Injecting-Drug Users — Continued

References

1. Eastern Regional Health Authority and National Disease Surveillance Centre. Serious unexplained illness among injecting drug users in Scotland: update. Eurosurveillance Weekly 2000;4:000601. Available at http://www.eurosurv.org/2000/000601.htm. Accessed June 2000.
2. Høiby EA. Systemic anthrax in an injecting drug user: Oslo, Norway—April 2000. Eurosurveillance Weekly 2000;4:000511. Available at http://www.eurosurv.org/2000/000511. Accessed June 2000.
3. Dixon TC, Meselson M, Guillemain J, Hanna PC. Anthrax. N Engl J Med 1999;341:815–26.
4. The Working Group on Severe Streptococcal Infections. Defining the group A streptococcal toxic shock syndrome. JAMA 1993;269:390–1.
5. Reingold AL, Hargrett NT, Dan BB, Shands KN, Strickland BY, Broome CV. Nonmenstrual toxic shock syndrome: a review of 130 cases. Ann Intern Med 1982;96:871–4.
6. McGregor JA, Soper DE, Lovell G, Todd JK. Maternal deaths associated with *Clostridium sordellii* infection. Am J Obstet Gynecol 1989;161:987–95.
7. Binswanger IA, Kral AH, Bluthenthal RN, Rybold DJ, Edlin BR. High prevalence of abscesses and cellulitis among community-recruited injection drug users in San Francisco. Clin Infect Dis 2000;30:579–81.
8. Vlahov D, Sullivan M, Astemborski J, Nelson KE. Bacterial infections and skin cleaning prior to injection among intravenous drug users. Public Health Rep 1992;107:595–8.
9. CDC. Tetanus among injecting-drug users—California, 1997. MMWR 1998;47:149–51.
10. Passaro DJ, Werner SB, McGee J, Mac Kenzie WR, Vugia DJ. Wound botulism associated with black tar heroin among injecting drug users. JAMA 1998;279:859–63.
11. Böhlen LM, Mühlemann K, Dubuis O, Aebi C, Täuber MG. Outbreak among drug users caused by a clonal strain of group A streptococcus. Emerg Infect Dis 2000;6:175–9.

Illnesses Associated With Use of Automatic Insecticide Dispenser Units — Selected States and United States, 1986–1999

To control indoor flying insects, restaurants and other businesses commonly use pyrethrin and pyrethroid insecticides sprayed from automatic dispensing units. Usually placed near entrances, these units are designed to kill flying insects in food service or work areas. On May 18, 1999, the Florida Department of Health (FDH) was notified by the Florida Department of Business and Professional Regulation (DBPR) that during May 12–17, three persons developed pesticide-related illnesses associated with improperly placed automatic insecticide dispensers. After FDH conducted a follow-up investigation and notified CDC's National Institute for Occupational Safety and Health (NIOSH) of this event, surveillance data were reviewed to identify additional cases of pesticide-related illnesses associated with automatic insecticide dispensers. Data were provided by the Toxic Exposure Surveillance System (TESS), the California Department of Pesticide Regulation (CDPR), the Montana Department of Agriculture (MDA), the National Pesticide Telecommunications Network (NPTN), and the Washington State Department of Health (WSDH)*. This report describes cases, summarizes surveillance data for pesticide-

*The data from TESS, NPTN, and MDA were provided by the U.S. Environmental Protection Agency (EPA). EPA and several state health departments collaborate with NIOSH and CDC's National Center for Environmental Health to conduct surveillance of acute pesticide-related illness and injury.

related illnesses associated with automatic insecticide dispensers, and provides recommendations for safe dispenser use.

Case Reports

Cases 1–3. A 42-year-old cook working at a Florida restaurant developed a sore throat, dyspnea, headache, and dizziness on May 12, 1999, after a several-hour exposure to mist released from insecticide dispensers in the food preparation area. The insecticide dispensers had been installed on May 10, but it is unknown on what day the cook was first exposed. The cook removed the dispensers on May 12 and noted relief of his symptoms. However, the restaurant management reinstalled the dispensers on May 14, and on May 15, a 40-year-old male customer developed headache and shortness of breath within 1 hour of entering the restaurant. These symptoms lasted approximately 4 hours. On May 17, approximately 45 minutes after leaving this restaurant, a 47-year-old male customer experienced a sharp burning sensation in his left eye and noted swelling, redness, and irritation of the eyelid that persisted approximately 24 hours. The implicated pesticide dispenser was within 6 feet of the booth where this customer had been sitting, and it faced his left eye. This person reported his symptoms to DBPR on May 18. None of the three persons sought medical attention for their symptoms. The active ingredients released by these dispensers were pyrethrin and piperonyl butoxide.

Case 4. On August 20, 1995, a 17-year-old male restaurant employee in California was changing the cartridge of an automatic insecticide dispenser. When he closed the dispenser panel, the firing mechanism was activated and discharged a pyrethrin-containing mist into his right eye. The employee immediately experienced burning in the eye and promptly sought medical attention at the emergency department of a local hospital. He was diagnosed with chemical conjunctivitis and treated symptomatically.

Surveillance Data

TESS is maintained by the American Association of Poison Control Centers and collects poisoning reports submitted by approximately 85% of U.S. poison control centers (*1*). A review of TESS data from 1993 through 1996, the most recent years for which data are available, identified 54 cases of pesticide-related illnesses associated with automatic insecticide dispensers; suicides and intentional misuse/abuse were excluded. Among the 42 cases for which specific age information was available, the median age was 22.5 years (range: 3–73 years). Among the 53 cases for which sex was known, 27 (50%) were male. Twenty (37%) cases were work-related. In all cases, pyrethrin/piperonyl butoxide was the responsible insecticide.

During 1986–1999, 43 cases of acute pesticide-related illnesses associated with automatic insecticide dispensers were reported to CDPR (32 cases), MDA (four cases), FDH (three cases), NPTN (two cases), and WSDH (two cases). Age, sex, and state of occurrence for these cases were compared with those from the TESS database, and no overlap with TESS data was found. Thirty-five (81%) of these cases were in persons exposed while at work, including seven whose exposure occurred during dispenser cartridge replacement or attempts to service faulty dispensers. Seven (16%) cases were in persons exposed while they were customers in restaurants, and one was a movie theater customer. For the 27 with age data available, the median age was 40 years (range: 17–68 years); for the 38 with information on sex, 23 (61%) were women. Resmethrin, a pyrethroid insecticide, was implicated in three cases; the remaining

[†]Comparable information on the circumstances of incidents is not available in the TESS data.

Automatic Insecticide Dispenser Units — Continued

40 were exposed to pyrethrin/piperonyl butoxide. Most insecticide dispenser-related illnesses identified in the non-TESS data† occurred when the dispensers were improperly placed too close (i.e., <12 feet) to food handling, dining, or work areas; were placed where ventilation currents entrained the mist to such areas; and/or were serviced by persons unfamiliar with proper maintenance of these units.

Among the 94 pyrethrin/piperonyl butoxide-exposed cases in the combined surveillance data, signs and symptoms for 36 (38%) involved the eye; 34 (36%), the neurologic system; 26 (28%), the respiratory system; 23 (24%), the gastrointestinal system; 20 (21%), the nose and throat; 10 (11%), the skin; and eight (9%), the cardiovascular system. Some persons experienced signs and symptoms in more than one system. Among the three resmethrin-exposed cases, reported signs and symptoms included pruritus, throat irritation, nausea, vomiting, diarrhea, headache, burning sensation in the lungs, and cough.

Reported by: O Shafey, PhD, Bur of Environmental Epidemiology, Florida Dept of Health. L Mehler, MD, California Dept of Pesticide Regulation. L Baum, Pesticide and Surveillance Section, Washington State Dept of Health. Office of Pesticide Programs, US Environmental Protection Agency. Div of Environmental Hazards and Health Effects, National Center for Environmental Health; Div of Surveillance, Health Evaluations, and Field Studies, National Institute for Occupational Safety and Health; and an EIS Officer, CDC.

Editorial Note: This report is the first to document pesticide-related illnesses attributable to automatic insecticide dispensers. Automatic insecticide dispensers are registered by the U.S. Environmental Protection Agency (EPA) for use in the restaurant industry and in other public settings, including schools, hotels, offices, supermarkets, hospitals, day-care centers, and long-term–care facilities (e.g., nursing homes). When used properly, automatic insecticide dispensers reduce the number of flying insects. However, given the dispensers' widespread use and potential for malfunction and/or improper use or maintenance, these units may pose a public health hazard.

Insecticide dispensers of the type described in this report are typically calibrated to spray automatically a fine mist of 50–100 mg of insecticide (consisting of approximately 0.5%–1.85% pyrethrin or resmethrin, along with other active and inert ingredients) every 15 minutes, 24 hours per day. Pyrethrins are insecticides derived from the oleoresin extract of dried chrysanthemum flowers (pyrethrum) (*2*). Piperonyl butoxide (either alone or combined with n-octyl bicycloheptene dicarboximide) often is added to pyrethrin products to inhibit microsomal enzymes that detoxify pyrethrins (*2*). Although pyrethrins (classified by EPA as acute toxicity category III compounds§) have little systemic toxicity in mammals, they possess irritant and/or sensitizing properties that can induce contact dermatitis, conjunctivitis, and asthma (*2,3*). Anaphylactic reactions (*2*) and gastrointestinal symptoms (*4*) related to inhalation of and cutaneous exposure to pyrethrin also have been reported; however, no previously published reports were identified associating pyrethrin exposure with reported cardiovascular (i.e., tachycardia, chest pain, and palpitations) or neurologic (i.e., headache, dizziness, malaise, altered taste, and lip numbness/burning) signs and symptoms. Resmethrin is a pyrethroid, a class of synthetic insecticides chemically similar to natural pyrethrins (*2*) and is classified in acute toxicity category III. Pyrethroids are reported to induce abnormal skin sensation, dizziness, salivation, headache, fatigue, vomiting, diarrhea, irritability to sound and touch, and

§ EPA classifies all pesticides into one of four acute toxicity categories based on established criteria (40 CFR Part 156). Pesticides with the greatest toxicity are in category I, and those with the least are in category IV.

Automatic Insecticide Dispenser Units — Continued

other central nervous system effects (*2,5*).

The findings in this report are subject to at least two limitations. First, the surveillance systems that identified cases are passive and may have missed some acute pesticide-related illnesses. Second, lack of detailed information on incidents recorded in the surveillance data may have precluded identification of additional risk factors for insecticide dispenser-related illnesses.

Effective flying insect control can be achieved through nonchemical integrated pest management practices (e.g., proper sanitation practices by employees and installation of air curtains and screens). However, if automatic insecticide dispensers are used, they should be installed according to manufacturer labeling instructions. Warning stickers on dispensers should be considered, installation near supplied-air ducts should be avoided, and timers should be set to dispense insecticide during nonbusiness hours (*6*). Dispensers used in locations frequented by the public should be installed and serviced by commercial pest control operators. Although they are not required by EPA, persons servicing these devices should use personal protective equipment (i.e., chemical-resistant gloves and goggles designed to provide splash protection).

References

1. Litovitz TL, Smilkstein M, Felberg L, Keil-Schwartz W, Berlin R, Morgan JL. 1996 report of the American Medical Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 1997;15:447–500.
2. US Environmental Protection Agency. Recognition and management of pesticide poisonings. 5th ed. Washington, DC: US Environmental Protection Agency, 1999.
3. CDC. Illnesses associated with occupational use of flea-control products—California, Texas, and Washington, 1989–1997. MMWR 1999;48:443–7.
4. Paton DL, Walker JS. Pyrethrin poisoning from commercial-strength flea and tick spray. Am J Emerg Med 1988;6:232–5.
5. Hayes WJ, Laws ER, eds. Handbook of pesticide toxicology. Vol 2. San Diego, California: Academic Press, Inc., 1991.
6. Anderson SR. Assessment of the health risks and handling of products used in food service establishments. J Envir Health 1985;47:200–1.

Probable Locally Acquired Mosquito-Transmitted *Plasmodium vivax* Infection — Suffolk County, New York, 1999

In the United States, malaria transmission was eliminated in the 1940s, and malaria eradication was certified in 1970 (*1*). Since then, 60 small localized outbreaks of probable mosquito-transmitted malaria have been reported to CDC (*2–6*). Before 1995, the number of imported malaria cases reported to the Suffolk County (New York) Department of Health Services ranged from zero to eight per year. Since 1995, seven to 17 cases per year have been reported. In all of these cases, a history of residing in or traveling to an area with endemic malaria outside the United States was confirmed. This report describes the investigation of two cases of *Plasmodium vivax* malaria that occurred in Suffolk County in August 1999; the patients had no history of travel outside of the United States.

Case Reports

Case 1. On August 18, an 11-year-old boy residing in Suffolk County was seen by his physician with a 5-day history of fever, rigors, abdominal pain, arthralgias, and vomiting.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

June 9, 2000 / Vol. 49 / No. 22

MMWR™
MORBIDITY AND MORTALITY
WEEKLY REPORT

Use of Medical Care, Police Assistance, and Restraining Orders by Women Reporting Intimate Partner Violence — Massachusetts, 1996–1997

Approximately 1.5 million women in the United States are physically or sexually assaulted by an intimate partner (IP) each year (*1*). The Woman Abuse Tracking in Clinics and Hospitals (WATCH) Project at the Massachusetts Department of Public Health analyzed data from the 1996 and 1997 Behavioral Risk Factor Surveillance System (BRFSS) in Massachusetts to 1) estimate the percentage of women aged 18–59 years experiencing intimate partner violence (IPV) who used medical care, police assistance, and restraining orders during the preceding 5 years, 2) determine where women experiencing IPV went for medical care, and 3) examine the overlap in use of these three services. This report describes the results of these analyses, which indicate that a higher percentage of women aged 18–59 years use police assistance rather than obtain a restraining order or seek medical care.

BRFSS is an ongoing, state-based, random-digit-dialed telephone survey of the U.S. civilian, noninstitutionalized population aged ≥18 years. Questions on IPV developed by the WATCH Project were added to the Massachusetts BRFSS in 1996 and 1997. During the 2 years, 2940 women aged 18–59 years responded to the survey (response rate: 64.5%). Of these, 129 (5.5%) were excluded from analysis because they either refused or responded "don't know/not sure" to the initial questions about whether they had ever been physically or sexually hurt, and if so, if this was by an IP*. Women aged ≥60 years also were excluded from the analyses because of low levels of reporting recent IPV. Data were aggregated across the 2 years and weighted to reflect the probability of selection and the demographic distribution of the Massachusetts adult population. Estimated proportions and standard errors were calculated using SUDAAN (*2*).

Survey respondents were asked whether they had ever been physically or sexually hurt† by an IP and when this violence last occurred. Respondents who reported IPV during the preceding 5 years also were asked the following questions about service use: 1) "Did you see a doctor or nurse as a result of being hurt by any of these people in the past five years?"; 2) "In the past five years, were the police called about any of these incidents?"; and 3) "In the past five years, have you gotten a restraining order at a court

*Same or opposite sex, current or ex-husband/wife, partner, boyfriend, girlfriend, or date.
† Being physically or sexually hurt included being shoved, slapped, hit with an object, or forced into any sexual activity.