

Impacts of Conventional Pesticide Use on Worker Health

Safer Alternatives to Pest Control in Agriculture:
Making the Public Health Case for Change

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California Department of Public Health Occupational Health Branch Promoting Healthy Workplaces

**Non-regulatory, public health program to
reduce work-related injury & illness:**

- § Identify & evaluate workplace hazards
- § Track patterns of work-related injury/illness
- § Provide info, training & technical assistance
- § Recommend protective workplace standards

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CDPH 

Occupational Pesticide Illness Prevention Program (OPIPP)

- § Part of a national system (SENSOR)
- § Support: NIOSH, US EPA
- § Standardized variables, case classification, severity index
- § Statewide work-related pesticide illness tracking
- § Mandates* allow access to
 - § Medical records
 - § Workplace



12 States Track Pesticide Illness

*CA Health and Safety Codes 100325, 105175



Collaborations

- § Department of Pesticide Regulation
- § Office of Environmental Health Hazard Assessment
- § Local Health Departments
- § County Agricultural Commissioners
- § Workers, employers
- § Advocacy groups



OPIPP Components

- § Surveillance
- § Investigation
- § Outreach, education
- § Prevention
 - § Promoting adoption of safer alternatives



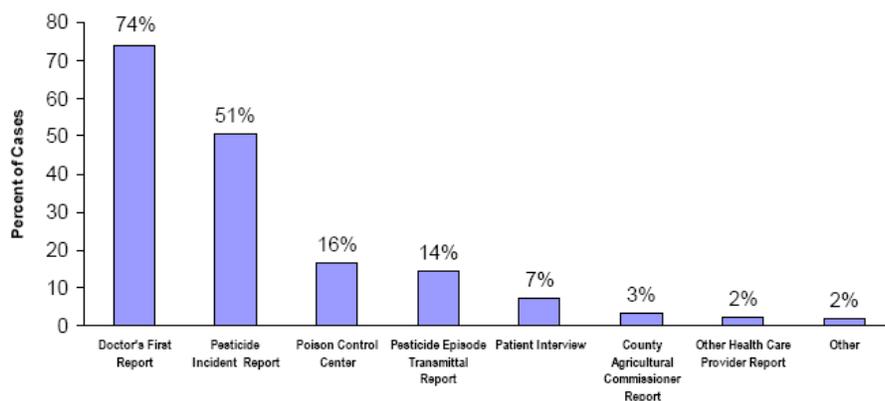
<http://www.cdph.ca.gov/programs/ohsep/Pages/Pesticide.aspx>



Surveillance



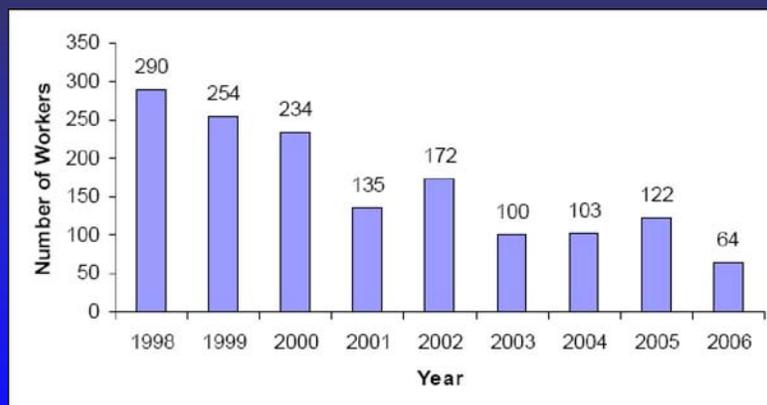
Surveillance Data Sources



1474 Workers with acute pesticide illness. Includes Definite, Probably, Possible cases. Excludes all disinfectant cases. An additional 1585 cases were classified.



Workers With Acute Pesticide Illness



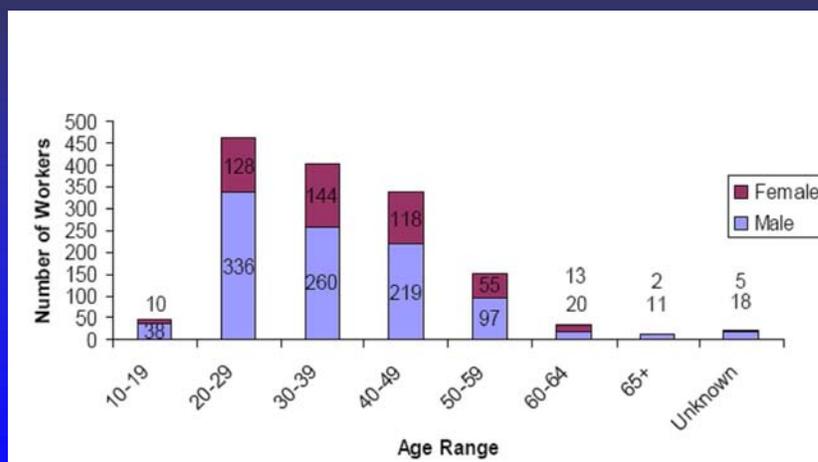
<http://www.cdph.ca.gov/programs/ohsep/Documents/pestillness.pdf>

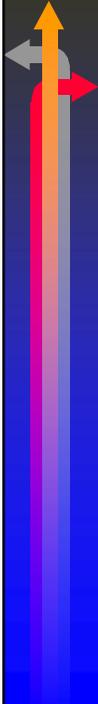


Illnesses Reported from 48 Counties



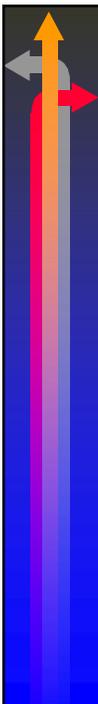
Most Ill Workers Young, Male





10 Most Common Health Effects Among Workers With Acute Pesticide Illness

Health Effect	Percent
Headache	38.1
Eye Pain or Irritation	37.7
Nausea	37.3
Nose or Throat Irritation	22.0
Dizziness	20.9
Vomiting	18.8
Itching	18.1
Skin Irritation	18.0
Rash	16.0
Skin Flushing	15.9



Other measures of illness

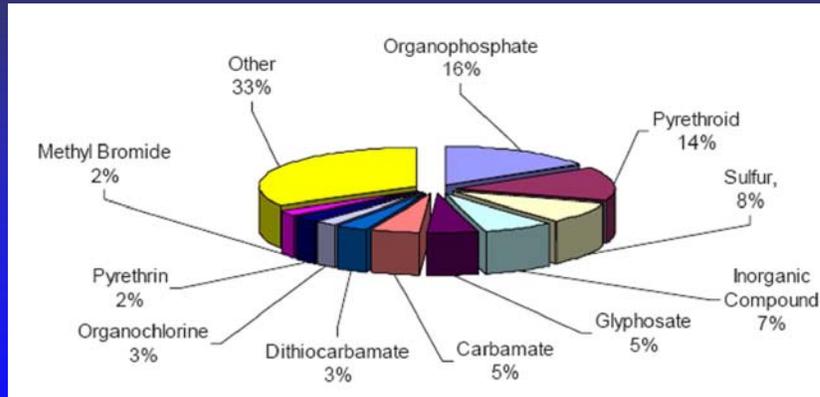
§ Severity:

- § High 0.5%
- § Moderate 25%
- § Low 74.5%

§ 27% of workers lost work time (≥ 8 hours)



Pesticides Associated with Worker Illnesses

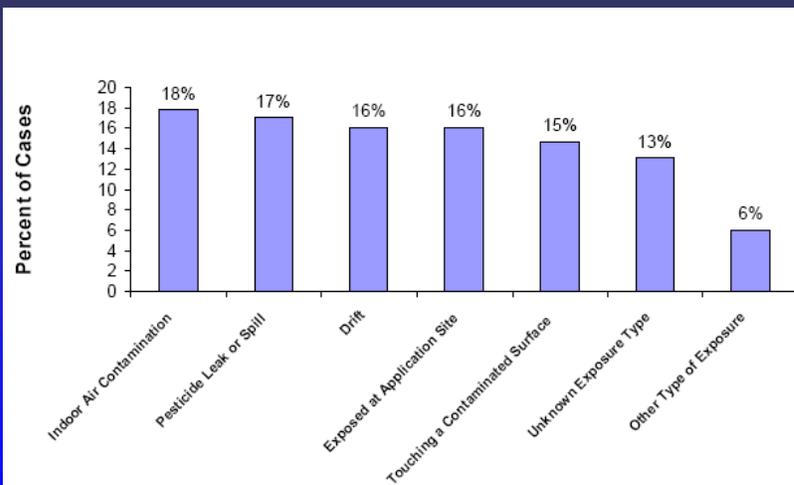


Worker Activity at Time of Illness

Activity at time of exposure	Number of Workers (%)
Routine work (not application)*	900 (61.1%)
Applying pesticides	325 (22.1%)
Mixing/loading	71 (4.8%)
Transporting or disposing of pesticides	45 (3.1%)
Repairing or maintaining application equipment	17 (1.2%)
Any combination of above	20 (1.4%)
Emergency response	39 (2.7%)
Manufacturing or formulating pesticides	4 (0.3%)
Unknown	53 (3.6%)



How Workers Were Exposed

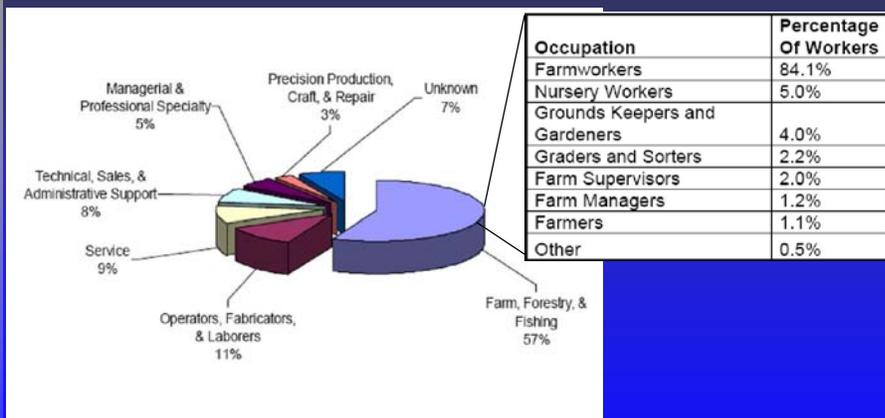


Illness Most Common in Agricultural Industry

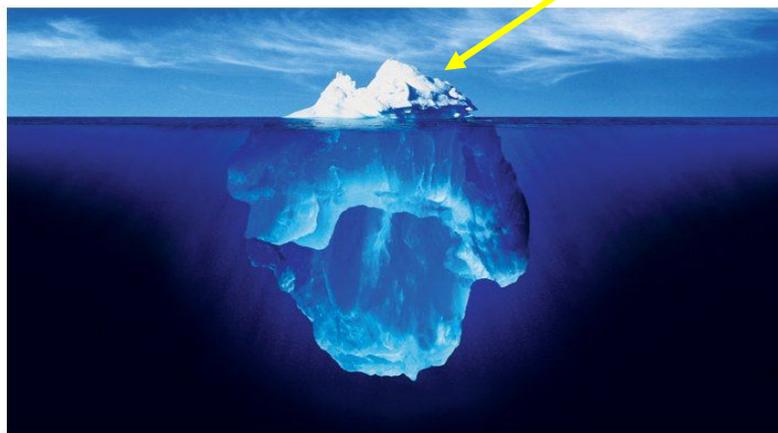
Industry	Percentage Of Workers
Agriculture, Forestry, Fishing and Hunting	54.7%
Manufacturing	6.7%
Public Administration	6.5%
Administrative and Support	6.0%
Healthcare and Social Assistance	4.9%
Educational Services	2.9%
Wholesale Trade	2.9%
Transportation and Warehousing	2.7%
Other	10.1%
Unknown	2.7%



Occupations of Ill Workers



Acute Pesticide Illness Surveillance



Investigations



OPIPP Field Investigation Protocol

- § Conduct interviews
 - § All workers (ill or not)
 - § Employer, contractors
 - § Regulators (Ag Commissioners)
- § Standardized interview*
- § Collect on-site observations
- § Review OSHA injury logs, medical records, industrial hygiene data, etc.



* Approved by IRB



Pesticide Investigations 1998-2007 Prevention Recommendations

- § Increase buffer zone distance, duration
- § Increase REI area/duration
- § Improve worker notification
- § Ensure prompt medical care
- § When available, implement the use of less toxic alternatives for controlling pests*



OPIPP Initiative: Reduce Illness Through Primary Prevention

- § Research, evaluate information on available safer alternatives to pesticides for all major investigations/ focus areas
- § Engage stakeholders, encourage development of new methods, wider adoption of existing methods



Safer Alternatives to Pesticides Examples

Process	Pesticide	Alternative
Aircraft Disinsection (2000-2007)	Permethrin http://www.cdph.ca.gov/programs/ohsep/Documents/aircraftdisinsection.pdf	Air curtains http://www.cdph.ca.gov/programs/ohsep/Documents/aircraftdisinsection.pdf
Preplant soil fumigation, carrots (1999-2002)	Metam sodium http://www.cdph.ca.gov/programs/ohsep/Documents/metamsod.pdf	Weed control: Manual, mechanical, solarization Nematodes: Compost, cover crops



Case Study*

- § May 12, 2005, orange grove, Arvin, CA
- § Airblast application –
 - § Cyfluthrin: katydids
 - § Spinosad†: citrus thrips
- § Drift onto vineyard
- § Cyfluthrin illness
 - § 27 vineyard workers
 - § 4 first responders



*<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5517a4.htm>

† Spinosad is approved for use in organic production



Factors Contributing to Illness

- § Toxicity of pesticide
- § Method of application
- § Unpredictability of weather conditions
- § Inadequate communication



The Pesticide

Baythroid 2 : 25% cyfluthrin –
Restricted Use Pesticide

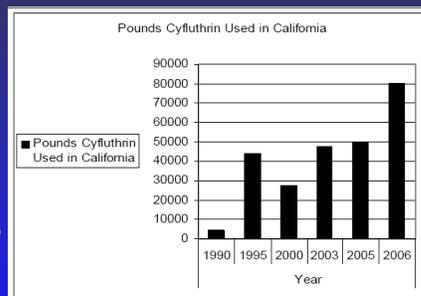
Type II pyrethroid

Increasing use

§ ~80,000 lbs in 2006

7% of cases reported to OPIPP

Pyrethroids 14% of cases



Pests: Varying Degrees of Damage

§ Thrips



Thrips-scarred fruit: down-graded to "for juice only"

§ Katydid

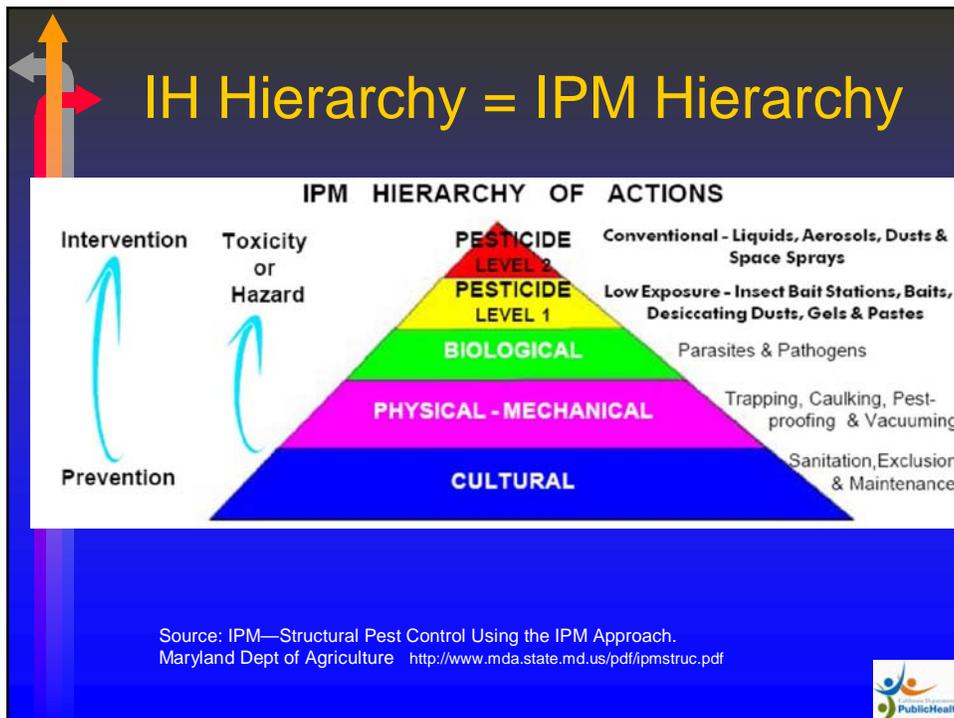
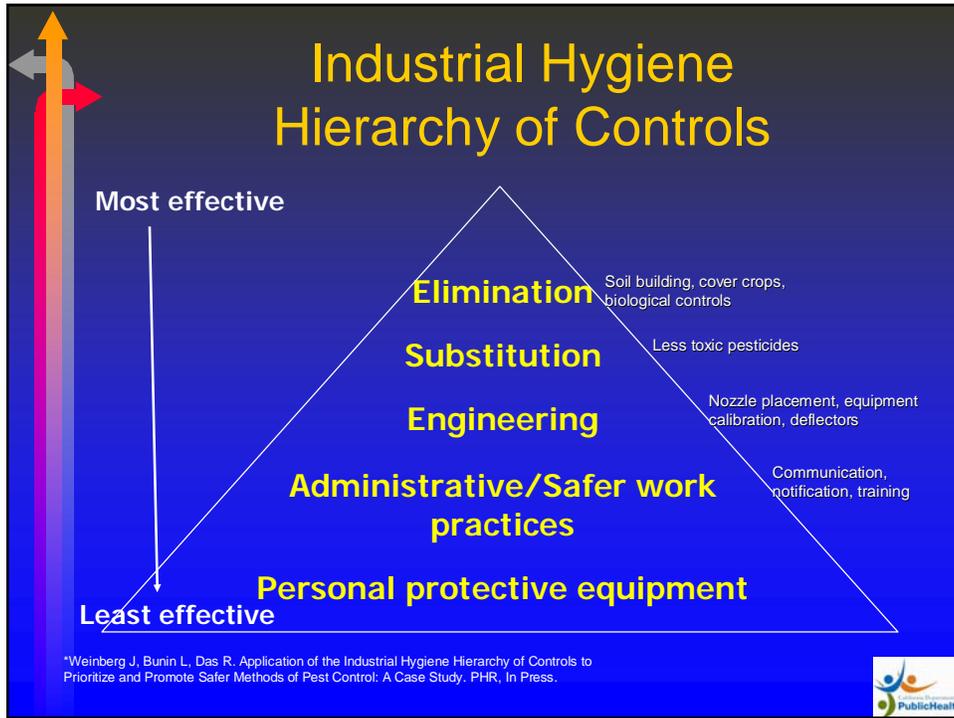


Fork-tailed katydids eat holes in leaves and fruit

<http://www.ipm.ucdavis.edu/GENERAL/search.html>

<http://www.cdph.ca.gov/programs/ohsep/Documents/thripscontrol.pdf>







Safer Alternatives for Pest Control Lessons Learned

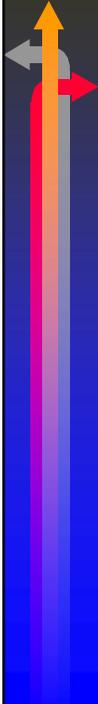
- § Understanding pests and methods of control is essential to promote change
- § Alternatives are process-specific
 - § Crop, pest, geographic area, etc.
- § Viable solutions are not easily available
- § Best options come from growers/users
- § Successful adoption requires collaboration with non-traditional partners



Pesticides and Worker Health: Summary

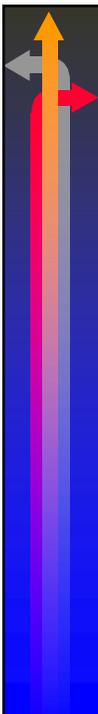
- § Conventional pesticide use may result in illness among workers
- § Pesticides previously thought to be nontoxic may cause illness
- § Illnesses are likely undercounted
- § No systematic tracking of chronic illness
- § Pest control methods should employ the hierarchy of controls





Resources

- § CDPH/OHB Pesticides Program
 - § <http://www.dhs.ca.gov/ohb/OHSEP/pesticide.htm>
- § CDC/NIOSH SENSOR Pesticides
 - § <http://www.cdc.gov/niosh/topics/pesticides/>
- § UC Davis IPM program
 - § www.ipm.ucdavis.edu/index.html
- § CDPH IPM in Schools
 - § www.cdpr.ca.gov/schoolipm/
- § US EPA IPM
 - § www.epa.gov/pesticides/food/ipm.htm



Occupational Pesticide Illness Prevention Program

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Questions?

