

## METHYL BROMIDE

(Bromomethane, monobromomethane, isobrome and methyl fume)

### Background:

Methyl bromide, a colorless gas at room temperature, is used primarily as a pesticide to fumigate soil, structures and commodities. It usually is shipped as a liquefied, compressed gas. It is odorless and nonirritating at low concentrations and has a musty or fruity odor at high concentrations. Because methyl bromide lacks adequate physiologic warning properties, chloropicrin, a lacrimator, often is added to prevent significant exposure. Methyl bromide is three times heavier than air and can accumulate in poorly ventilated or low-lying areas. All suspected or confirmed cases of methyl bromide intoxication must be reported to the local department of public health and the Illinois Department of Public Health (IDPH).

### Signs/symptoms:

Methyl bromide methylates the sulfhydryl groups of enzymes, causing disruption at the cellular level. It is primarily a neurotoxic gas.

- 1) Skin: High concentrations may cause erythema, pain and blisters. 🐻 *Because of their relatively larger surface area: body-weight ratio, children are more vulnerable to toxicants absorbed through the skin.*
- 2) HEENT: Mucosal irritation and burns of eyes, mouth and nose may occur.
- 3) GI: Nausea, vomiting and diarrhea may occur after exposure. Elevated liver enzymes may be noted.
- 4) Renal: Transient renal insufficiency may occur.
- 5) Pulmonary: Upper respiratory tract irritation, cough and chest tightness may be seen. Prolonged, increased exposure may cause pulmonary edema. Pulmonary edema may be delayed up to 4 to 5 days. 🐻 *Children may be more vulnerable because of relatively increased minute ventilation per kg and failure to evacuate an area promptly when exposed.*
- 6) Cardiovascular: High concentrations may cause tachycardia and hypotension.
- 7) CNS: The most common signs/symptoms of acute intoxication are neurologic and may include dizziness, headache, confusion, lethargy, seizures and coma. Late sequelae of exposure may include organic brain syndrome and extrapyramidal effects.

### Laboratory and Diagnostic Testing:

- 1) Bromide exposures may be used to prove that an exposure occurred, but not to predict clinical outcome
- 2) CBC, Chem-7 and liver function tests
- 3) CXR
- 4) Pulse ox
- 5) Head CT if uncertain that mental status changes are from chemical exposure

### Treatment:


#### Decontamination:

Patients exposed only to methyl bromide gas pose no risk of secondary contamination and need only removal of clothing. Patients whose skin or clothing is contaminated with liquid methyl bromide can secondarily contaminate staff by direct contact or through off-gassing of vapors. These patients must have clothing removed and be decontaminated with soap and water.

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### Supportive Care:

There is no specific antidotal therapy for methyl bromide poisoning. The cornerstone of treatment is basic supportive care.

- 1) IVF: Management of fluid losses from emesis and hypotension.
- 2) Airway/pulmonary: Consider bronchodilators and steroids for wheezing/bronchospasm. Consider racemic epinephrine with patients  (*especially children*) with stridor. Intubate the patient as clinically indicated.
- 3) CNS/Seizures: Attempt initial control with benzodiazepines. If seizures persist or recur, administer phenobarbital. Monitor for respiratory depression, hypotension, dysrhythmias and the need for endotracheal intubation.