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Epistaxis and Liver-Function Abnormalities Associated with Exposure to "Butyl" Caulk — Kentucky

In a recent study the National Institute for Occupational Safety and Health (NIOSH) was asked to investigate a report of possible toluene overexposure involving a person who lived in a log home in Brodhead, Kentucky.

On February 27, 1981, a 45-year-old male resident of Brodhead was hospitalized for uncontrolled epistaxis. Three days earlier, while the walls on the first floor of his log home were being caulked with a toluene- and petroleum distillate-based "butyl" caulk, he had noted a "strong solvent odor." However, he remained in the house almost continuously. Over the next 3 days, he experienced increasingly severe headache, nausea, dizziness, and feelings of disorientation. On the fourth morning he had a nosebleed that became profuse in early evening, requiring that he be hospitalized. His wife and 2 sons, who slept upstairs, had similar symptoms, including nosebleeds, but to a milder degree. Neither he nor his family had a history of nosebleeds or bleeding diathesis. Results of blood tests done during his hospitalization to determine coagulation parameters were consistently normal.

In the first 5 days of his hospitalization, the patient continued to have intermittent nasal hemorrhage despite packing. He received 8 units of blood in the same period and underwent surgery on March 4. On March 6, a routine blood chemistry screen showed elevations of total bilirubin, alkaline phosphatase, gamma glutamyl-transferase, serum glutamic oxalacetic transaminase, and lactate dehydrogenase. His liver function returned to normal within 2 weeks, except for a persistently elevated alkaline phosphatase. Although he did not and does not consume alcohol, he has since developed moderate hepatomegaly. A liver biopsy done on February 1, 1982, showed fatty infiltration and fibrosis. There was no history of hepatitis or exposure to hepatitis; however, laboratory tests to rule out viral hepatitis were not done.

Evaluation of the log home included air sampling and caulk analysis by a private environmental consulting firm on April 5, 1981, and a visit by NIOSH investigators on April 20 (*1*). Air sampling on April 5 showed toluene at a concentration of 2 parts per million (ppm) in the patient's bedroom (acceptable NIOSH limit is 100 ppm). NIOSH investigators noted that the house was heated to about 75 F (24 C) without humidification. The patient's bedroom had bare log walls with caulk visibly extruding between the logs. NIOSH calculated the surface area of exposed caulk in the bedroom to be 4.4 square feet. Quantitative analysis of a bulk sample of fresh caulk yielded 6% toluene, 0.5% xylene, and 15.5% "naphtha" or mixed petroleum distillates.

Reported by the Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, NIOSH, CDC.

Editorial Note: Symptoms compatible with central nervous system (CNS) involvement have been reported following occupational exposure to toluene, xylene, and naphtha (*2*). Airborne xylene in high concentrations is particularly irritating to mucous membranes (*3*). Although toxic hepatitis has been reported only rarely in association with toluene and xylene exposures (*4,5*), persistently elevated alkaline phosphatase was reported for a glue "sniffer" who was

Epistaxis – Continued

heavily exposed to toluene (*4*), and hepatomegaly was reported for a substantial proportion of industrial painters who were chronically exposed to toluene (*6*). In a recent Swedish study (*7*), industrial painters who were chronically exposed to levels of toluene and mixed solvents that were below Sweden's standard threshold limit had significantly higher alkaline phosphatase levels than did a reference group.

Although environmental monitoring was not done in the log home until several weeks after the patient was initially hospitalized, it appears likely that he was exposed to air levels of toluene, naphtha, and xylene sufficient to cause symptoms compatible with CNS involvement and to precipitate—in combination with the dry, warm, indoor air—a severe nosebleed. Mucous-membrane irritation resulting from chemical exposure associated with nosebleeds is not uncommon. Although the association between such an exposure and liver-function abnormalities and persistent hepatomegaly is less clear, the sudden rise and fall in liver enzymes within 2 weeks after exposure to the caulk, and the absence of any other explanation for the liver function abnormalities, make the possibility of toxic hepatitis plausible. Results of tests on material obtained in a liver biopsy a year after the exposure are compatible with this hypothesis.

Contact with the trade organization of log-home manufacturers and 17 of its member companies indicated that, because of variations in the building design, there is no established policy regarding variations in the techniques or the types of caulking used. Member companies stated that the first caulking is usually done at the time of construction and that the structure is recaulked again later. Neither the caulk manufacturer nor the trade organization recalled previous reports of illness associated with exposure to caulk vapors.

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Human Cryptosporidiosis — Alabama

A case of human cryptosporidiosis in an animal handler has been reported by Auburn University. About 3 weeks before onset of symptoms in mid-July 1981, the patient, a previously healthy 25-year-old male free of immune deficiencies, had started a survey of calves for *Cryptosporidium* sp. (*1*). Clinical features of his illness included nausea and low-grade fever, moderate abdominal cramps, anorexia, 5-10 watery, frothy bowel movements a day, and then constipation. Fourteen days after onset, the patient was much improved and was eating a full diet. Sheather's sugar-flotation tests showed oocysts of *Cryptosporidium* sp. in the first fecal sample collected 56 hours after onset of symptoms and in fecal samples collected daily

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Persistent, Generalized Lymphadenopathy among Homosexual Males

Since October 1981, cases of persistent, generalized lymphadenopathy—not attributable to previously identified causes—among homosexual males have been reported to CDC by physicians in several major metropolitan areas in the United States. These reports were prompted by an awareness generated by ongoing CDC and state investigations of other emerging health problems among homosexual males (*1*).

In February and March 1982, records were reviewed for 57 homosexual men with lymphadenopathy seen at medical centers in Atlanta, New York City, and San Francisco. The cases reviewed met the following criteria: 1) lymphadenopathy of at least 3 months' duration, involving 2 or more extra-inguinal sites, and confirmed on physical examination by the patient's physician; 2) absence of any current illness or drug use known to cause lymphadenopathy; and 3) presence of reactive hyperplasia in a lymph node, if a biopsy was performed.

The 57 patients had a mean age of 33 years and the following characteristics: all were male; 81% were white, 15% black, and 4% Hispanic; 83% were single, 6% married, and 11% divorced; 86% were homosexual, 14% bisexual. The median duration of lymphadenopathy was 11 months. Ninety-five percent of patients had at least 3 node chains involved (usually cervical, axillary, and inguinal). Forty-three patients had had lymph node biopsies showing reactive hyperplasia. Approximately 70% of the patients had some constitutional symptoms including fatigue, 70%; fever, 49%; night sweats, 44%; and weight loss of $\geq$5 pounds, 28%. Hepatomegaly and/or splenomegaly was noted among 26% of patients.

Recorded medical histories for the 57 patients suggested that the use of drugs such as nitrite inhalants, marijuana, hallucinogens, and cocaine was common. Many of these patients have a history of sexually transmitted infections (gonorrhea 58%, syphilis 47%, and amebiasis 42%). Of 30 patients skin-tested for delayed hypersensitivity response, 8 were found to be anergic on the basis of at least 2 antigens other than purified protein derivative (PPD).

Immunologic evaluation performed at CDC for 8 of the above patients demonstrated abnormal T-lymphocyte helper-to-suppressor ratios ($<$0.9) for 2 patients. Since this review, immunologic evaluations at CDC of 13 additional homosexual males with lymphadenopathy from Atlanta and San Francisco revealed 6 with ratios of $<$0.9. The normal range of T-lymphocyte helper-to-suppressor ratios established in the CDC laboratory for healthy heterosexual patients is 0.9-3.5 (mean of 2.3). The normal range is being established for apparently healthy homosexual males.

Since the initiation of this study, 1 patient with lymphadenopathy has developed Kaposi's sarcoma.

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