Blistering Agents

Exposure

CRITERIA

- Signs and symptoms indicating exposure to blister agents (see Signs and Symptoms of Exposure in PEARLS)

PROTOCOL

EMR	Follow *General – Universal Patient Care/Initial Patient Contact protocol.*	**EMR**
EMT	Consider gross decontamination.	**EMT**
EMT	Ensure adequate airway and oxygenation.	**EMT**
	If chemical burns greater than 10% Body Surface Area, see *Burns-Thermal and Pain Control protocols* and *Trauma Field Triage Administrative Policy*.	

PEARLS

- Blister Agents pose a significant risk of exposure to responders. They are difficult to remove during decontamination and do not provide immediate signs of contamination.

Signs and Symptoms of Blister Agents

- Skin penetration is rapid. Mustard causes both localized cellular and systemic damage. A large liquid or vapor exposure causes immune system failure and pulmonary damage. Sepsis and pulmonary damage are major causes of death.

- Blister agents are powerful irritant and vesicant, producing corrosion and necrosis of the skin, eyes, and respiratory tract. While the chemical reaction with biological tissue occurs rapidly, **symptoms are typically delayed by several hours**. Systemic poisoning occurs more easily in warm climates than in temperate ones.

- **DERMAL** - Dermal mustard exposure signs and symptoms occur within 2 to 24 hours of exposure. Itching and erythema occur 2 to 3 hours after dermal exposure to the gas or liquid; erythema spreads over the next 24 hours and yellowish blisters appear and can become ulcerated, which heal in 4 to 6 weeks after a transitory melanoderma. Thinner skin (neck, axillae, and groin) is more susceptible than thicker skin (soles and palms).

- **INHALATION** - Cough, hemoptysis, dyspnea, and possibly pulmonary edema may occur up to 24 hours after inhalation of the gas. **DO NOT** treat as conventional pulmonary edema. **DO NOT** use CPAP or Furosemide/Lasix. Ulceration of airway mucosa may occur. Mild pulmonary exposure produces rhinorrhea, sneezing, epistaxis, hoarseness, and cough within 12 to 24 hours of exposure. Severe exposure produces additional symptoms of productive cough and shortness of breath (mild to severe) 2 to 4 hours after exposure.

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Variations of Blister Agents

- Mustard (Sulfur and Nitrogen)
- Lewisite (causes immediate pain on skin contact)
- Dimethyl Sulfate

Concept of Treatment Protocol

Blister Agent injuries are chemical burns (including inhalation injuries) and should be managed as such.

- Chelating agents (i.e. British Anti Lewisite- BAL) have been used to reduce the effects of exposure. However, no chelating agents are carried out-of-hospital in Hampton Roads
- Sodium thiosulfate (found in regional Haz-Mat Drug boxes) has been used to prevent systemic injury