Pulmonary Hemorrhage/Hemosiderosis — Continued

processes, or trauma. A case report form is available from CDC. Physicians should report possible cases through state health departments to CDC's Air Pollution and Respiratory Health Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health; Internet: rae1@cehdeh1.em.cdc.gov; telephone (404) 488-7320; or fax (404) 488-7335.

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Epidemiologic Notes and Reports

Injuries Among Construction Workers During the Raising of Wood-Framed Walls — Colorado and California

In Colorado, traumatic spinal cord injuries that produce documentable motor, sensory, bowel, and/or bladder impairments must be reported to the state or local health department. Persons with such injuries are interviewed by staff of the Colorado Department of Public Health and Environment (CDPHE) Spinal Cord Injury Early Notification System (ENS)*; injuries that occur in workplaces are investigated by staff of the CDPHE Sentinel Event Notification System for Occupational Risk (SENSOR) program†. This report describes the investigation of a construction-related spinal cord injury reported to the CDPHE SENSOR program on February 8, 1993, and summarizes information about a similar case in California.

On February 1, 1993, the construction worker sustained a spinal cord injury—which resulted in permanent paraplegia—while attempting to raise a preconstructed wood-framed wall of a single-family house. A crew of three workers was using a standard procedure that consisted of laying the wall on the ground and "walking it up" to a vertical orientation. The wall was approximately 18 feet wide and 25 feet high at the center peak. During the procedure, two workers were positioned at the outer edges of the wall and one in the center. As the workers were raising the wall, they realized it was too heavy for them to control, possibly because it had become wet from snow that had accumulated on it during the previous evening. While the crew was attempting to lower the wall back to a horizontal orientation, the weight of the wall shifted; the crew lost control of the wall, and it fell to the ground. The worker in the center could

*Colorado is one of 21 states with spinal cord injury registries. Colorado's registry, the ENS, begun in January 1986, is a collaborative project between the Rocky Mountain Regional Spinal Injury System and the CDPHE and is funded through a National Institute on Disability, Rehabilitation, and Research grant and a cooperative agreement with CDC.

†During 1987–1992, CDC funded SENSOR projects in 10 states to develop state-based capacity for recognizing, reporting, investigating, and preventing selected occupational disorders. These 10 states and four additional states received renewed SENSOR funding in 1992.

Construction Work Injuries — Continued

not escape the falling wall and was trapped under it, sustaining a fracture dislocation of the seventh thoracic vertebra and spinal cord injury.

During the investigation of this injury, Colorado SENSOR staff determined that the building technique used in this incident is common in the construction industry and that many companies employ similar practices for raising prefabricated walls. Colorado SENSOR staff learned of a similar incident that had occurred in California and resulted in a permanently disabling spinal cord injury. In that incident, an unspecified number of workers were raising a 19 x 17½-foot rain-soaked wood-framed wall with an attached chimney chase. As the workers attempted to lift the wall, the base slipped forward, causing the wall to fall back toward the workers. Although most of the workers were able to clear the area before the wall collapsed, three were pinned beneath the wall as it fell. One of the three sustained fracture dislocations of the T12 and L1 vertebrae, spinal cord injury, and subsequent permanent paralysis.

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Editorial Note: The estimated annual incidence of acute traumatic spinal cord injury in the United States ranges from 28 to 50 injuries per million persons (*1*)[§]. During 1988 (the most recent year for which national published data are available), the estimated prevalence of spinal cord injuries that resulted in paraplegia and quadriplegia was approximately 177,000 (*2*). Most injuries (61%) occurred in persons aged 16–30 years (*3*). During 1988, the estimated total cost of spinal cord injuries in the United States was $5.6 billion: $3.4 billion in direct costs (i.e., hospitalization and other medical care, home modifications, equipment, and pharmaceuticals) and $2.2 billion in indirect costs (i.e., the value of productivity lost to society) (*2*).

During January 1989–December 1992, the average annual rate for spinal cord injury in Colorado ranged from 34 to 43 cases per 1 million population (mean: 37) (*4*). Of the 506 spinal cord injury cases reported in Colorado during this period, 51 (10%) occurred on the job (*4*), including 14 (27%) among workers in the construction industry.

The California Occupational Safety and Health Standards Board has promulgated regulations for the raising of wood-framed walls at construction sites. The regulation requires that temporary restraints (e.g., cleats on the foundation or floor, or straps on the wall bottom plate) be used when raising wood-framed walls measuring 10 or more feet to prevent inadvertent sliding or uplift of the bottom plate; anchor bolts cannot be used to brace such walls. Compliance with the procedures outlined in this standard—if it had been in effect—may have prevented the incidents in both California and Colorado.

Securing the base of a wall being raised manually is an important measure for reducing some risks associated with raising wood-framed walls. Other measures include 1) establishing industry guidelines that classify size categories of walls according to linear feet of wood in the wall, specify the personnel or equipment required for raising each category of wall, and provide an upper limit beyond which cranes or

[§]The range in estimated incidence rates reflects differences in case definitions. Some studies, for example, include hospital admissions only, which exclude acute fatal injuries.

Construction Work Injuries — Continued

boom trucks must be used to raise the wall; 2) using pulley systems or hydraulic jacks to raise walls; 3) developing a bracing system to arrest the fall of a wall; and 4) establishing and enforcing company and industry policies that prohibit raising of wet wood-framed walls unless additional employees or other raising techniques are used.

To further characterize incidents similar to those described in this report and to assist in developing prevention measures, information about other injuries that have resulted from raising wood-framed walls in construction operations should be reported to Acting Chief, Injury Surveillance Section, Surveillance and Field Investigation Branch, Division of Safety Research, National Institute for Occupational Safety and Health; telephone (304) 285-5916.

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International Notes

Progress Toward the Global Elimination of Neonatal Tetanus, 1989–1993

Neonatal tetanus (NT) is a leading cause of neonatal mortality in many parts of the world. During the 1980s, NT accounted for half of all neonatal deaths and one fourth of all infant mortality in some countries (*1*). In addition, in 1993, an estimated 515,000 neonatal deaths were caused by NT* (*2*) for a global mortality rate of 4.1 per 1000 live births. In 1989, the World Health Organization (WHO) adopted a resolution to eliminate NT worldwide (*3*), and in 1990, the World Summit for Children issued a declaration for global elimination of NT by the end of 1995 (*4*). In 1993, WHO's goal was defined as the elimination of NT as a public health problem by reducing its incidence to less than one case per 1000 live births for each health district (*2*) (baseline: in 1988, a total of 32,454 NT cases were reported to WHO and an estimated 787,000 NT deaths occurred; the global NT mortality rate was 6.5 cases per 1000 live births [*5*])†. To achieve and maintain NT elimination, 80% or more of infants need to be protected at birth through vaccination of their mothers with at least two doses of tetanus toxoid (TT2+) or through clean delivery and cord-care practices (*2*). In addition, effective surveillance

*Estimates of NT deaths are derived from national mortality data, NT mortality rates from NT surveys, or in the absence of surveys, by assuming that rates are similar for countries with similar socioeconomic conditions and from tetanus toxoid coverage levels.

†Because the case-fatality rate for NT is high (100% in some countries), WHO estimates only the number of deaths for NT, not number of cases.

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Epidemiologic Notes and Reports

Acute Pulmonary Hemorrhage/Hemosiderosis Among Infants — Cleveland, January 1993–November 1994

Hemosiderosis is an uncommon childhood disease characterized by spontaneous pulmonary hemorrhage often associated with iron deficiency anemia. During January 1993–November 1994, eight cases of acute pulmonary hemorrhage/hemosiderosis were diagnosed among infants at a children's referral hospital in Cleveland. In comparison, during 1983–1993, a total of three cases of pulmonary hemosiderosis were diagnosed among infants and children at this hospital. This report summarizes the preliminary results of the ongoing epidemiologic, clinical, and laboratory investigations by pediatric pulmonologists in Cleveland, the Ohio Department of Health, the City of Cleveland Department of Public Health, the Cuyahoga County Board of Health, and CDC.

In 1993, cases were diagnosed in January (one case) and October (one); in 1994, cases were diagnosed in March (one), June (one), July (two), September (one), and November (one). For each of the eight infants (mean age: 10.3 weeks; range: 4 weeks–16 weeks), onset of hemoptysis was associated with pallor and an abrupt cessation in crying; fever was not reported for any of the infants. Other reported symptoms on admission included limpness, lethargy, and grunting. At the time of initial evaluation at the hospital, seven infants required admission to the pediatric intensive-care unit because of hemoptysis and respiratory distress.

All eight infants were black, and seven were male. The median age of their mothers was 20 years (range: 15–29 years). Seven of the pregnancies and deliveries occurred without complications; one infant born at 27 weeks' gestation and weighing 2 lbs, 2 oz (950 g) had complications of severe prematurity. All infants lived within a 6-mile radius of the hospital. No infants were breast fed; before admission, all were fed cow's-milk–based formula.

Laboratory findings on admission included a normal white blood cell count (median=13.8 cells/mm^3) and features consistent with a normocytic, normochromic anemia characteristic of acute blood loss with a mean hematocrit of 27.1% (normal: 36.0%–47.0%) and a mean hemoglobin of 9.1 g/dL (normal: 10.0–15.0 g/dL). Red blood cell morphology was suggestive of a microangiopathic process: microscopic exam-