



## **MUSTARD AGENTS**

### **Agent Information:**

Chemical warfare agent and a chemotherapeutic agent, a member of the blister agent grouping. Synonyms are sulfur mustard H, HD, HT; also lewisite, nitrogen mustard, mustard lewisite, phosgene-oxime. Sulfur mustards are yellow to brown oily liquids with a slight garlic or mustard odor. Although volatility is low, vapors can reach hazardous levels during warm weather. Mustard agents are toxicologically, part of a group of compounds known as vesicants or corrosives.

### **Signs and Symptoms:**

Signs and symptoms vary depending on the route of exposure and level of exposure.

Signs: skin erythema and blistering, watery, swollen eyes; upper airways sloughing with pulmonary edema; metabolic failure; and neutropenia and sepsis, especially for sulfur mustard (late in exposure).

Symptoms: burning, itching, or red skin; mucosal irritation (prominent tearing, and burning and redness of eyes); shortness of breath; nausea; and vomiting. Sulfur mustards are absorbed by the skin, causing erythema and blisters. Ocular exposure to these agents may cause incapacitating damage to the cornea and conjunctiva. Inhalation damages the respiratory tract epithelium and may cause death. Onset for lewisite is minutes; sulfur mustard is hours to days.

### **Route of Exposure:**

Inhalation and dermal absorption are primary.

### **Protective Measures:**

Utilize appropriate Level PPE as identified by the Environmental Protection Agency and Hazmat protocols.

People whose skin or clothing is contaminated with sulfur mustard can contaminate rescuers by direct contact or through off-gassing vapor.

### **Prophylaxis:**

N/A

### **Treatment:**

There is no antidote for mustard agents; for lewisite, British Anti-Lewisite (BAL or Dimercaprol) or IM (rarely available). Remove clothing, irrigate with copious amounts of water. Supportive care.

### **Reporting:**

Any suspect cases should be reported immediately to the Division of Public Health, Epidemiology Branch: 1-888-295-5156 (24/7 coverage). For additional information, view the CDC website for Emergency Preparedness and Response at [www.bt.cdc.gov](http://www.bt.cdc.gov).