FLORIDA DEPARTMENT OF HEALTH

DIVISION OF Environmental Health

Bureau of Community Environmental Health
Chemical Surveillance
Florida Hazardous Substances Emergency Events Surveillance (FL HSEES)

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Acute illnesses associated with pesticide exposure at schools

JAMA. 2005 Jul 27; 294(4):455-65

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Outline

1. Summary
    1. First study nationwide
    2. Magnitude of the problem + associated factors
    3. Data from three surveillance systems
2. Outcomes so far
    1. Publication in JAMA
    2. Media coverage
    3. Contributed to legislation introduced
3. Next steps
    1. School integrated pest management link
    2. Monitor integrated pest management implementation
    3. Fact sheet development

Questions

1. Are acute pesticide-related illnesses a problem in US schools?
2. If so, what can be done to prevent these illnesses?

Incidents and case reports

- **California Department of Pesticide Regulation**
  - — **2000: 62 cases**
- **Beyond pesticides.** **School pesticide incidents around the country**
  - — **About 40 incidents**
- **Media report.**
  - — **About 600 cases exposed to Pesticide drift in Texas in May, 2005**

Methods

- **Period: 1998–2002**
- **Three pesticide surveillance systems:**
  1. **Sentinel Event Notification System for Occupational Risks (SENSOR) – National system**
  2. **California Department of Pesticide Regulation [CDPR] – California**
  3. **Toxic Exposure Surveillance system (TESS) – National System**

Methods

- **Case definition:**
  1. Illness subsequent to pesticide exposure at schools
  2. Illness consistent with known toxicology of pesticide
- **Illnesses severity:**
  1. High
  2. Moderate
  3. Low
- **Pesticide exposure (SENSOR/CDPR cases only)**
  1. Applications on school property
  2. Drift from neighboring farm fields

Age groups by surveillance systems

(n=2,593)

Age groups	SENSOR/ CDPR n	(%)	Poison control centers n	(%)	Total n	(%)
Total	406	(16)	2,187	(84)	2,593	(100)
Children	149	(37)	1,831	(84)	1, 980	(76)
Adults	254	(62)	274	(13)	528	(20)
Unknown	3	(1)	82	(3)	85	(4)

Illness severity by surveillance systems

(n=2,593)

Severity	SENSOR/ CDPR		Poison control centers		Total	
	n	(%)	n	(%)	n	(%)
Total	406	(16)	2,187	(84)	2,593	(100)
High	1	(<1)	2	(<1)	3	(<1)
Moderate	59	(15)	216	(10)	275	(11)
Low	346	(85)	1,969	(90)	2,315	(89)

Pesticide class by surveillance systems

(n=2,593)

Pesticide class	SENSOR/ CDPR		Poison control centers	
	n	(%)	n	(%)
Total	406	(16)	2,187	(84)
Insecticides	270	(67)	625	(29)
Disinfectants	99	(24)	731	(33)
Repellents	3	(1)	332	(15)
Herbicides	21	(5)	258	(12)
Other	13	(3)	241	(11)

Age groups by site of exposure

(SENSOR/CDPR only)

(n=406)

Age groups	School grounds		Drift from farms	
	n	(%)	n	(%)
Total	281	(69)	125	(31)
Children	90	(32)	59	(47)
Adults	191	(68)	63	(50)
Unknown	0	( )	3	(3)

Illnesses by case category

(SENSOR/CDPR only, n=406)

Category	n (%)
School employees	242 (60)
Students	146 (36)
Parents	6 (1)
Unknown-N/A	12 (3)

Among 242 school employees	n (%)
Handled pesticides	93 (38)
No pesticide handling	143 (59)
Unknown	6 (3)

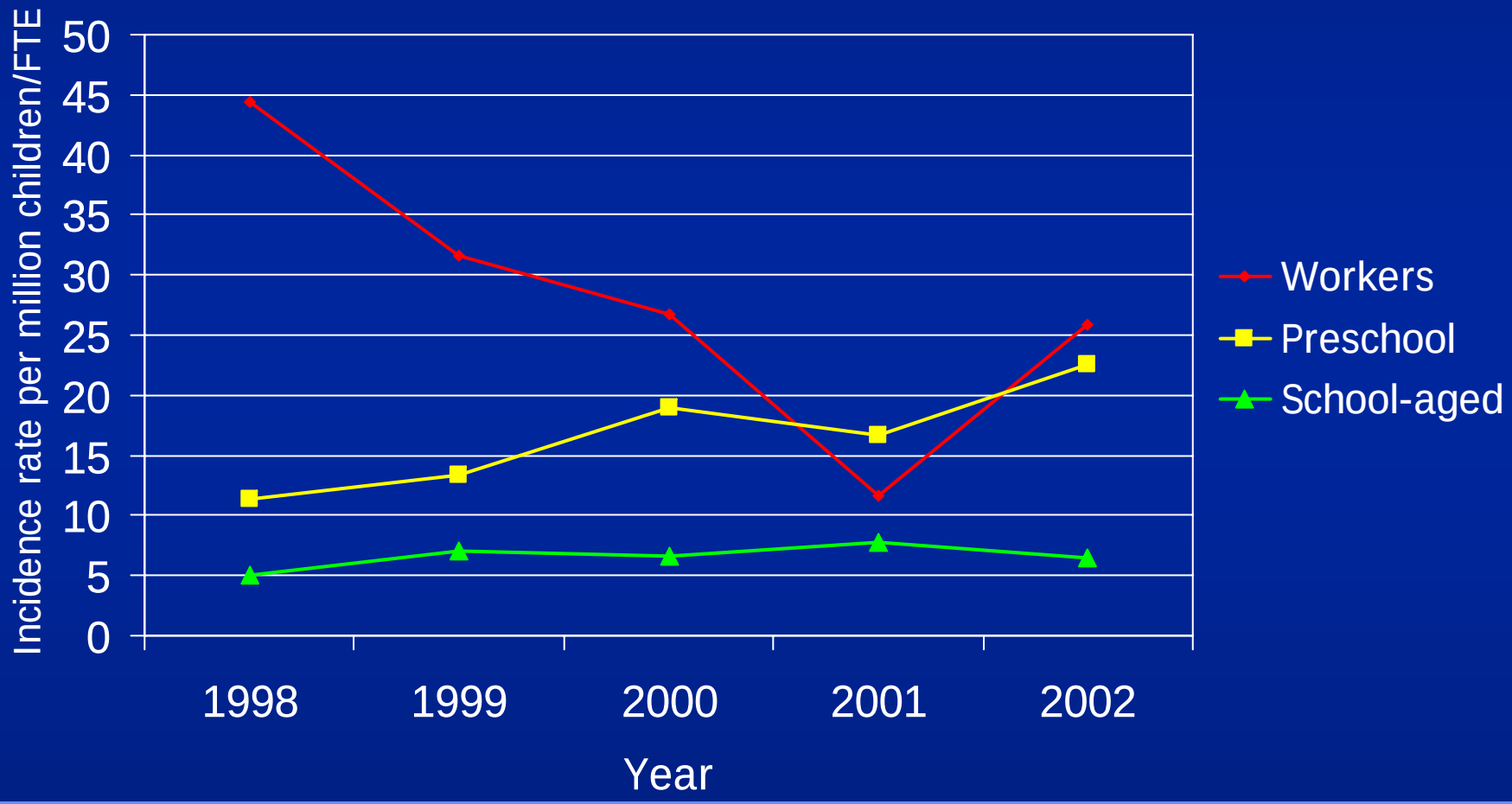
Incidence rates

per million children / per million full time equivalents (FTEs)

Age group	Number cases	Population	Incidence rate
Children	1 972	265 738 476	**7.4** cases / million children
Workers	244	8 938 032	**27.3** cases / million FTEs

Incidence rate trends

per million children / per million FTEs



Limitations

- Low estimates of magnitude
- Possibility of false positives
- Three different surveillance systems

Conclusion

Pesticide exposures at schools continue to produce acute illnesses among school employees and students

- Pesticide applications at schools
- Pesticide drift from farm fields

Recommendations

To prevent acute pesticide-related illnesses associated with:

Pesticide applications at schools —**implement**→ **Integrated pest management strategies**

Pesticide drift from farms —**adapt**→ **application methods that prevent drift**

Pesticide drift from farms —***establish***→ **"buffer" non-spray zones**

School Integrated Pest Management (IPM)

Impact

1. **Published in the JAMA and cited by other articles**

- **Pesticide Exposure at Schools and Acute Illnesses.** Kirrane and Hoffman. *JAMA* 2005;294:2431-2431**.**
- **Pesticide-Related Illnesses at School** *Journal Watch Dermatology* 2005;2005:10-10.
- **Pesticide Exposure at School Can Make Kids Sick.** *Journal Watch Pediatrics and Adolescent Medicine* 2005;2005:3-3.
- **Pesticide-Related Illnesses at School.** *Journal Watch (General)* 2005;2005:2-2.
- **What's new in the other general journals Tonks.** *BMJ* 2005;331:311-312.

Impact

2. Wide media coverage (16 interviews):

- AP, ABC news, US News & World Report, The Miami Herald, Health Day, LA times, NBC News Channel, Daily News - NY city, Orlando Sentinel, The Sacramento Bee.
  500+ news stories

— Reaction:

- Industry: grade A+I = Alarmist + incomplete
- EPA, Advocacy groups: support and encouragement

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School study sparks pesticide row

Campaigners have called for action to protect children after research highlighted a link between illness and pesticide use in or near schools.

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Pesticides May Be Sickening School Kids

Report Finds That Pesticide Use in or Near Schools Sickened More Than 2,500 in Five Years

By LINDSEY TANNER AP Medical Writer

AP Associated Press

CHICAGO Jul 26, 2005 — Pesticide use in or near U.S. schools sickened more than 2,500 children and school employees over a five-year period, and though most illnesses were mild, their numbers have increased, a nationwide report found.

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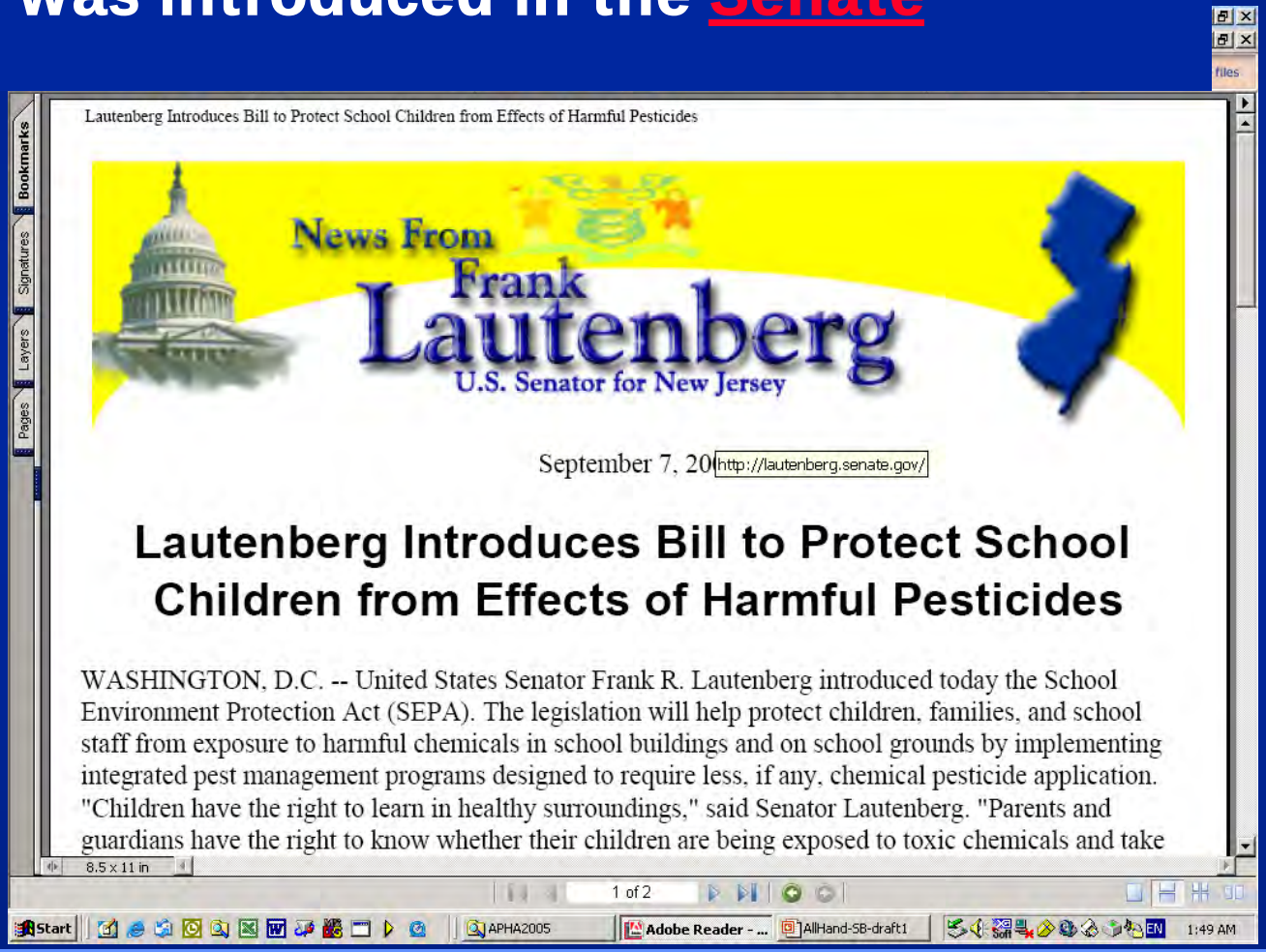
Illnesses from pesticides rising in schools

Researchers say long-term effects of chemicals on kids unknown

Health

Impact

3. Legislation was introduced in the Senate



SECTION 2 - Outcomes

1. **Published in the JAMA:**
   - **"Acute illnesses associated with pesticide exposure at schools"**

     JAMA. 2005 Jul 27; 294(4):455-65.

2. **Wide media coverage (16 interviews):**
   - **AP, ABC news, US News & World Report, The Miami Herald, Health Day, LA times, NBC News Channel, Daily News - NY city, Orlando Sentinel, The Sacramento Bee. ⟹ 500+ news stories**
   - **Reaction:**
     - **Industry: grade A+I = Alarmist + incomplete**
     - **EPA, Advocacy groups: support and encouragement**

2 - Outcomes

3. Wide media coverage (radio):
   - US: AP radio, CNN radio, KDKA, WFUV in the Bronx, NPR Radio (Boston)
   - UK: BBC-Farming today

Section 3: Next Steps

1. Include link to school integrated pest management within SENSOR-Pesticides webpage

2. NIOSH fact sheet based on the findings of the article

3. Monitor number of school districts, cities, and states that adopt integrated pest management programs

School IPM elements

1. Monitoring pest problems
2. Identifying and eliminating sources of pests using non-toxic methods
3. If pesticide use is necessary:
   - Use pesticides with the least toxicity–avoid toxicity categories I and II
   - Prior written communication
   - Students and staff should not be present
4. Call poison control center or seek medical care
5. Application by trained and qualified workers
6. School's policy on pest control in writing
7. Involve and train stakeholders

Regulations on pesticide use at schools

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

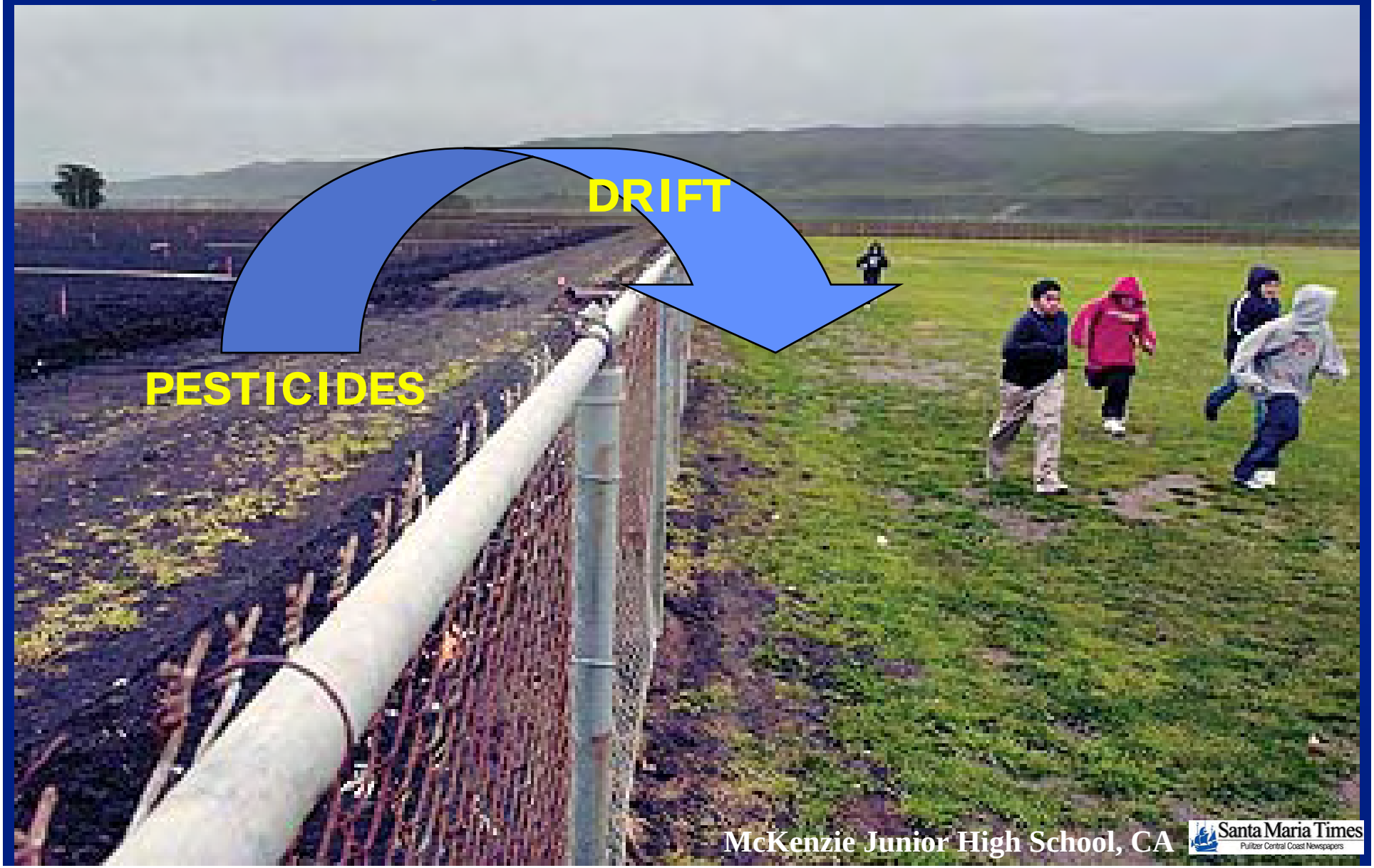
No specific regulations to reduce pesticide exposures at schools

At the State level:

— 18 states recommend (n=6) or require (n=12) schools to use integrated pest management (IPM) strategies.

—7 states restrict pesticide applications near schools.

Pesticides used in neighboring farmland might drift onto schools



QUESTIONS AND ANSWERS

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