

Welder's Anthrax Cases Caused by *Bacillus Cereus* Group Bacteria Containing Anthrax Toxin Genes

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Between 1994 and 2024, nine cases of welder's anthrax caused by species within the *B. cereus* group have been reported in immunocompetent metal workers, with most being welders. In these cases, the isolates were found to harbor a plasmid similar to *B. anthracis* pXO1 that encodes anthrax toxins. In recent years, two cases of welder's anthrax were reported in 2020 and another one in 2024. Of the patients with available data, over half presented with fever, chills, cough, dyspnea, and hemoptysis. All had abnormal chest radiographs and were diagnosed with pneumonia. All were hospitalized and admitted to intensive care if they survived past the Emergency Department. Six of the nine patients died. Worksites were reported to be in Texas for four patients and in Louisiana for five. Four case investigations included environmental sampling at the worksite, and samples from two investigations yielded *B. cereus* containing a plasmid similar to *B. anthracis* pXO1. Information on the type of welding, job activities, and type of workplace, including indoor or outdoor activities, was not available for most of the patients. In the two 2020 cases, one welder worked exclusively outdoors on the roof of an oil tank in a refinery in Louisiana prior to illness onset. Besides welding, he performed additional tasks on and around the oil tank, including scrubbing debris off the roof of the oil tank using a wire metal brush, and was present during sandblasting the paint off oil tank walls and metal-grinding. In the second case, the welder worked in a wood fabrication shop in Texas that had no local exhaust systems but had large bay doors that were usually open. National databases of occupational mortality from the U.K. as well as multiple studies in the U.S. have consistently demonstrated that welders have an increased mortality pneumonia from all causes. The observations from these investigations have indicated an excess of pneumonia in men below retirement age of 65 years. Evidence suggests that the inhalation of ferrous and other metal fumes in the workplace may predispose workers to lung infections. Welder's anthrax has emerged as a rare but important occupational infectious disease. Communication and cooperation between clinicians, employers, and public health practitioners are important to identify work-related cases and identify occupational and personal risk factors. More research is needed to better understand incidences of this emerging disease and the mechanisms of infection and disease among welders.

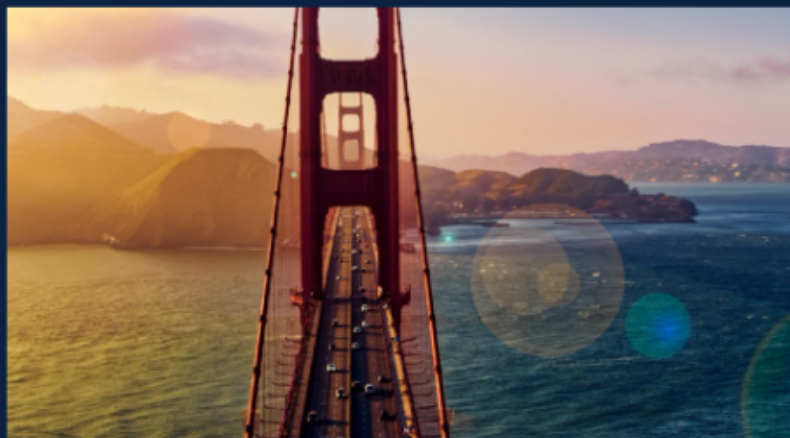
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