Respiratory Diseases in the Construction Industry

In 2010, the U.S. Bureau of Labor Statistics (BLS) reported 500 nonfatal work-related “respiratory conditions” among the nation’s 5.7 million wage-and-salary construction workers in the private sector.1 This figure is believed to be underestimated, as data from the Building Trades National Medical Screening Program (BTMed, see page 49) showed that among former construction workers at U.S. Department of Energy (DOE) nuclear sites, nearly one in five (18.7%) had an abnormal chest x-ray (chart 50a). For asbestos workers, the rate was more than double (39.3%). A medical screening program for veteran sheet metal workers also found that the duration of sheet metal work significantly increased the risk of parenchymal disease.2 In addition, a study in California found that construction workers, especially roofers, had a significantly elevated risk for all types of lung cancer, and had a lower survival rate than non-construction workers (14.2% vs. 16.2%).3

The BTMed respiratory examination found that 41% of construction workers in the program had an abnormal pulmonary function test; the percentage was close to 50% among roofers, brickmasons and concrete workers, and truck drivers (chart 50b). For both chest x-rays and pulmonary function tests, workers in production (blue-collar; see Glossary) occupations had a noticeably higher prevalence of abnormalities than those employed in administrative or support positions, which was consistent with their exposure levels to workplace hazards (see page 35).

Construction workers from DOE sites were also at risk of developing chronic beryllium disease (CBD), a disease that causes difficulty breathing and scarring of lung tissue. An indicator of CBD is beryllium sensitivity (BeS), which is defined as one abnormal plus one borderline or two abnormal beryllium lymphocyte proliferation tests, a test to diagnose CBD.4 About 1.4% of all construction workers had BeS; and the percentage doubled among boilermakers (2.9%) and roofers (2.8%; chart 50c). BeS can almost always be attributed to workplace exposures, given that beryllium is typically found only at atomic energy and defense sites.5

The prevalence of lung diseases increases steadily with age.6 Using data from the Health and Retirement Study, a large longitudinal survey on the U.S. population aged 50 years and older, it was estimated that the prevalence of lung disease more than doubled among the older construction worker cohort, from 6.9% to 15.2% in a 10-year period (chart 50d). The prevalence of lung diseases among workers in construction trades was significantly higher than those in white-collar occupations in the follow-up period, suggesting that lung diseases due to construction exposures may not emerge until later in life.

Dual exposure to both smoking and occupational hazards markedly increases the risk of respiratory diseases.7 In 2010, the annual cost to the nation for chronic obstructive pulmonary disease (COPD) alone was expected to reach almost $50 billion.8 The best way to protect workers from respiratory hazards is to have simultaneous prevention efforts against occupational exposures and smoking. To that end, the National Institute for Occupational Safety and Health has initiated the Total Worker Health™ program, promoting a “synergism of prevention” by integrating occupational safety and health and worksite health promotion.9

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50b. Prevalence of abnormal pulmonary function test, selected construction occupations at U.S. Department of Energy sites, 1996-2010


50d. Lung diseases among older construction workers in 10-year follow-up, construction trades vs. white-collar occupations, 1998 vs. 2008 (All employment)

Source: Charts 50a and 50b – BTMed disease prevalence: Exams completed through 2010. Contact: John Dement, Duke University Medical Center.