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Surveillance of acute Occupational Pesticide-related Illness: The US Experience

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= A B S T R A C T =

Pest control is required for protecting the food supply and for controlling disease vectors. Unfortunately, there is no perfectly safe form of pest control. Pesticides are commonly used for pest control. Pesticides are defined under the US Federal Insecticide Fungicide and Rodenticide Act(FIFRA) as any substance or mixture of substances intended to prevent, destroy, repel, or mitigate pests, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant(40 CFR Part 152). Currently in the United States, there are 890 active ingredients registered as pesticides. Approximately one billion pounds of active ingredient are used in the US per year. Unlike most chemicals(anti-neoplastic and anti-microbial medications are the principal exceptions), pesticides are specifically designed to kill and cause harm. Because society allows these chemicals to be disseminated into the environment, it is important to monitor the health effects associated with these releases. This represents an important justification for establishing and maintaining surveillance systems for acute pesticide-related illness and injury. A comprehensive, national surveillance system for acute pesticide-related illness and injury does not currently exist in the US. Although the United States has several surveillance systems for this condition, none provide a complete understanding of the problem of acute pesticide-related illness and injury. The Toxic Exposure Surveillance System(TESS) and Bureau of Labor Statistics(BLS) are useful for assessing magnitude and trends. The state-based surveillance systems are more useful for timely identification of outbreaks and emerging problems. Efforts are underway to increase the number of states that conduct surveillance, and to broaden the use of the standardized case definition to facilitate aggregation of data across states. Through such efforts, a comprehensive, national surveillance system may be attainable.

가 ,

(State-based surveillance systems)

(US Federal Insecticide, Fungicide and Rodenticide Act, FIFRA)

31 , ,

(Zeitz, MacDonald Yoon, 1998; Freund, , 1989; Calvert , 2000). 8 (Arizona, California, Florida, Louisiana, New York, Oregon, Texas, Washington)

(40 Code of Federal Regulation[CFR] Part 152).

890 가

(active ingredients)

10 가 (Aspelin and Grube,

1999).

20,000

() ,

, 5 (California, Florida, New York, Oregon Texas)

(Sentinel Events Notification System for Occupational Risks, SENSOR)

(National Institute for Occupational Health and Health, NIOSH)

가

가

8

가

(sentinel health care professionals)

(3 14 [

: 188 , 가 : 123 , 가

가

: 3], BLS, 2001)

가

가

(poison control centers),

가

(

가

(:

, 1998,

, 1994)

Migrant Legal Aid)

(: state agricultural departments, state structural pest control boards)

가 가
 , 가 가 가
 , ,
 1992-1996 California, New York, Texas
 Oregon
 775 1,102 . 1991 1996
 California (1)
 가 ,
 (2)가가
 , 가 50%
 (3)(Calvert , 2000).

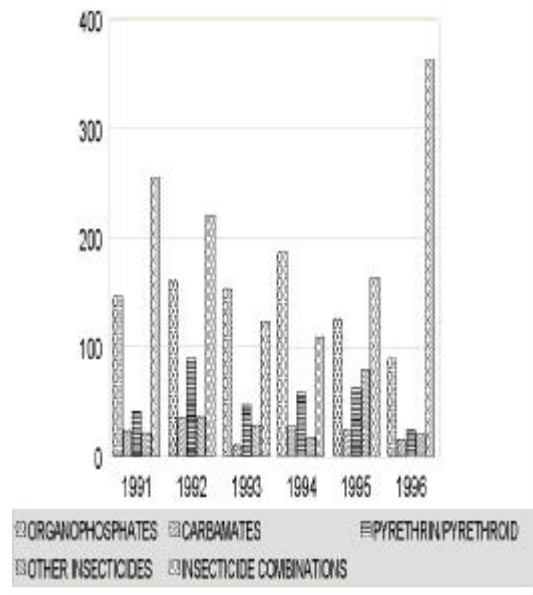


Fig. 2. Number of Acute Occupational Insecticide-related Illnesses by Insecticide Category in California, 1991-1996

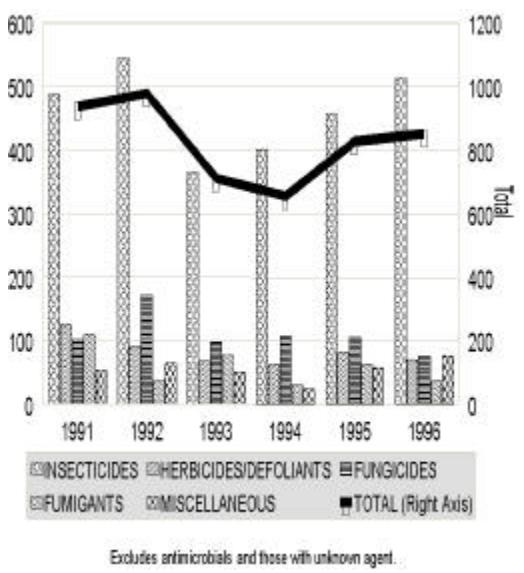


Fig. 1. Number of Acute Occupational Pesticide-related Illnesses by Pesticide Category in California, 1991-1996

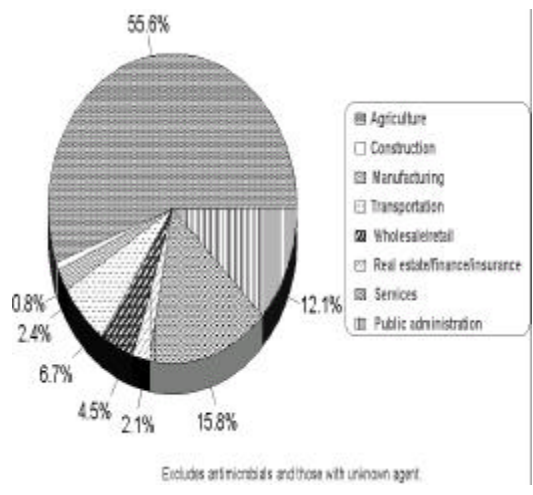


Fig. 3. Proportion of Acute Occupational Pesticide-related Illnesses by Major Industrial Category in California, 1991-1996

Table 1. Web addresses of state-based acute pesticide-related illness surveillance programs

State	Web Site
Arizona	http://www.hs.state.az.us/edc/inv&surv.htm
California	http://www.dhb.org/aginjury.htm#about HESIS
Florida	http://www.doh.state.fl.us/
Louisiana	http://www.dhh.state.la.us/flogfvc.htm
New Mexico	http://www.health.state.nm.us/index.htm (pesticide information not currently provided)
New York	http://www.health.state.ny.us/index.htm
Oregon	http://www.chdhr.state.or.us/eop/pest/welcome.htm
Texas	http://www.tdh.texas.gov/epidemiology/eed.html
Washington	http://www.doh.wa.gov/ehp/ts/pest.htm

TESS(Toxic Exposure Surveillance System)

TESS (American Association of Poison Control Centers, AAPCC)

(poison control centers, PCC) 85% (Litowitz, 1999). 81% PCC

TESS 가 가 (US EPA)

1993 가 , 1993

1996 6,323 , 63%가 (organophosphates pyrethins/pyrethroids) (Calvert, 2000).

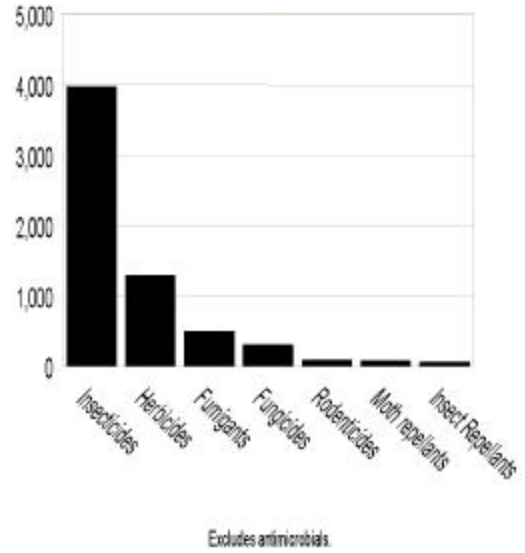


Fig. 4. Number of Acute Occupational Pesticide-related Illnesses by Pesticide Category(TESS, 1993- 1996)

(Bureau of Labor Statistics, BLS)

1992 , BLS 1970

(Occupational Safety and Health Act)

1992 1996 504 -914 (5).

가 , 가 가 , 가

(BLS, 2000).

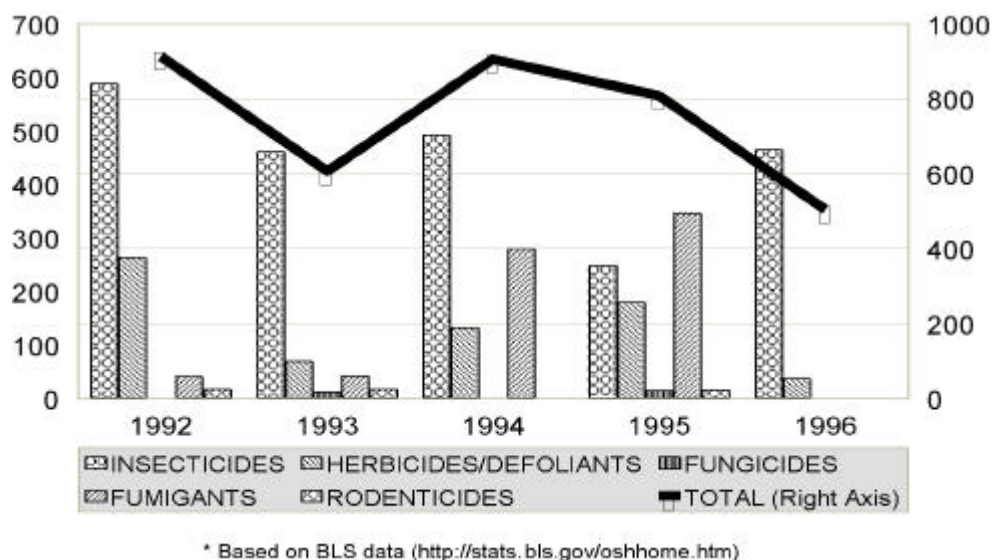


Fig. 5. Number of Occupational Pesticide-related Illnesses by Pesticide Category in the US, 1992-1996

Table 2. Summary of pesticide surveillance system in us

	State-based Surveillance	TESS ¹⁾	BLS ²⁾
Coverage	Arizona, California, Florida, Louisiana, New York, Oregon, Texas, Washington	81% of US population	Sampled private industries
Data source	Physicians, PCC, Emergency medical services, Other health care professionals, Clinics, Laboratories, Hospital Records, Migrant legal aids, Agricultural department, Death certificates, Worker's compensation claims	Poison Control Center (PCC)	Annual survey of employers
Others	Some states are partially funded by NIOSH (SENSOR ³⁾)	Data is purchased by EPA ⁴⁾ .	Estimated statistics. comparatively severe cases.

1) Toxic Exposure Surveillance System.

2) Bureau of Labor Statistics.

3) Sentinel Events Notification System for Occupational Risks.

4) Environmental Protection Agency.

가 California
 phosalone
 phosalone 20 가
 가
 가 (OMalley and
 McCurdy, 1990).
 (Centers for Disease Control
 and Prevention, 1994; Washington State Department
 of Agriculture, 1994).
 (intervention)

가 Conclusion

가 가 가
 , 가 , TESS BLS
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 . 1998 7 34
 2 carbofuran 가 가
 가 가 가
 (Centers for Disease Control and Prevention, 1999).

28 Carbofuran , 48
 (, 2002) (, 2002)
 가
 (, 2002),
 (, 2002).

- 가
- 가
- 10% (, 2002)
1. , . 1998; 23(1): 39-50
 2. . 2001 . , 2002
 3. . 2001 . 2002
 4. , . 가 . 1994; 15(9): 559-571
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