

## Notes from the Field

### Exposures to Discarded Sulfur Mustard Munitions — Mid-Atlantic and New England States 2004–2012

Before the 1970s, the United States sometimes disposed of at sea excess, obsolete, or unserviceable munitions, including chemical munitions (1). Chemical munitions known to have been disposed of at sea included munitions filled with sulfur mustard, a vesicant (i.e., an agent that causes chemical burns or blisters of the skin and mucous membranes) (2). Signs and symptoms of exposure to a mustard agent can include redness and blistering of the skin, eye irritation, rhinorrhea, hoarseness, shortness of breath, and (rarely) diarrhea and abdominal discomfort. Since 2004, CDC has received notification of three separate incidents of exposure to sulfur mustard munitions. In one incident, a munition was found with ocean-dredged marine shells used to pave a driveway. The other two incidents involved commercial clam fishing operations. This report highlights the importance of considering exposure to sulfur mustard in the differential diagnosis of signs and symptoms compatible with exposure to a vesicant agent, especially among persons involved with clam fishing or sea dredging operations.

#### Case Reports

**Case 1.** In 2004, U.S. Air Force Explosive Ordnance Disposal (EOD) personnel responded to discovery of an artillery shell protruding from a Delaware driveway paved with crushed clamshells (3). They recovered the shell and moved it to Dover Air Force Base for destruction using standard EOD procedures. During handling a “black, tar-like substance” began to drip, and two members required treatment for chemical burns after large pus-filled blisters developed on their hands and arms. One EOD team member required hospitalization as a result of the exposure. Sulfur mustard exposure was confirmed by chemical analysis. After this incident, the Department of Defense made the Army’s policy and procedures for addressing liquid-filled munitions applicable to the Air Force and all other military services.

**Case 2.** In 2010, commercial fishermen recovered an unknown number of munitions during dredging for clams off the coast of Long Island, New York (4). During the effort to dump the munitions back in the ocean, a munition was dropped on the deck of the boat, resulting in the release of a black liquid substance. Drops of the substance also landed on the clothing covering the leg and arm of a crew member, and another crew member was exposed to fumes. After several hours, both crew members felt ill and were subsequently

transported to a local hospital for evaluation. One crew member was evaluated and released. The other crew member developed small blisters on his forearm and upper thigh. These injuries were recognized by a nurse trained in chemical agent injuries as compatible with exposure to sulfur mustard. Sulfur mustard exposure was confirmed by chemical analysis.

**Case 3.** In 2012, a 75-mm projectile was recovered at a clam processing plant in Delaware. Reportedly, it had been brought to the plant accidentally during dredging operations for clams in Delaware Bay. An EOD team removed the munition for disposal (5). The munition involved was determined to contain mustard agent. None of the potentially exposed persons developed signs or symptoms of exposure to mustard. Clam fishermen told investigators that they routinely recover munitions that often “smell like garlic,” a potential indication of the presence of a chemical agent.

#### Diagnosis and Management of Suspected Cases

Mustard agent is listed in the Chemical Weapons Convention as an agent used in chemical munitions. Clinicians suspecting mustard exposure should consult with their state or local health department and poison control center regarding the need for follow-up and investigation of potential exposures. CDC’s Chemical Weapons Elimination Program can provide technical consultation and laboratory services to assist clinicians with testing, diagnosis, and management of suspected cases. Program staff members can be contacted through the duty officer at the CDC Emergency Operations Center at 770-488-7100.

Additional information regarding the U.S. Army Chemical Material Activity programs is available by contacting the Public Affairs Office by telephone, 800-488-0648. Additional information regarding CDC programs associated with chemical weapons is available by telephone at 800-CDC-INFO.

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5. WBOC 16. Delaware seafood facility evacuated after military ordnance found. July 2, 2012. Available at <http://www.w boc.com/story/18915482/unexploded-ordnance-uncovered-at-del-clam-processing-facility>.

## Workers' Memorial Day — April 28, 2013

Workers' Memorial Day recognizes workers who died or suffered from exposures to hazards at work. In 2011, a total of 4,069 U.S. workers died from work-related injuries (1). Most fatalities from work-related illness are not captured by national surveillance systems, but an estimate for 2007 was 53,445 deaths (2). Several national surveillance systems report new cases of nonfatal work-related injuries and illnesses, although no system captures all cases. In 2011, nearly 3 million injuries and illnesses to private industry workers and 821,000 to state and local government workers were reported by employers (3). In the same year, an estimated 2.9 million work-related injuries were treated in emergency departments, resulting in 150,000 hospitalizations (CDC, unpublished data, 2013).

Based on methods that focus on medical costs and productivity losses, the societal cost of work-related fatalities, injuries, and illnesses was estimated at \$250 billion in 2007 (2). Methods that include consideration of pain and suffering would result in a higher estimated societal cost (4). CDC is working to better describe the burden of fatalities, injuries, and illnesses suffered by workers; additional information is available at <http://www.cdc.gov/niosh/programs/econ/risks.html>.

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## Fatal Injuries in Offshore Oil and Gas Operations — United States, 2003–2010

During 2003–2010, the U.S. oil and gas extraction industry (onshore and offshore, combined) had a collective fatality rate seven times higher than for all U.S. workers (27.1 versus 3.8 deaths per 100,000 workers). The 11 lives lost in the 2010 Deepwater Horizon explosion provide a reminder of the hazards involved in offshore drilling. To identify risk factors to offshore oil and gas extraction workers, CDC analyzed data from the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI), a comprehensive database of fatal work injuries, for the period 2003–2010. This report describes the results of that analysis, which found that 128 fatalities in activities related to offshore oil and gas operations occurred during this period. Transportation events were the leading cause (65 [51%]); the majority of these involved aircraft (49 [75%]). Nearly one fourth (31 [24%]) of the fatalities

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