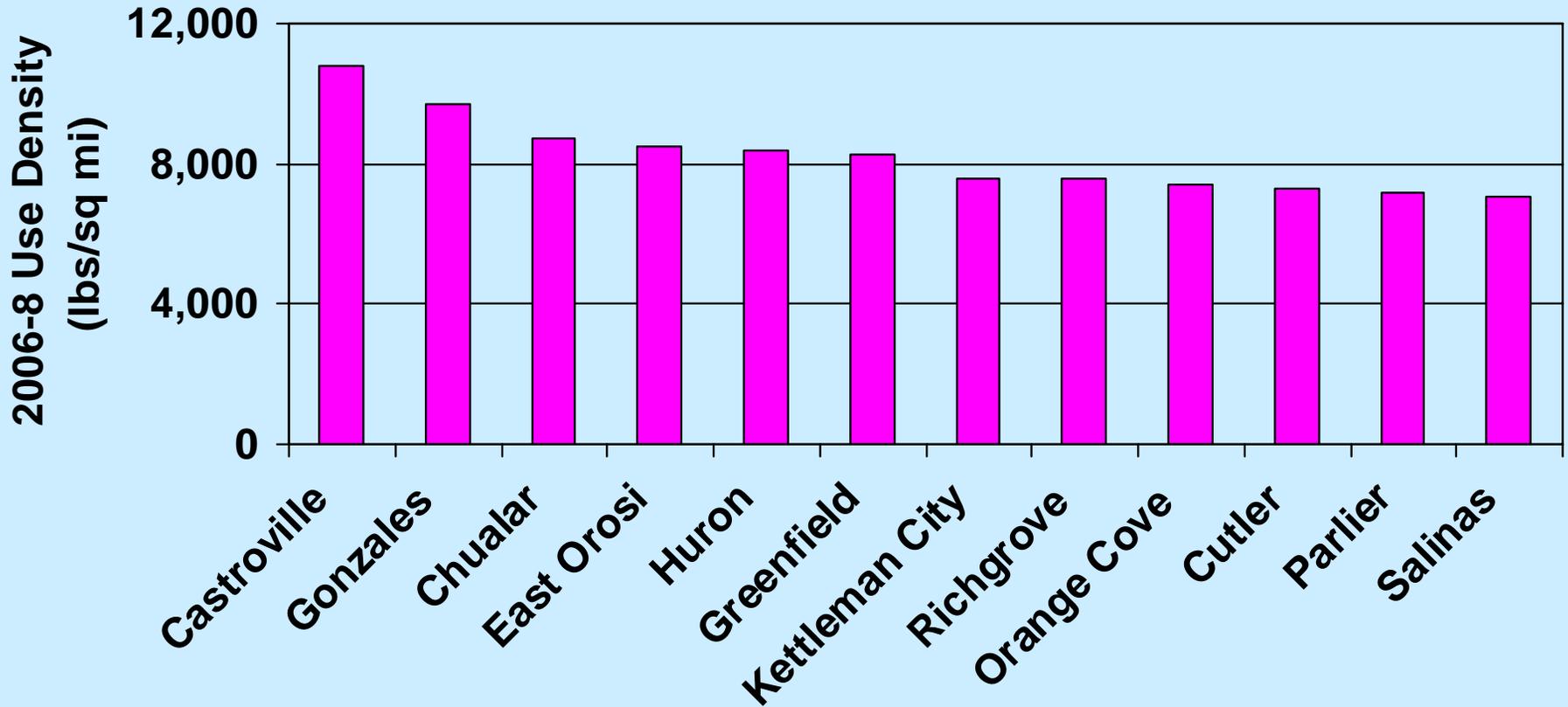
Proposed weighting of community factors

- Communities selected based primarily on pesticide use ratings, due to higher exposure
- Demographic or other factors sometimes used when two or more communities in close proximity have similar pesticide use

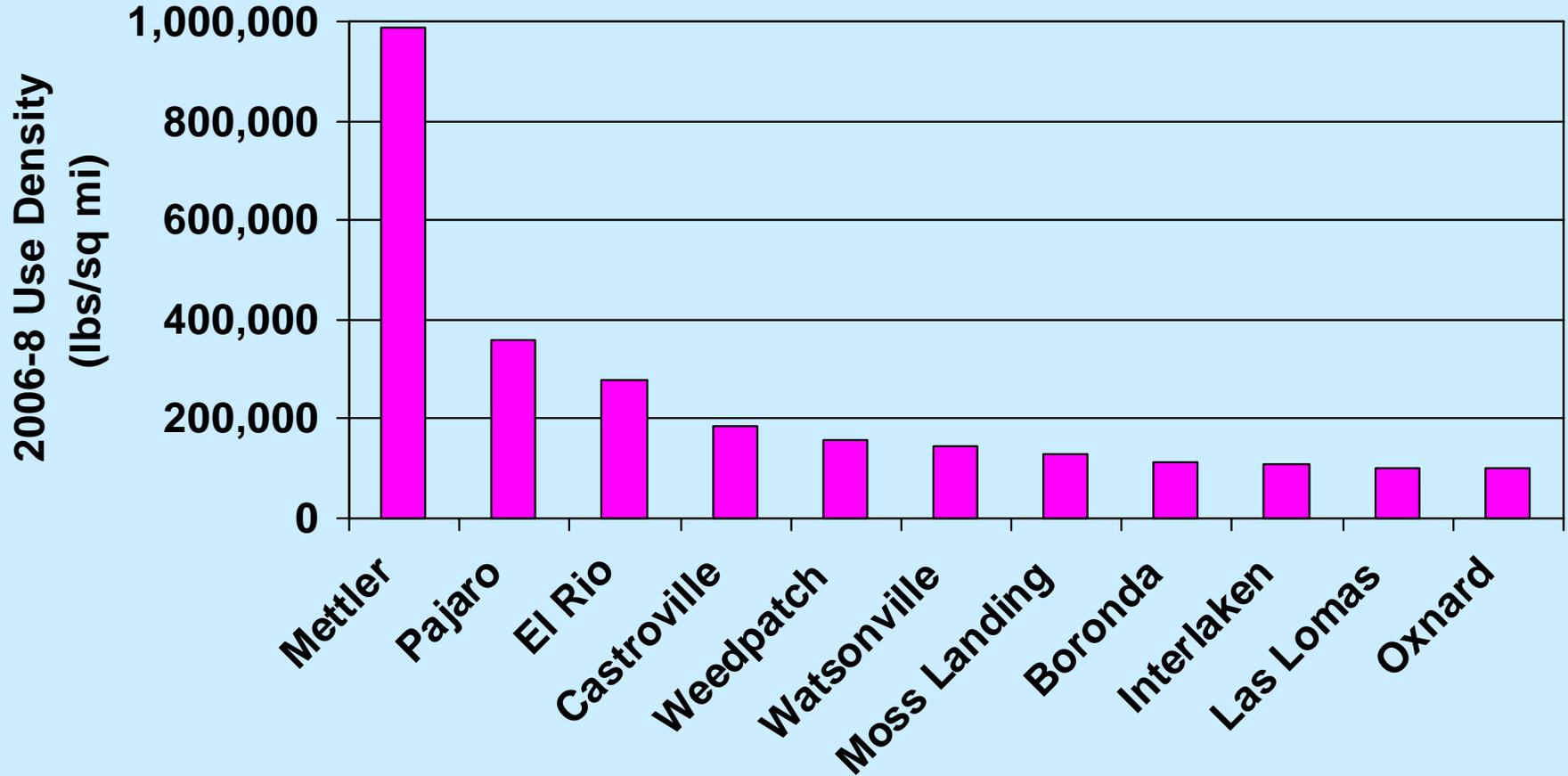
Communities with the highest use ratings of 34 proposed pesticides

Communities	County	Rating
Linden, Ripon, Salida, Escalon, Manteca, Del Rio, Riverdale Park, Lathrop, Modesto, Stockton, Hickman	San Joaquin Stanislaus	3.23-2.71
Shafter, Wasco, Arvin, Rosedale, Mettler	Kern	3.01-2.77
Greenfield, Soledad, Salinas, Gonzales, King City, Castroville	Monterey	2.96-2.62
Patterson, Westley	Stanislaus	2.93
Camarillo, Oxnard	Ventura	2.89-2.86
Cantua Creek, Huron, Mendota	Fresno	2.85-2.71
Reedley, Parlier	Fresno	2.77-2.62

Communities with high use density of proposed nonfumigants



Communities with high use density of fumigants



Candidate communities

Considered, but not proposed

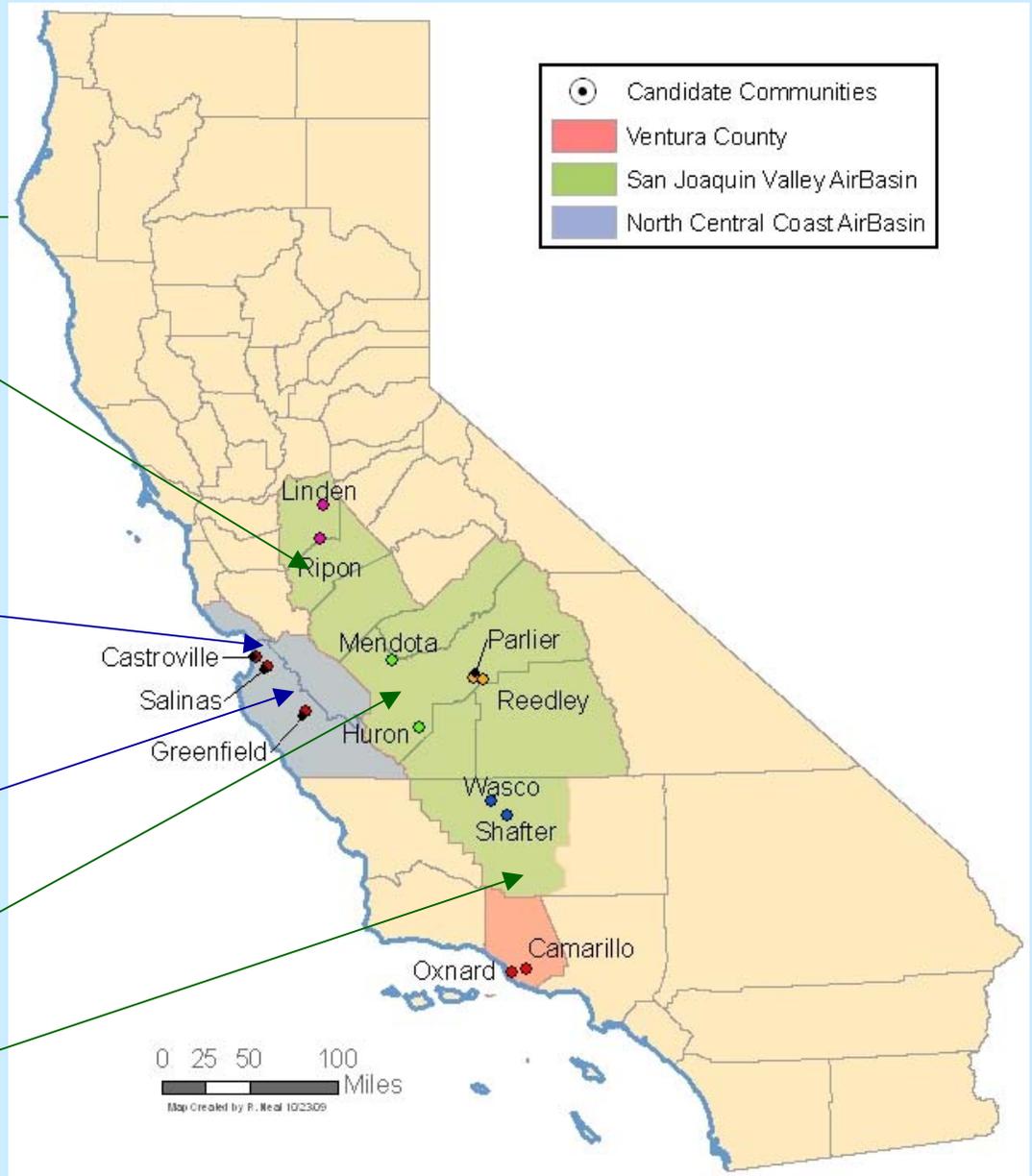
Patterson, Westley

Pajaro

Gonzales, Soledad

Cantua Creek

Mettler

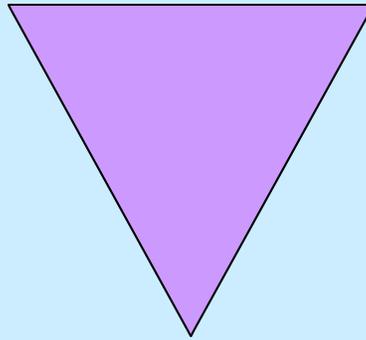


Key issues

- Rating system favors communities with relatively high use of many pesticides over communities with extremely high use of a few pesticides
- Appropriate weighting of community factors (use vs. demographics vs. other)
- Appropriate combination of 2 to 5 communities
 - Communities with different pesticide use patterns
 - Continue monitoring in Parlier?
 - Oxnard/Camarillo resources issue
- Balancing number of samples vs. number of pesticides vs. number of communities

Summary of proposed air network options

**1 to 2 samples each week,
each community**



**2 to 5 communities
monitored**

- Linden or Ripon
- Shafter or Wasco
- Greenfield, Salinas, or Castroville
- Camarillo or Oxnard
- Huron or Mendota
- Reedley or Parlier

**2 to 4 monitoring methods
(25-34 pesticides)**

- Parlier method
- VOC method
- Chloropicrin
- MITC

Comments

- Public workshop
 - January 26, 2010
 - 1:30 pm
 - Cal/EPA Building
- PREC comments due by January 14, 2010
- Public comments due by February 5, 2010

Questions, comments, additional information

- Lead staff

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- DPR web site: www.cdpr.ca.gov
 - Select “Air” under Quick Finder
 - Select “Air Monitoring Network”