

# Sulfur Mustard

(Vesicant)

## What is Sulfur Mustard?



Sulfur mustard is a chemical warfare agent, known as a “vesicant” because it causes blistering of the skin and mucous membranes on contact. Sulfur mustard was made in large amounts during World Wars I and II and was used in the Iran-Iraq war in 1980-1988. It is not used in the United States, except for research purposes.

Sulfur mustard is a thick liquid at ambient temperature, but becomes a solid at 58 °F. It is heavier than water as a liquid and heavier than air as a vapor. It does not occur naturally in the environment. It is often called “mustard gas”, but sulfur mustard is not likely to change into a gas immediately if it is released at ordinary temperatures. As a pure liquid, it is colorless and odorless, but when mixed with other chemicals, it looks brown and has a garlic-like smell.

## Exposure

Sulfur mustard is no longer made in the United States and may be stored at a few Army storage sites; therefore, the general public is not exposed to sulfur mustard.

For immediate assistance, call the Poison Control Center Hotline: 1-800-222-1222.

Individuals working at or living near these military storage sites may be exposed to sulfur mustard if an accidental spill or unplanned release occurs. However, the Army has taken many precautions to protect the public from exposure.

Occupational exposures are currently limited to soldiers in some combat situations; those involved in its shipment, storage or disposal; construction workers at storage sites, research laboratories; and workers involved in plastics manufacturing resulting from process contamination with sulfur or nitrogen impurities.

## Health Effects

Adverse health effects depend on the amount of exposure, the route of exposure, and the length of time that people are exposed. Sulfur mustard is a powerful irritant and blistering agent that damages the skin, eyes, and respiratory tract. It damages DNA, a vital component of cells in the body. The vapor is heavier than air, so it will settle in low lying areas.

Exposure to sulfur mustard is usually not fatal. Typically, signs and symptoms do not occur immediately. Depending on the severity of the exposure, symptoms may not occur for 2 to 24 hours. It can have the following effects on specific parts of the body:

**Skin** – Redness and itching may occur 2 to 48 hours after exposure and change eventually to yellow blistering of the skin.

**Eyes** – Irritation, pain, swelling and tearing may occur within 3 to 12 hours of a mild to moderate exposure. A severe exposure may cause symptoms within 1 to 2 hours and may include the symptoms of a mild or moderate exposure to light sensitivity, severe pain, or blindness (lasting up to 10 days).

**Respiratory tract** – Runny nose, sneezing, hoarseness, bloody nose, sinus pain, shortness of breath and cough within 12 to 24 hours of a mild exposure and within 2 to 24 hours of a mild exposure and within 2 to 4 hours of a severe exposure.

**Digestive tract** – Abdominal pain, diarrhea, fever, nausea and vomiting

## Diagnosis

Sulfur mustard and its breakdown products can be detected in the blood and urine within a few weeks after the last exposure. These tests are not usually available at a doctor's office, but the doctor can send the samples to a laboratory that can perform these tests. None of these tests can predict whether or not a person will experience any health effects.

## Treatment

Though no antidote exists, exposure is usually not fatal. If a person has been exposed to sulfur mustard, move quickly to an area where fresh air is available. Remove clothing by cutting off the body; do not pull clothes over the head. Quickly wash entire body with large amounts of soap and water.

If the eyes are burning or vision is blurred, rinse with plain water for 5 to 10 minutes. If wearing contacts, wash hands after removing clothes then remove contacts before rinsing eyes. If wearing glasses, remove and wash them with soap and water. It is okay to put glasses back on after they have been washed. Place contaminated clothes and contact lenses into a plastic bag and seal. Place bag into a second bag and seal.

If sulfur mustard has been ingested, do not induce vomiting. Give the person milk to drink and seek medical attention right away.



**For more sources of information on this topic visit or contact:**

ST. CLAIR COUNTY HEALTH DEPARTMENT [www.scchealth.co](http://www.scchealth.co)

MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES [www.michigan.gov/mdhhs](http://www.michigan.gov/mdhhs)

CENTERS FOR DISEASE CONTROL AND PREVENTION [www.cdc.gov](http://www.cdc.gov)

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH TOXICS AND HEALTH HOTLINE: 1-800-648-6942

MICHIGAN OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION (MIOSHA): 517-322-1814

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY: [www.atsr.cdc.gov](http://www.atsr.cdc.gov) 1-888-422-8737