

Personal Protective Equipment Use Data from the California Occupational Pesticide Illness Prevention Program

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Presented on behalf of the Occupation Health Branch,
Occupational Pesticide Illness Prevention Program



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Division of Environmental and Occupational Disease Control (DEODC)

- Environmental Health Investigation
- Occupational Health
- Environmental Health Laboratory
- Childhood Lead Poisoning Prevention

This presentation

Emergency Preparedness Planning—First Responder PPE study planned





Presentation Overview

- Background on OPIPP and Pesticide use in California
- Data on Occupation Pesticide Illness (OPI) in CA
- PPE data related to OPI in CA
- Recommendations

CDPH

Occupational Pesticide Illness Prevention Program

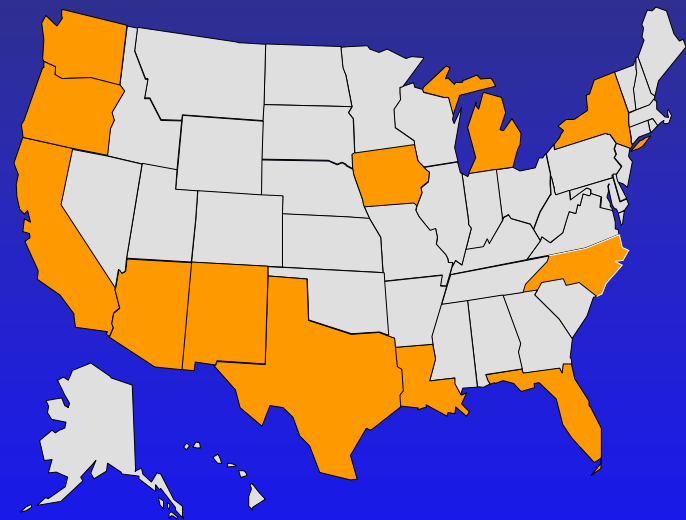


- Statewide work-related pesticide illness tracking
- Investigation of select incidents
- Outreach/Dissemination

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

OPIPP is Part of a National System (SENSOR)*

- **12 States track pesticide illness**
 - Standardized variables, case classification, severity index
- **Shared expertise, methods, tools, data**
- **Other tracked conditions**
 - Asthma, burns, fatalities, etc.



States That Track Pesticide Illness

*Sentinel Event Notification System for Occupational Risk

<http://www.cdc.gov/niosh/topics/pesticides/>

Pesticide Illness Case Work Flow



2995 total reports

Case classification

1474 Pesticide Illness Cases *
1998-2006





Sources of information

- Reports from various sources
- Pesticide label data
- Online sources (EPA Pesticide info, etc)
- Medical records
- Field investigations
 - Site visit
 - Interviews



Data Abstraction

- Demographics
- Industry, occupation
- Exposure information
 - Location, activity, why occurred
- Chemical information
- PPE
- Health effects/medical information

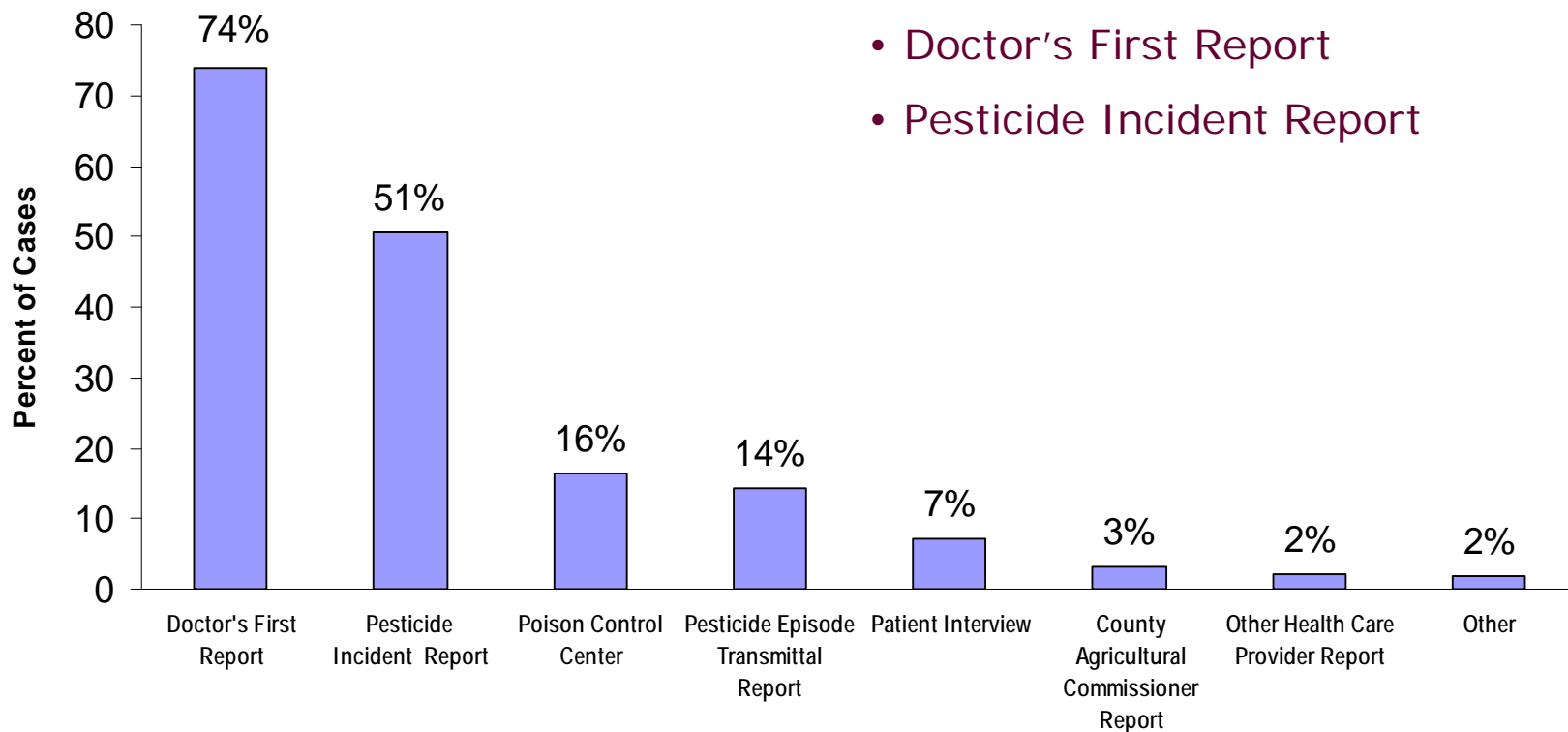


Pesticide Illness Case

- Surveillance case definition: any acute adverse health effect resulting from exposure to a pesticide product
- Case classification
 - ✓ Documentation of Pesticide Exposure
 - ✓ Documentation of Adverse Health Effect
 - **Two or more** new post-exposure abnormal signs and/or test/laboratory findings reported by a licensed health care professional.
 - ✓ Evidence of exposure/health-effect relationship

Initial Report Source for 1474 Workers with Acute Pesticide Illness

California, 1998-2006



* Includes Definite, Probable, and Possible cases. Excludes all cases related to disinfectants.

An additional 1585 reports were classified as Suspicious, Unlikely, Insufficient Information, Asymptomatic, and Not a Case according to the [NIOSH case classification system](#).

Industry of OPI Cases

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

Includes
Janitorial &
Landscape
Industries

Ten Most Common Health Effects of Workers with Acute Pesticide Illness

Health Effect	Percent
Headache	38.1%
Eye 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%

Activity at Time of Pesticide Exposure for 1474 Workers

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%)



Types of PPE*

1. Respirator, air supplied
2. Respirator, half mask/full face
3. Dust mask/disposable respirator
4. Rubber/chemically resistant boots
5. Gloves, cloth or leather
6. Gloves, rubber or synthetic
7. Chemical goggles, face shield
8. Chemically resistant clothing
9. Engineering controls

*NIOSH Standardized Variables



PPE Data Categories*

1. PPE worn, required
2. PPE worn, not required
3. PPE worn, undetermined if required
4. PPE not worn, required
5. PPE not worn, undetermined if required
6. PPE not worn, not required
7. Not applicable (PPE use not required)
8. Unknown

*NIOSH Standardized Variables

Example of PPE instructions for Lannate (methomyl)

PERSONAL PROTECTIVE EQUIPMENT

Applicators and others exposed to the diluted spray solution must wear:

- Long-sleeved shirt and long pants.
- Chemical resistant gloves such as barrier laminate or butyl rubber.
- Shoes plus socks.
- Protective eyewear.

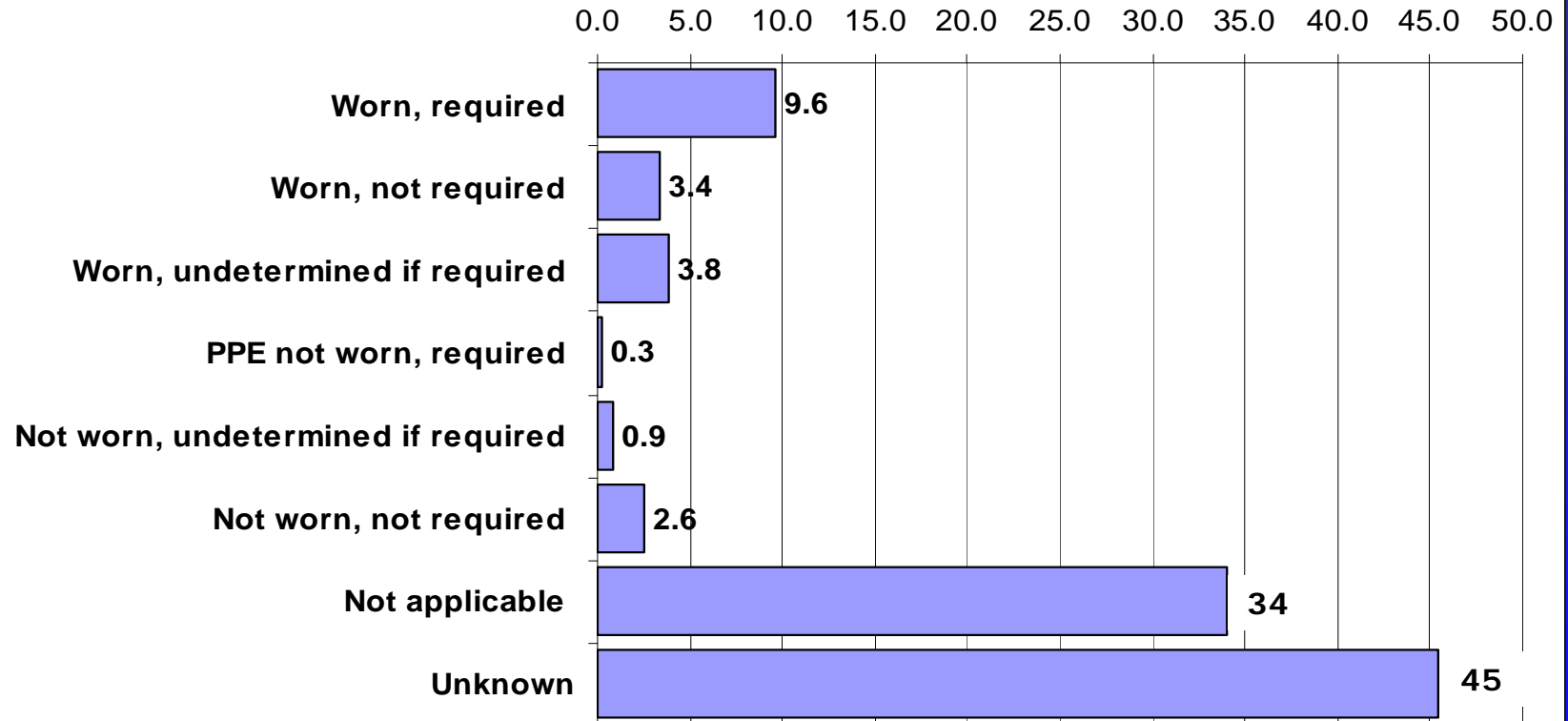
Mixers, loaders, cleaners, repairers of application equipment, and others exposed to the concentrate must wear:

- Long sleeve shirt and long pants.
- Chemical-resistant gloves, such as barrier laminate or butyl rubber.
- Socks and chemical resistant footwear.
- Protective eyewear.
- Respirator as outlined below.
- Chemical resistant apron.

PPE Findings – 1472 Cases

Overall PPE Use

% of Cases (N=1474)





Not Applicable and Unknown

Not Applicable ~45%

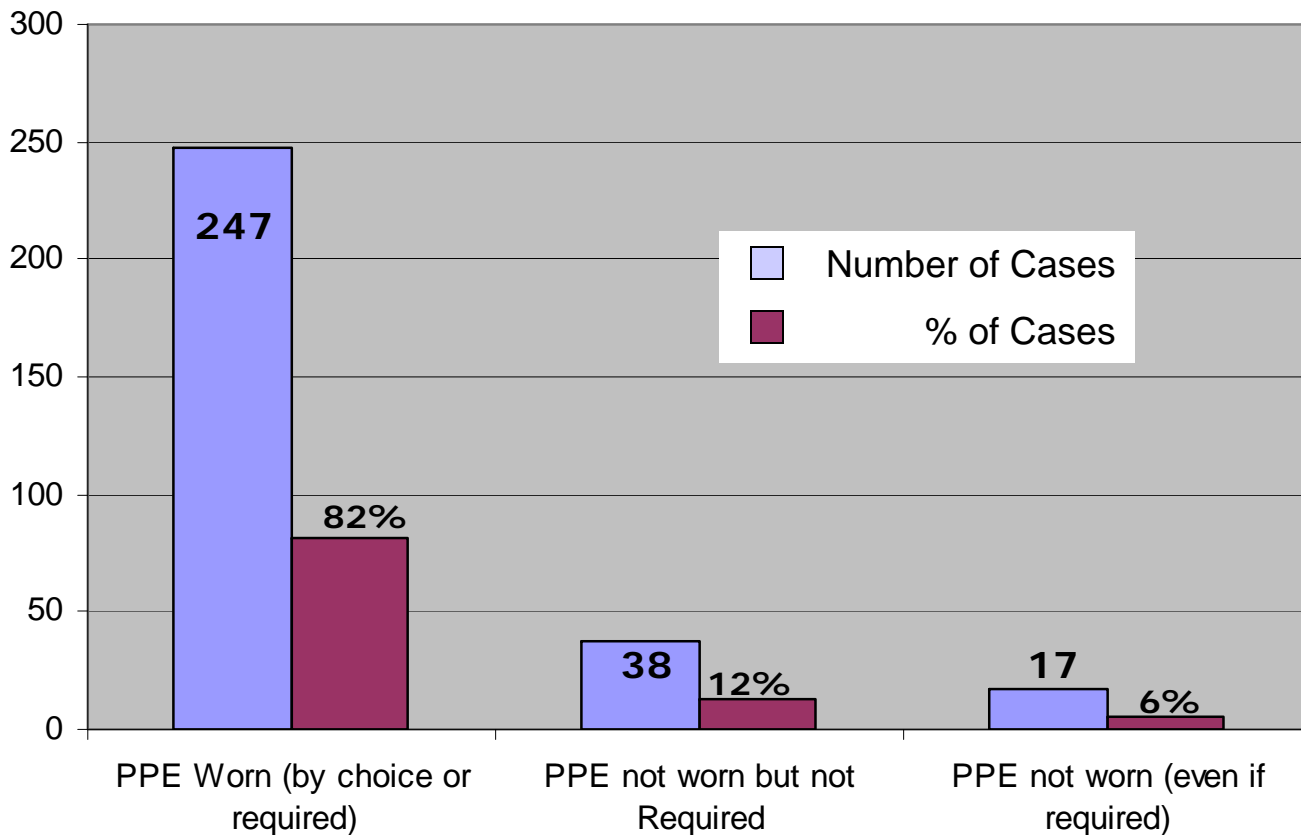
- PPE not expected to be used for the specific activity
- Examples:
 - Insecticide sprayed in office setting.
 - Pesticide drift

Unknown ~34%

- We do not have enough information to say anything about the case

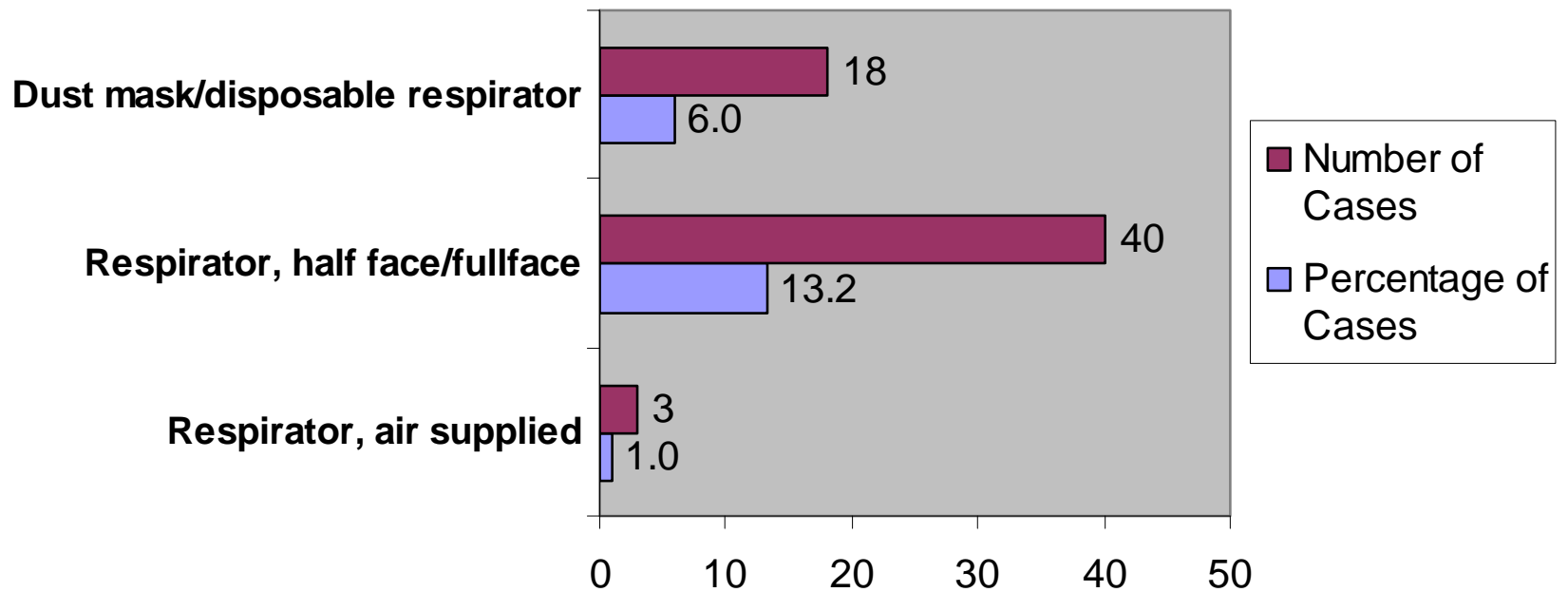
Reported PPE Use

Number and Percentage of PPE Use Among 302 Cases



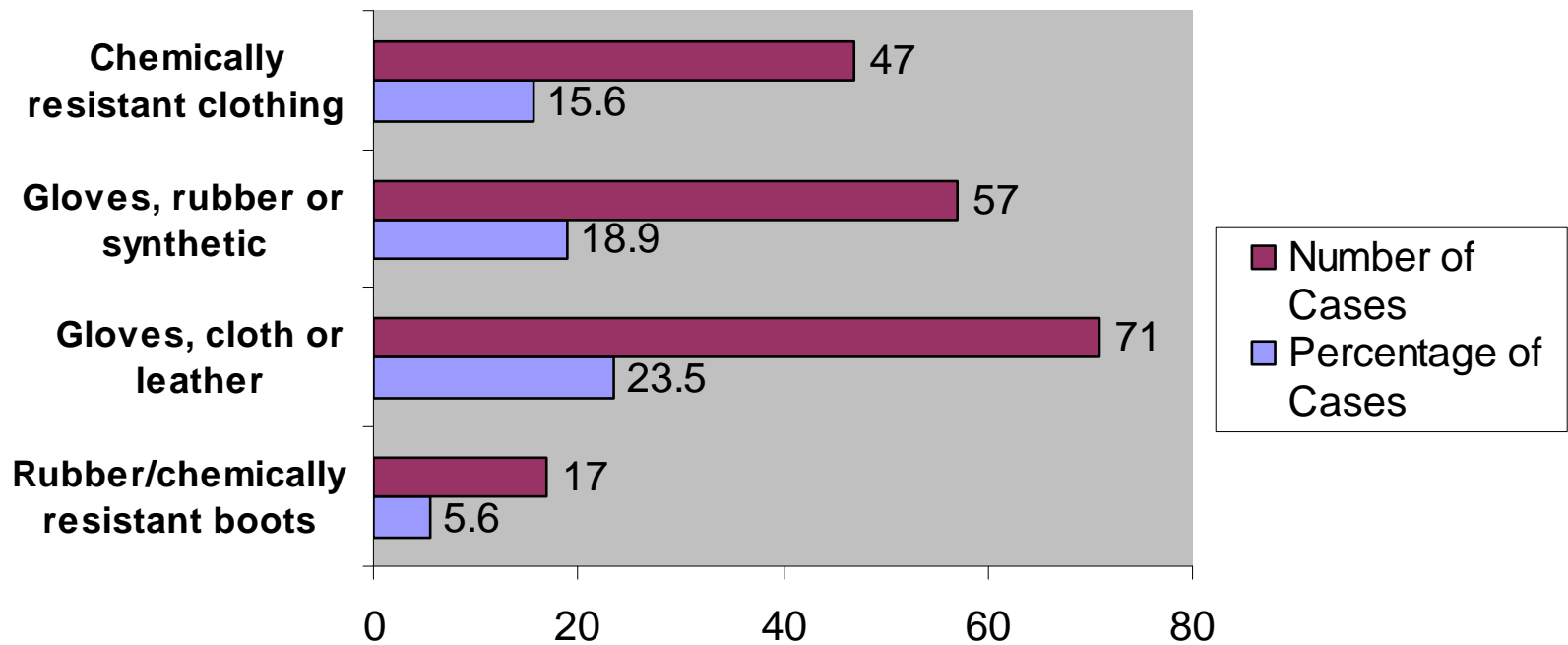
Respirator PPE

Type of Respiratory PPE Used by those Using PPE - Number and Percentage (N=302)



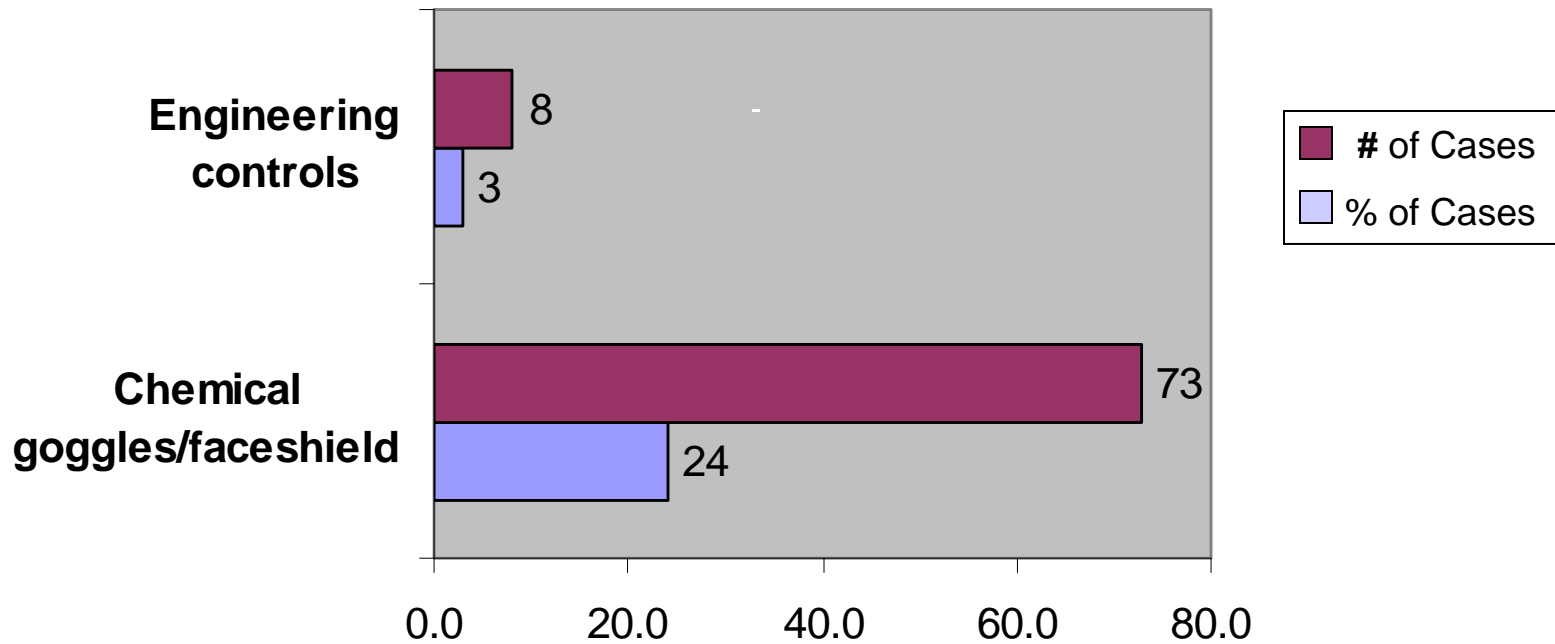
Dermal PPE

**Type of Dermal PPE Used by Those Using PPE -
Number and Percentage (N=302)**



Goggles and Other

Goggles and Engineering Controls for those Using PPE - Number and Percentage (N=302)





Limitations and Data Gaps

- Data not readily available through passive surveillance methods
- Obtaining PPE information labor intensive
- Denominator data for PPE use
 - How many workers use PPE
- Have not yet conducted an analysis of type of illness compared with PPE used



Summary of PPE and OPI

- Passive surveillance systems may be used to collect information on PPE
 - Supplement with active information gathering
- Illness most common among workers not required to wear PPE
- Workers become ill despite PPE use
 - Goggles/face shield > gloves > chemical-resistant clothing > respirators



How Findings Advance Field

- Surveillance systems should be utilized to obtain PPE information
- PPE is only one component of worker protection
- Data may be used to assess adequacy of control methods for workers potentially exposed to pesticides



Recommendations to Improve Workplace Safety

- Reduce use of hazardous substances
 - Substitute with safer alternatives
- Improve engineering controls
 - Application methods that reduce non-target exposure (such as drift)
- Improve worker training
- Enforce/improve other regulatory controls
- Reassess adequacy of PPE requirements



How Findings Relate to Industry Sector

- Findings most relevant to agriculture
- Service sector also prominent
- Pesticide illness affects multiple industries
- General recommendations for prevention apply to all sectors



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