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Severe Acute Respiratory Illness Linked to Use of Shoe Sprays -- Colorado, November 1993

On November 3, 1993, the Colorado Department of Health (CDH) was notified of acute respiratory illness in a Colorado woman following use of an aerosolized leather-shoe conditioner. Active surveillance by CDH identified two additional cases. This report summarizes the case investigations. Patient 1

On November 2, a 44-year-old woman sprayed the entire contents of a 5-oz can of aerosolized leather-shoe conditioner on a pair of boots; the application lasted approximately 5 minutes. She used the product in a small, poorly ventilated room. Approximately 45 minutes later, she developed a severe cough, burning of her eyes and throat, shortness of breath, weakness, wheezing, myalgia, headache, and slurred speech. She was taken to an emergency department; her temperature was 101.1 F (38.4 C); pulse, 100 per minute; blood pressure, 110/60; and respiratory rate, 28 per minute. She had bilateral rales on lung examination and an oxygen partial pressure (PO2) of 60 mmHg in arterial blood on 3 liters of oxygen through a nasal canula. A chest radiograph revealed bilateral midzone interstitial infiltrates. On admission to the hospital, her white blood cell count was 21,300 cells per cubic millimeter with 90% segmented forms, and her hematocrit was 47.3%. Results of tests for liver function, electrolytes, urea, and creatinine were normal. Within 1-8 hours following admission, she developed vomiting, chills, and epigastric cramping. Treatment was initiated with amantadine, erythromycin, and a bronchodilator.

On November 3, the patient's dyspnea had resolved, and she was afebrile; her pulse and respiratory rate were normal. Her chest radiograph showed an almost complete clearing of the pulmonary infiltrates. A persistent dry cough, abdominal cramps, and vomiting resolved gradually during the next 36 hours.

The patient had had a mild upper respiratory-tract illness for 3-4 days before using the spray. She has a 28-year history of smoking approximately 20 cigarettes per day but reportedly did not smoke on November 2 because of her respiratory-tract illness. She had no past history of severe respiratory illness.

As a result of this case, CDH initiated active surveillance for additional cases of acute respiratory illness. Directors of emergency departments and intensive-care units at hospitals in metropolitan Denver were contacted by telephone and facsimile to identify case-patients previously treated for this illness and to request reporting of future cases. In addition, CDH issued a news release to warn the public of the adverse health effects associated with use of sprays in poorly ventilated areas. CDH retrospectively identified two additional cases: patient 2 was identified by patient 1, and patient 3 was identified by a pulmonologist who had read about patient 1 in the newspaper. Patient 2

An 11-year-old boy, who was in an adjacent room when patient 1 used the leather conditioner, developed a burning throat, shortness of breath, cough, and abdominal pain approximately 45 minutes after exposure. He did not seek medical attention. Patient 3

On November 1, a 23-year-old nonsmoking man sprayed three pairs of shoes with a water and soil repellant (a nonaerosol pump spray) in an enclosed garage with a partially open door. Within 30 minutes, he developed chest tightness, a nonproductive cough, dizziness, lightheadedness, shortness of breath, and tachycardia;

within 1-2 hours, he developed severe chills. On November 2, the patient continued with a nonproductive cough and had an episode of posttussive emesis, a temperature of 100 F (38 C), chest tightness, and nasal congestion. On November 3, he was admitted to the hospital with a temperature of 99.5 F (37.5 C) and pulse of 104. Chest radiograph showed bilateral upper-lobe alveolar/interstitial infiltrates. He was treated with supplemental oxygen and bronchodilators and was discharged November 4.

As a result of these cases, the manufacturer of the implicated leather conditioner spray issued a voluntary nationwide recall of the product on November 3. The Consumer Product Safety Commission is investigating the water and soil repellant as well as other products of the manufacturer. Reported by: K Kulig, MD, J Brent, MD, S Phillips, MD, T Messenger, MPH, RE Hoffman, MD, State Epidemiologist, Colorado Dept of Health. K Burkhart, MD, Central Pennsylvania Poison Control Center, Hershey; DR Tavris, MD, State Epidemiologist, Pennsylvania Dept of Health. B Oneida, Blue Ridge Poison Control Center, Charlottesville; GB Miller, Jr, MD, State Epidemiologist, Virginia Dept of Health. US Consumer Product Safety Commission, Bethesda, Maryland. Air Pollution and Respiratory Health Br, Div of Environmental Hazards and Health Effects, National Center for Environmental Health; Div of Field Epidemiology, Epidemiology Program Office, CDC.

Editorial Note

Editorial Note: In December 1992, at least 157 persons nationwide consulted physicians about acute respiratory illnesses following the use of reformulated Wilsons Leather Protector (1). In August 1993, another reformulated leather conditioner, Magic Guard, was associated with 38 cases of similar respiratory illness in Pennsylvania and Virginia. Symptoms typically began within 6 hours after using the products and most frequently included shortness of breath, coughing, and chest tightness. Of these 198 reported cases (including the three described in this report), 23 persons have been hospitalized; none have died.

The shoe sprays linked recently to illness had been reformulated to eliminate 1,1,1 trichloroethane (i.e., methyl chloroform), an ozone-depleting solvent, from the formula, in accordance with Title VI of the Clean Air Act amendments of 1990 *. This legislation prohibits the sale or distribution of nonessential aerosol products that release Class I substances ** (such as 1,1,1 trichloroethane) and requires reformulation of products containing such substances by January 1994. In addition, the fluoropolymers and the propellants in these sprays had been changed. The product changes to the leather conditioner and the water and soil repellant sprays involved the solvent (from 1,1,1 trichloroethane to hexane and 2,2,4 trimethylpentane, respectively), the propellant (from carbon dioxide to isobutane and isooctane, respectively), and the fluoropolymers (from FC-905 and FC-3537, respectively, to FS-4565).

The illnesses described in this report appear to be either acute chemical pneumonitis or polymer-fume fever. Diseases with similar symptoms and signs include atypical pneumonia, congestive heart failure, hypersensitivity pneumonitis, and adult respiratory distress syndrome. Many chemicals cause pulmonary symptoms, usually related to either direct injury to airway cells or an exaggeration of normal physiologic responses (2). Chemical pneumonitis is caused by inhalation of hydrocarbons (3) and polymer-fume fever, by inhalation of fumes containing pyrolytic products released when fluoropolymers are heated to high temperatures and has been associated with smoking of cigarettes contaminated with fluoropolymers (4).

Consumers should be warned about potential adverse health effects linked to use of shoe sprays (aerosol and nonaerosol) in enclosed areas. Any spray containing polymers or solvents should be used only in adequately ventilated areas. In addition, manufacturers of shoe sprays should be aware that problems have occurred following reformulation.

State health departments are requested to report to CDC persons who have been hospitalized following exposure to any shoe spray (aerosol or nonaerosol). Standardized case-report forms are available from CDC's Air Pollution and Respiratory Health Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health, telephone (404) 488-7320.

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* Public Law no. 101-549, section 610 (42 U.S.C. section 7671).

** Controlled substances that include chlorofluorocarbons, halons, methyl chloroform, and carbon tetralchloride.

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Acute Respiratory Illness Linked to Use of Aerosol Leather Conditioner -- Oregon, December 1992

At 8 a.m. on December 27, 1992, the Oregon Poison Center (OPC) notified the Oregon Health Division (OHD) that 13 persons in one household became ill following the use of an aerosol leather conditioner and that this report was similar to two reports received on December 26 that also involved use of this product. A review of telephone logs identified similar calls on December 23 and 24, for a total of 29 persons in six households who reported illness associated with use of this spray. By midday on December 27, the product producer issued a voluntary nationwide recall of this product. Following the public announcement of the recall, as of December 31, the number of preliminary reports to the OHD and the OPC of illness associated with use of this spray increased to 400 and involved approximately 550 persons. This report summarizes the preliminary findings of the ongoing investigation of this problem by the OHD.

Among persons who reported seeking medical attention, reported symptoms typically began within a few minutes to several hours after applying the conditioner to leather products. Manifestations of the illness most commonly reported included prolonged cough, shortness of breath, and pleuritic chest pain. Many persons also reported headache, malaise, chills, and fever as high as 104F (40 C). At least three persons exhibited signs of pulmonary infiltrates based on radiographic examination; one person was admitted to a hospital with a diagnosis of adult respiratory distress syndrome. At least four other persons were admitted to hospitals for observation or treatment. For many persons, the symptoms appeared to resolve in less than 24 hours. Information on the age and sex of persons who reported symptoms was not immediately available.

From December 27 through December 31, following publicity and contact by the OHD, OPC, and CDC, poison control centers in at least 17 other states reported persons who experienced symptoms associated with this spray. CDC received reports from California, Colorado, Georgia, Idaho, Maine, Massachusetts, Minnesota, New Hampshire, New York, Ohio, Pennsylvania, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Following the prompt voluntary recall, by December 31, all cans of the leather conditioner were reported to have been removed from stores and distribution channels. The cans are not marked with specific lot identifiers. The OHD and CDC are conducting epidemiologic investigations to further define the association between illness and use of this product, and the specific cause for this problem. CDC is also working with the Consumer Product Safety Commission (CPSC) regarding the CPSC-administered Federal Hazardous Substances Act, which requires hazardous household products to bear appropriate cautionary labeling.

Reported by: MJ Smilkstein, MD, BT Burton, MD, Oregon Poison Center; W Keene, PhD, M Barnett, MS, K Hedberg, MD, D Fleming, MD, State Epidemiologist, Oregon Health Div, Dept of Human Resources. CM Jacobson, Consumer Product Safety Commission, Bethesda, Maryland. Air Pollution and Respiratory Health Br, Div of Environmental Hazards and Health Effects, National Center for Environmental Health; Div of Field Epidemiology, Epidemiology Program Office, CDC.

Editorial Note

Editorial Note: Preliminary information indicates this outbreak is associated with the use of Wilsons Leather Protector, distributed nationally by Wilsons, the Leather Experts, headquartered in Minneapolis. Leather Protector is sold nationally at more than 550 stores owned by Wilsons; the stores are operated under several names. Typically, one or two applications of the protector are intended to be applied to new leather garments. This investigation suggests that in most households where persons developed symptoms, the product had been used indoors or in other areas with limited ventilation. The new product was distributed to Wilsons stores in late November 1992; however, stores did not begin to sell the new product until the old product supply was exhausted. Sales of the product in Oregon began after December 18.

The product is packaged in 5-ounce black aerosol cans with red and white lettering. The cans are a new formulation of Wilsons Leather Protector that had previously been sold in a 7-ounce can. The product is sold exclusively by Wilsons. The product changes involved the propellant (from carbon dioxide to propane), the solvent (from 1-1-1 trichloroethane to isooctane), and an active ingredient (from 1% FC-905 to 1.2% FC-3537 {which are both fluoroalkyl polymers in different solvents}).

The most commonly reported symptoms suggest an acute chemical pneumonitis (1) or a hypersensitivity pneumonitis (2). Some patients have had symptoms consistent with inhalation fevers such as polymer-fume fever (e.g., chest tightness, headache, shivering, fever, weakness, and shortness of breath). This syndrome is caused by inhalation of fumes containing pyrolytic products released when fluoropolymers are heated to high temperatures. In most cases, patients with polymer-fume fever have been cigarette smokers (3,4). However, it is also possible that an unknown contaminant in the leather spray may be causing this illness.

Consumers should be warned against using Wilsons Leather Protector. In addition, any spray containing polymers or solvents should be used only in areas where there is adequate ventilation.

A provisional case definition used by the OHD includes any two of three pulmonary symptoms (i.e., pleuritic chest pain, shortness of breath, and nonproductive cough), with the onset of at least one symptom within 6 hours after exposure to this spray and at least one symptom lasting 12 hours or more; or any pulmonary symptom with onset within 6 hours of exposure to the spray and pulmonary infiltrates on radiographic examination. CDC has requested that state health departments report to CDC cases that involved persons being hospitalized, using a standardized case report form available from CDC's Air Pollution and Respiratory Health Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health, telephone (404) 488-7320. Further consumer information regarding this product is available from the CPSC Hotline, telephone (800) 638-2772.

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