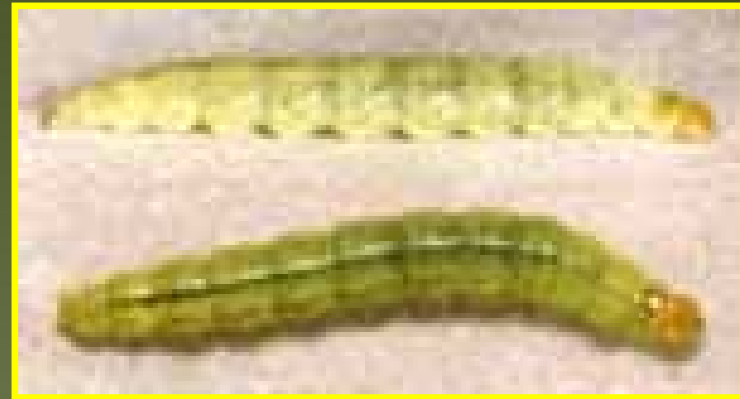


# The Light Brown Apple Moth in California: Planes, Pheromones and Public Health



Saturnino “Nino” Yanga  
Worker Health and Safety Branch  
Department of Pesticide Regulation  
CalEPA

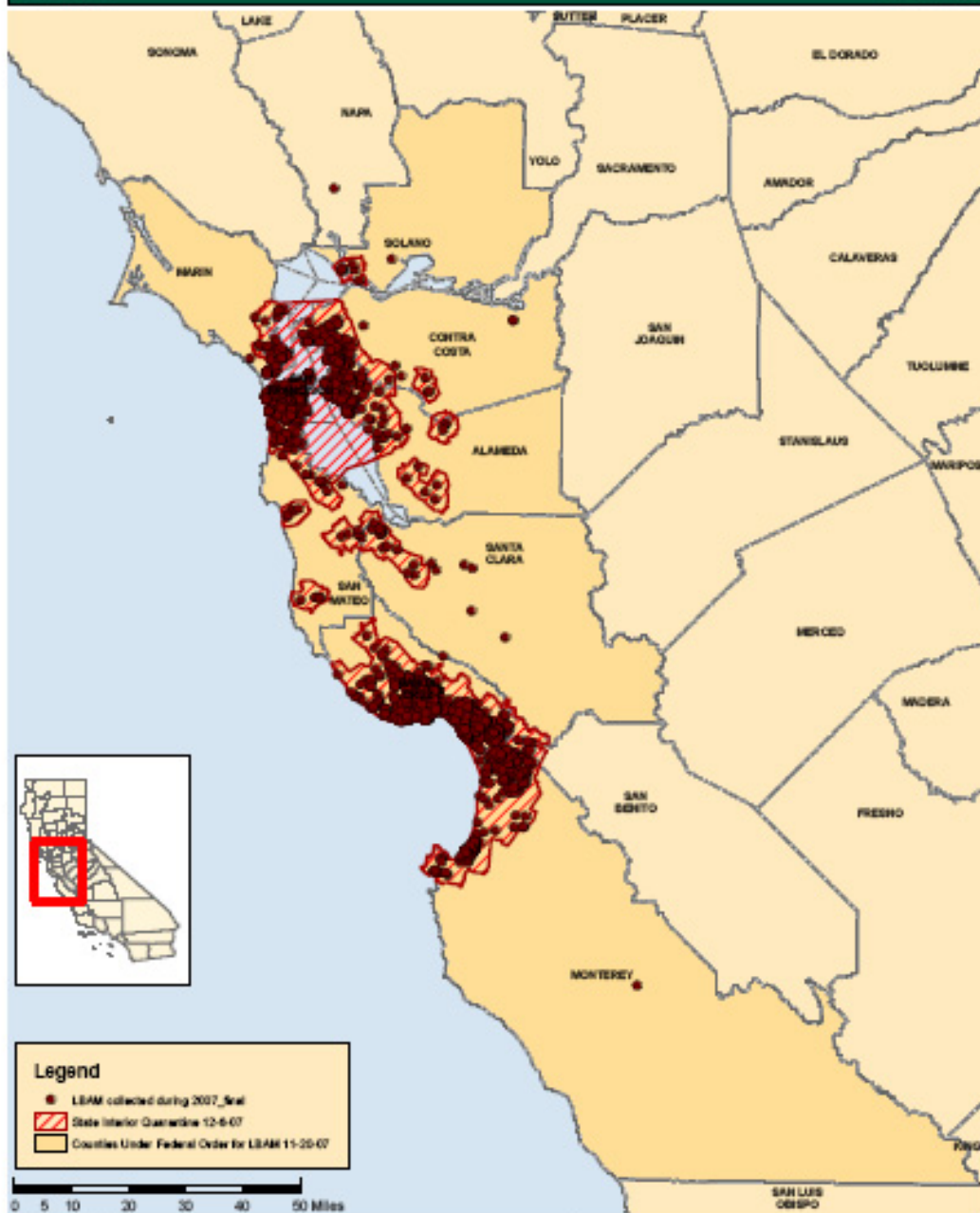
# The Light Brown Apple Moth



[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/lba\\_moth/images/postvittana.jpg](http://www.aphis.usda.gov/plant_health/plant_pest_info/lba_moth/images/postvittana.jpg)

- Invasive species
- > 2,000 host plants
- Economic damage by feeding of larvae
- Severe outbreaks: as high as 85 % of crop
- No natural enemies in the continental US
- CA climate can support a continuous breeding  
→ permanent establishment!

# Light Brown Apple Moth Distribution N. California - 2007







[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/lba\\_moth/images/larvae.jpg](http://www.aphis.usda.gov/plant_health/plant_pest_info/lba_moth/images/larvae.jpg)

[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/lba\\_moth/images/strawberry.jpg](http://www.aphis.usda.gov/plant_health/plant_pest_info/lba_moth/images/strawberry.jpg)

# STATE/LOCAL AGENCIES INVOLVED

CALIFORNIA DEPARTMENT OF  
**Food and Agriculture** *Your Connection to California Agriculture. . .*

- Charged with control and eradication of invasive pests and disease

California Department of  
**Pesticide Regulation**

- Receives, reviews, evaluates and determines whether pesticides should be registered for sale and use in California.
- Pesticide Illness Surveillance Program - documents and evaluates situations in which pesticides cause injury and illness

# STATE/LOCAL AGENCIES INVOLVED



- Coordinates with DPR to serve as the primary enforcement agents for State pesticide laws and regulations at the local level.



- Pesticide Epidemiology Section:
  - Epidemiological & other assistance to local health officers in an outbreak of pesticide poisoning,
  - Provides education and training on the recognition, management, and reporting of pesticide poisoning to health professionals and others.
  - Risk communication - education for the public and for county health departments on pesticide related health issues.



# TIMELINE OF MAJOR EVENTS



02/07: LBAM  
1<sup>st</sup> detected  
In Berkeley



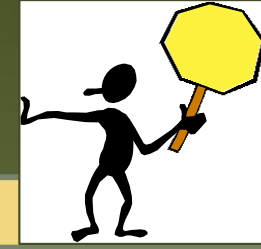
05/07: TWG  
Convened



05/02/07: Federal  
Domestic  
Quarantine Order  
by APHIS



9/9/07-9/13/07  
(Monterey  
Co.)



10/10/07 Monterey  
Co. Judge issues  
temp. restraining  
Order



10/19/07 Temp.  
restraining  
Order lifted

04/10/08: Joint  
DPR, OEHHA,  
DPH Illness  
Summary  
Report  
released



10/31/07 Consensus  
Statement on Human  
Health Aspects  
(OEHHA/DPR).



10/24/07-10/26/07  
(Monterey Co.)  
11/8/07 – 11/09/07  
(Santa Cruz Co.)



04/24/08:  
Santa Cruz Co.  
Judge halts aerial  
spraying until EIR  
is completed



04/24/08:  
Governor announces  
postponement of  
spraying until acute  
toxicity tests are  
completed



05/12/08:  
Monterey Co.  
Judge halts aerial  
spraying until EIR  
is completed



06/19/08: CDFA  
announces it will  
abandon aerial  
spraying over  
populated areas



11/3/08: Results  
of 6-pack  
toxicology Study  
released

# ISSUES REGARDING LBAM ERADICATION PROJECT

- Insufficient Public participation/ notification/ outreach
- Emergency status of LBAM
- Safety of the product used/ Health Concerns
  - Active Ingredient
  - Inert Ingredients - disclosure
- Aerial spraying vs. other eradication methods
- Aerial spraying over populated areas



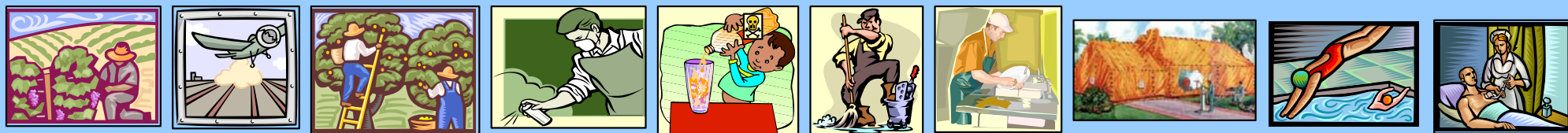


# ISSUES REGARDING LBAM ILLNESS REPORTS

- Reporting mechanism
- Data quality
- Numbers



# REPORTING PESTICIDE RELATED ILLNESSES AND INJURIES IN CALIFORNIA



## Pesticide Exposure

Non-medical providers  
(No record of illness)

**Illness**

Home Treatment  
(No record of illness)

Doctor's First Report of  
Occupational Injury  
or Illness (DFROI)

Occupational  
Exposures

**Consult**



*ALL pesticide related  
illnesses inc. occupational*

*Web-based reporting  
System*

**Local Health Officer**  
(Reported within 24 hours by physician  
if s/he suspects illness is pesticide related)

Insurance  
Carrier

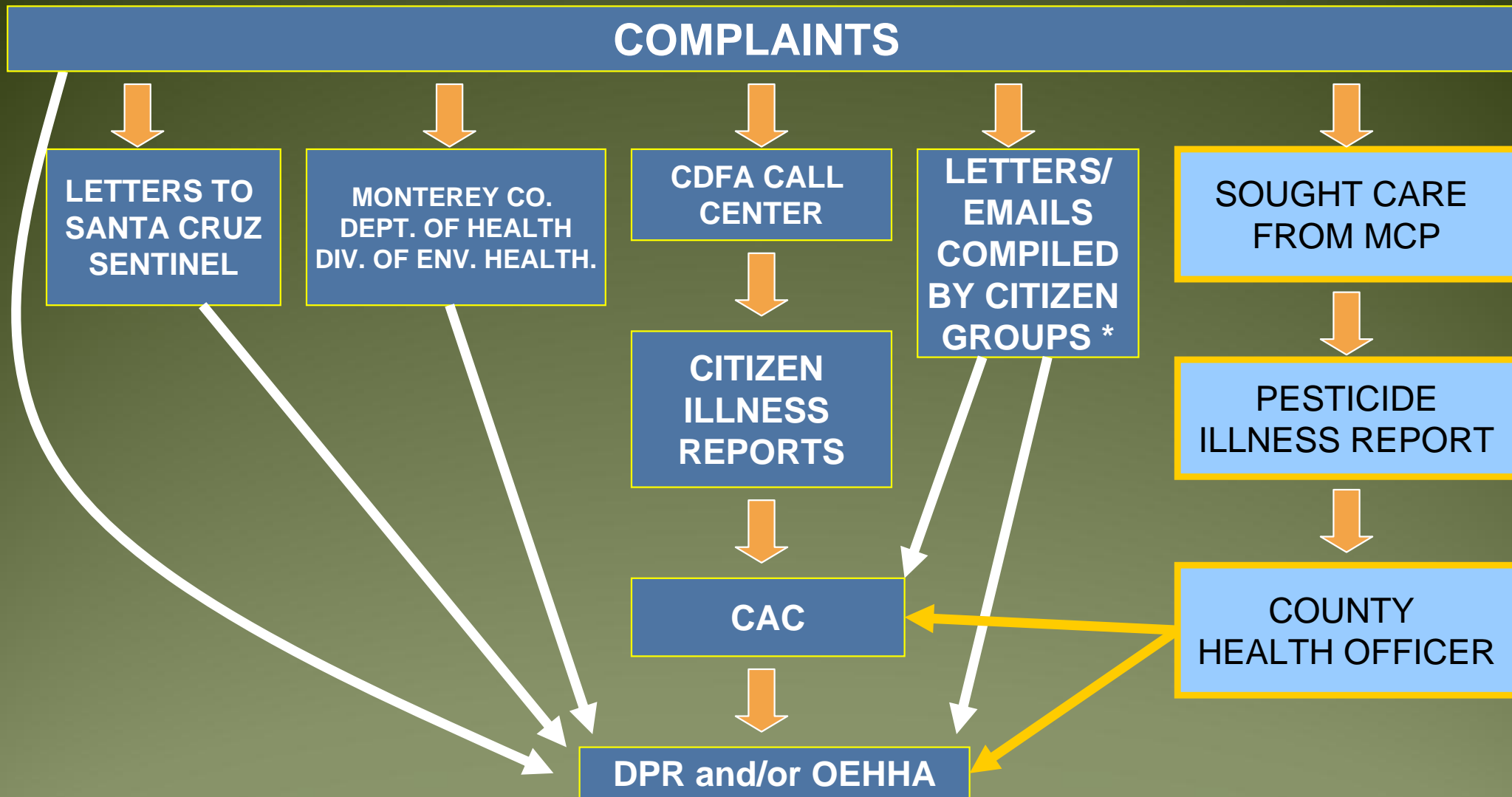
**Pesticide Illness Report (PIR)**

**County  
Agricultural  
Commissioner**

**Pesticide Episode  
Investigation  
Report (PEIR)**



# HOW WERE LBAM CASES REPORTED IN 2007?



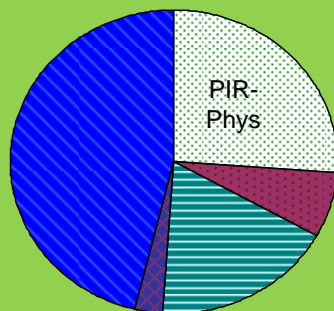
\* Citizen's Groups:  
[www.stopthespray.com](http://www.stopthespray.com),  
[www.reactiontospraying@yahoo.com](mailto:www.reactiontospraying@yahoo.com),  
Mike Lynberg's 'compendium' of complaints

# Summary of Findings

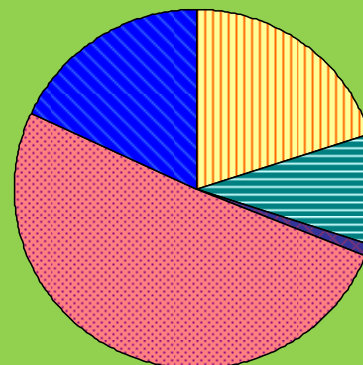
- 643 Reports collected
  - 180 duplicate reports or non-human health related
  - 24 additional reports received on April 1, 2008 → separately accounted for in Summary
- Majority of reports from Santa Cruz County



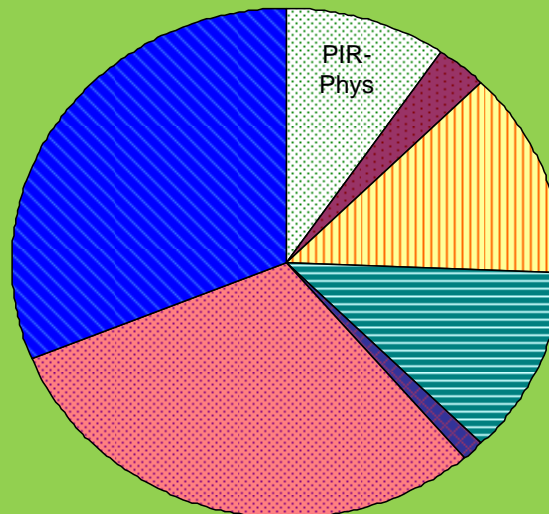
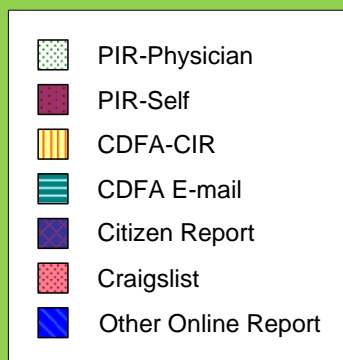
Figure 3. REPORTING SOURCES BY COUNTY



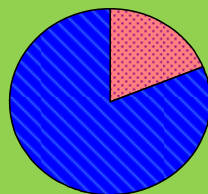
SANTA CRUZ (167 reports)



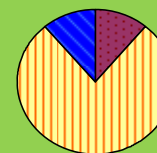
MONTEREY (266 reports)



ALL COUNTIES (463 reports)

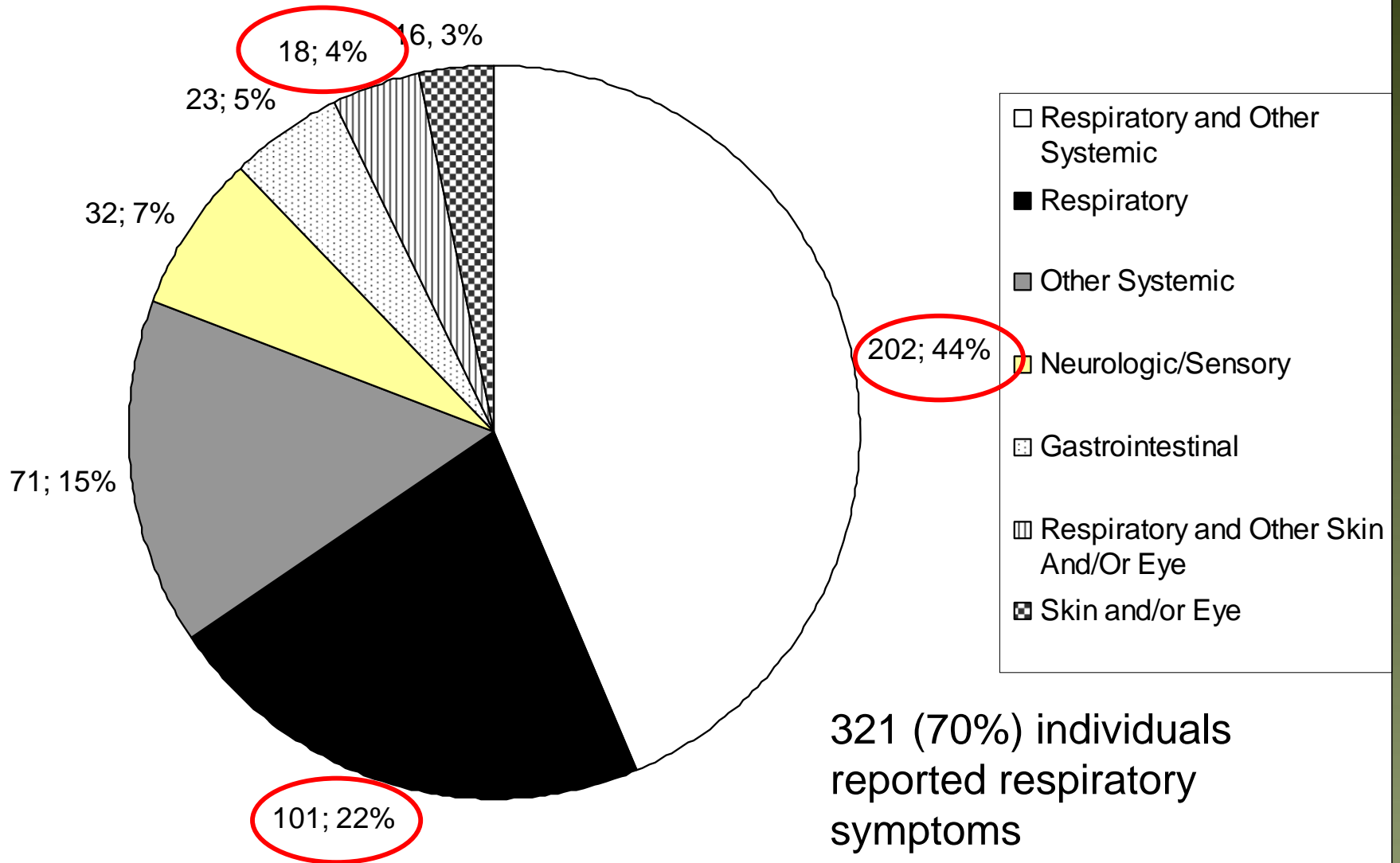


UNKNOWN COUNTY (21 reports)

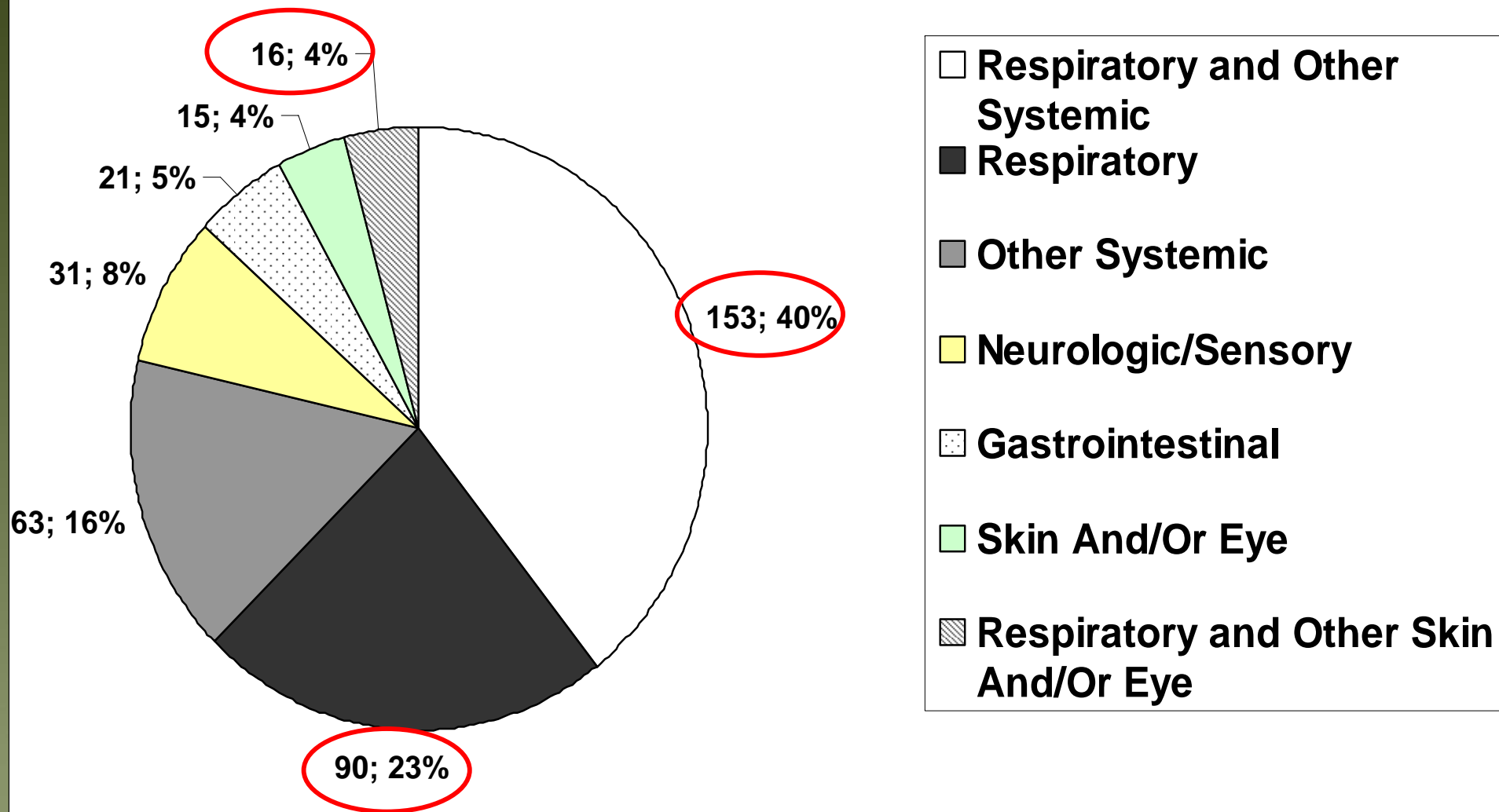


SANTA CLARA (9 reports)

**Figure 4. Categories of Reported Symptoms From All Counties**



**Figure 9. Categories of Reported Symptoms for Those Not Known to Have Sought Medical Attention**



# Summary of Findings

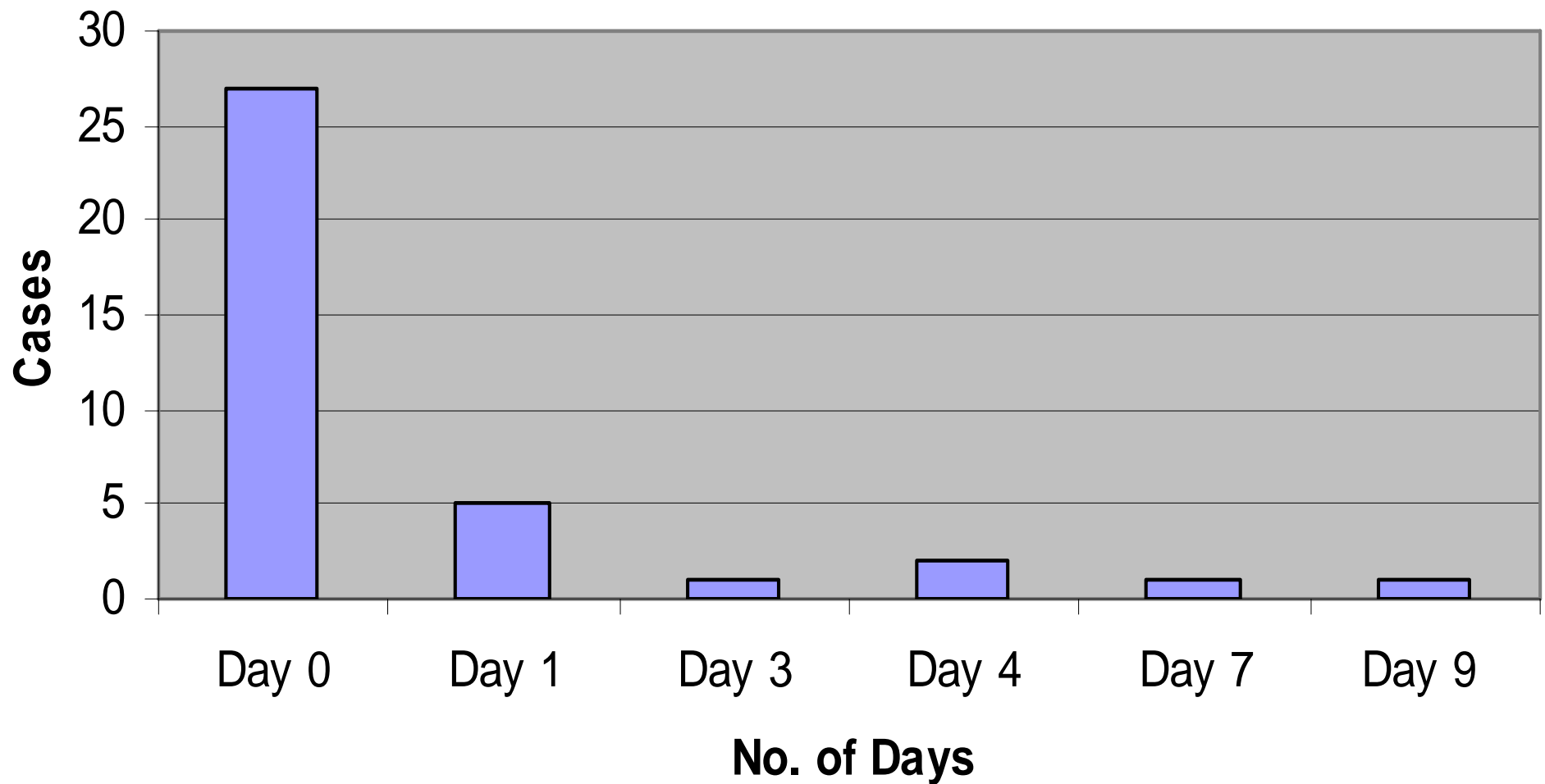
- Number of individuals who sought medical attention: 74 (16%)
  - Monterey County: 24
  - Santa Cruz County: 44
  - Santa Clara County: 6



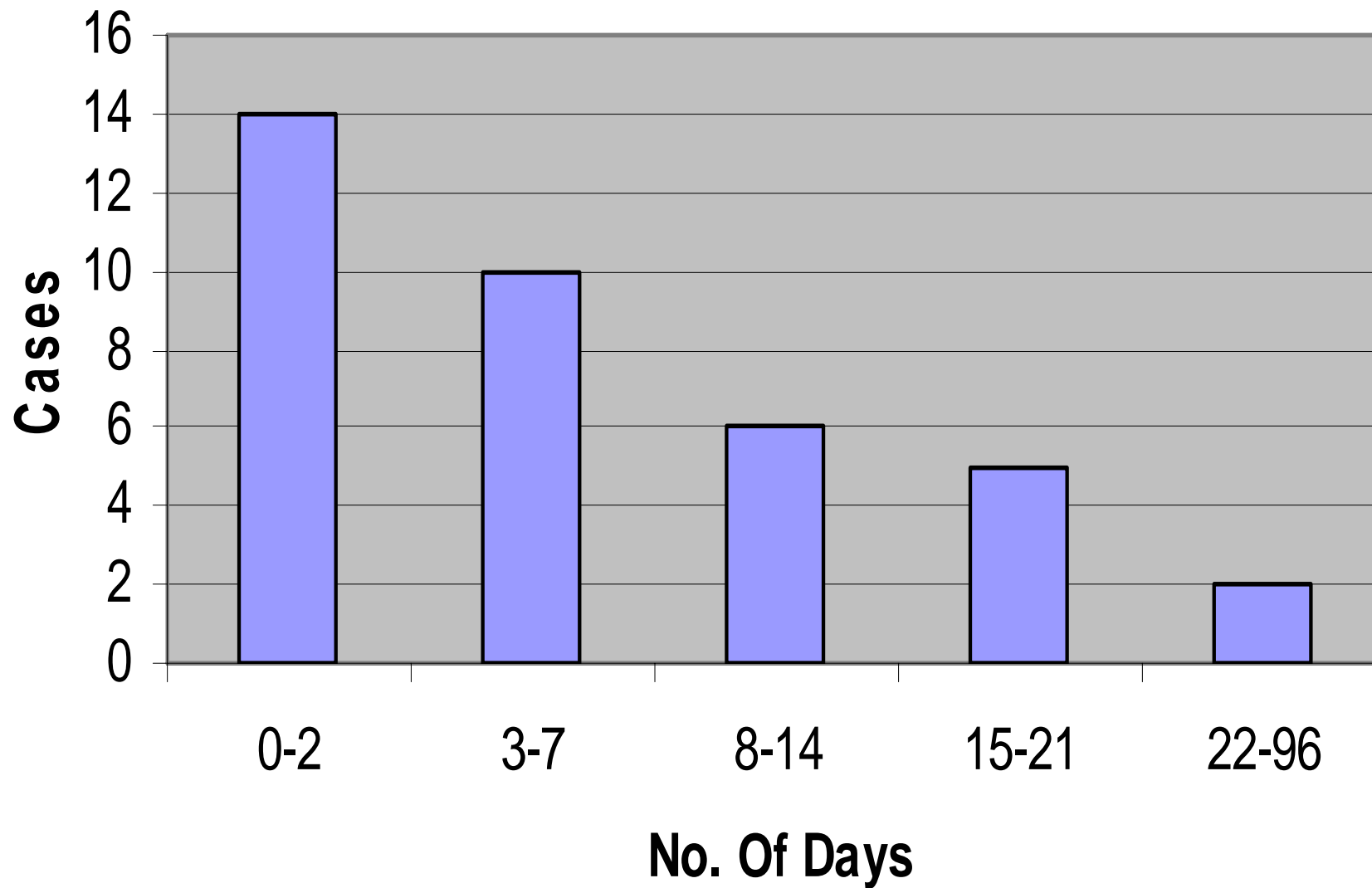
# Summary of Findings

- 44 PIRs from 28 medical providers in Santa Cruz County; 2 additional PIRs received after release of Summary Report
  - Symptoms that did not correspond to spray dates: 3 cases (unrelated)
  - Symptom occurring a month after a short visit to spray area: 1 case (unrelated)
  - Respiratory effects: 38 of 42 cases

**Figure 7. Number of Days From Reported Date of Exposure to Pheromone Applications to Date of Onset of Symptoms**



**Figure 8. Number of Days from Date of Exposure to Pheromone Application to Date of Medical Care**



# Summary of Findings

- PISP: Can we use a model for using ER reports to identify an increase in health problems ?
  - Counts of ER contacts at a) Monterey Co. hospitals for Sept, Oct and Nov 2007 and b) Santa Cruz hospitals for Nov 2007. (Office of Statewide Health Planning and Development (OSHDP))
  - Inclusion criteria: Asthma, Other Respiratory Conditions or any effect of pesticide exposure
  - Could not identify any increase in consultations during the spray period.



# Summary of Findings

- Remaining 42 PIRs
  - No epidemiologic basis for attributing ill health to spray exposure.
    - NOT enough proof that no one suffered health effects !
    - Few people may possibly have exceptional sensitivity to the product used.

# PROBLEMS WITH RECEIVED ILLNESS REPORTS

- DUPLICATE RECORDS!
  - 1000's vs. 463
- INSUFFICIENT INFORMATION ON:
  - EXPOSURE – How? Where? When?
  - SYMPTOMS – Onset? Resolution?
  - CONTACT INFORMATION – address, phone?
  - REPORTS: PIRs to 'one line' emails
- SYMPTOMS NOT ASSESSED BY MEDICAL CARE PROVIDER
  - Only 16% (74/463) sought medical care



# NO SUCH THING AS BAD PRESS?

Bender, Kristin. “**Aerial Spraying Plan has Foul Odor to Some**”. Contra Costa Times, 23 February 2008.

Reynolds, Julia. “**Marketing of Moth Spraying: Emails show how officials failed to gauge opposition**”. The Monterey County Herald, 27 January 2008.

Kawamura, A.G. “**California Agriculture Chief Defends Moth Spraying**”. Marin Independent Journal 02 March 2008.

Kay, Jane. “**Experts Questions Plan to Spray to Fight Moth**”. San Francisco Chronicle 06 March 2008.

Lieber, Robert. “**Agricultural Chief Accused of Lying About Spraying**”. Marin Independent Journal 09 March 2008.

Brooks, Amy. “**Report Inconclusive on Spray’s Health Effects**”.

[http://www.dailycal.org/article/101308/report\\_inconclusive\\_on\\_spray\\_s\\_health\\_effects](http://www.dailycal.org/article/101308/report_inconclusive_on_spray_s_health_effects). 09 March 2008.

Lynberg, Mike. “**Flaws with State’s Moth Spray Report**”.

[http://www.montereyherald.com/opinion/ci\\_8929619](http://www.montereyherald.com/opinion/ci_8929619). 09 March 2008.

Yi, Matthew. “**Moth Fallout Leads Committee To Pass Two Bills**”.

[http://www.montereyherald.com/opinion/ci\\_8929619](http://www.montereyherald.com/opinion/ci_8929619). 17 April 2008.

“**Moth Spraying Opponents March on GG Bridge**”.

<http://cbs5.com/local/moth.spraying.protest.2.737622.html>

Agha, Laith. “**State Cancels Moth Spraying**”. Monterey Herald. 20 June 2008.

# Lessons Learned:

- **COMMUNICATION IS EXTREMELY IMPORTANT!**

- Public Involvement/ Outreach/ Notification !
  - Importance of the eradication project,
  - Potential health risks, and
  - How to minimize exposure
  - What, Where and How to report health effects
- Local health providers (Recognition, Management and Reporting pesticide illnesses)
- Between and among Local and state officials
  - Data sharing between public health agencies





# Lessons Learned:

- **COORDINATION IS JUST AS IMPORTANT!**
  - Between and among state and local agencies on collecting and evaluating illness reports.
- **PUBLIC PERCEPTION/OPINION IS A FORCE TO RECKON WITH!**
  - OUTREACH!
  - The World Wide Web is a powerful medium!
- **LEARN FROM PAST EXPERIENCES/EVENTS!**
  - Lake Davis Pike Eradication – Dept. of Fish & Game
    - 1997 and 2007

# OUTCOME OF LBAM AERIAL SPRAYINGS

- CDFA and USDA will no longer aerially apply pheromones
  - Use sterile insect technique instead
  - Use twist ties to prevent the spread of LBAM to other counties when they find LBAM
  - Drafting an environmental impact report for the use of pheromones in the project



**Twist Tie with Hanger and Flag**

# OUTCOME OF LBAM AERIAL SPRAYINGS

- Joint contract between DPR, OEHHA and California Poison Control Center (CPCS)
  - CPCS as single, centralized reporting hub!
  - CDFA to refer health effects concerns/complaints during eradication program to CPCS.
  - CPCS → DPR and OEHHA within 24 – 48 hours
  - Determine any unusual circumstances that need attention and make recommendations to CDFA and USDA.
- Legislation

## LEGISLATION RESULTING FROM 2007 LBAM AERIAL SPRAYING (Chaptered)

- **Assembly Bill 2763** (Laird)
  - Amended FAC section 5260.
  - Consultation with other state agencies to develop a plan of the best options to eradicate higher priority pests.
  - Public hearings and public input
  - Notice to local authorities, residents, and the Governor, and providing the plan to the Governor,

## LEGISLATION RESULTING FROM 2007 LBAM AERIAL SPRAYING (Chaptered)

- **Assembly Bill 2765** (Huffman)
  - Amended FAC sections 5571 and 5776, and added to section 2276.5.
  - County Agricultural Commissioner (CAC) to:
    - Conduct at least one public hearing, when an eradication plan includes potential aerial application of a pesticide in an urban area,
    - Ask for an evaluation of human health and environmental risks conducted jointly by DPR and OEHHA.
  - Notice to residents, physicians, and media
    - Pesticide information
    - Health and safety precautions
    - Telephone number and address of public health personnel familiar with the eradication program

## LEGISLATION RESULTING FROM 2007 LBAM AERIAL SPRAYING (Introduced, Current Session)

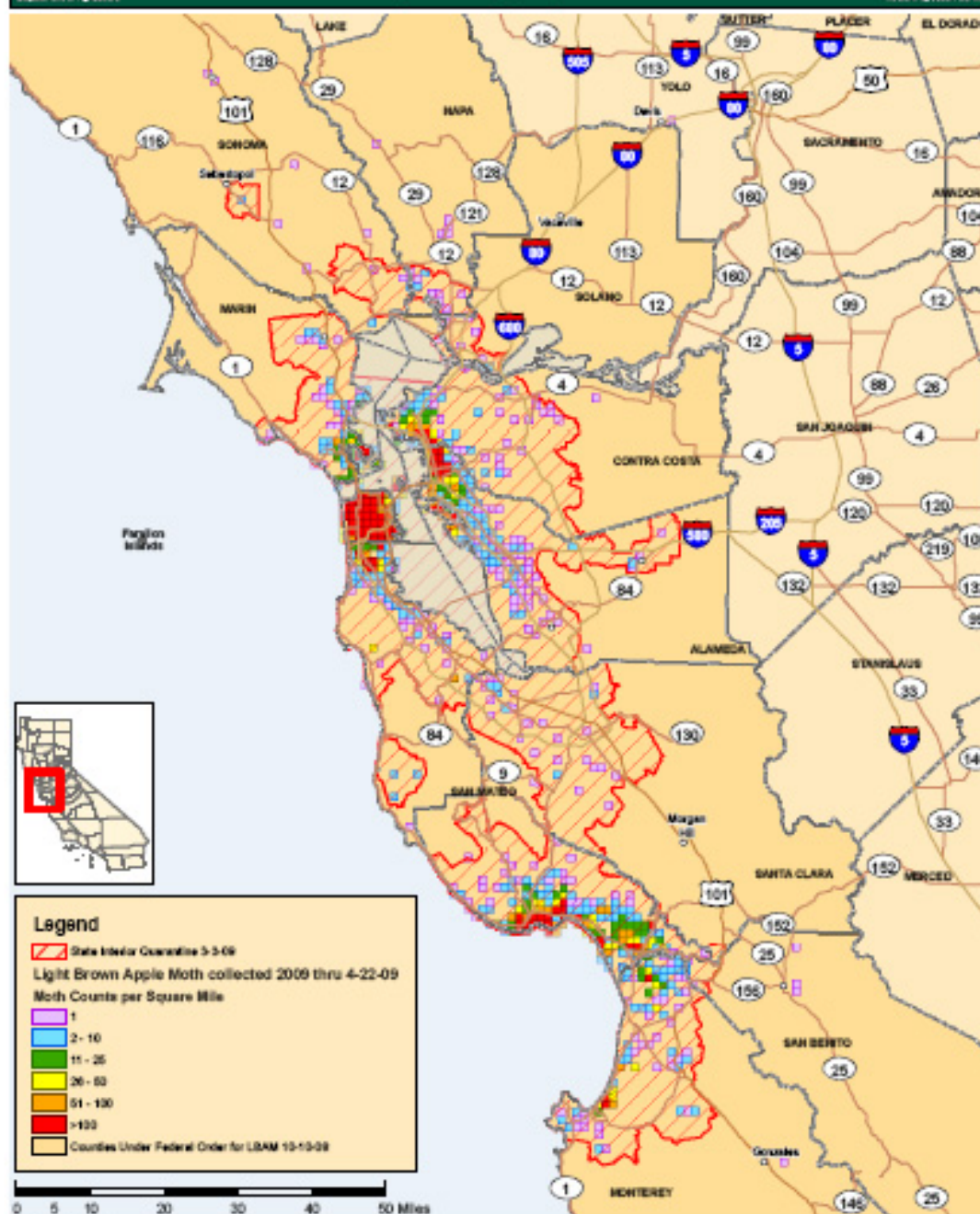
- **AB 622** (Swanson)
  - Would require that any aerial application of a pesticide must observe a safety zone of at least 3.3 miles from residential areas.
- **AB 759** (Laird)
  - Would require registrant to voluntarily provide a list of ALL ingredients of a pesticide to OEHHA before it can be used( for aerial spraying.
- **AB 1091** (Monning)
  - Would require establishing a toll free telephone hotline number for reporting adverse health effects related to aerial and community ground pesticide applications.





The saga continues.....

# Light Brown Apple Moth Distribution & Detection Levels in N California January 1, through April 22, 2009



USDA, APHIS, PPQ  
Western Region GIS Specialist  
603 Capitol Mall, Suite 6-430  
Sacramento, CA 95814

Coordinate System:  
CA State Plane, NAD 83  
Date Created: April 28, 2009

Data Source:  
CA Dept of Food and Agriculture  
USDA, APHIS, PPQ



The U.S. Department of Agriculture's Animal and Plant Health Inspection Service collected the data displayed for internal agency purposes only. These data may be used by others; however, they must be used for their original intended purpose.

QUESTIONS?



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Worker Health and Safety Branch  
Department of Pesticide Regulation  
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[syanga@cdpr.ca.gov](mailto:syanga@cdpr.ca.gov)