



TOXIC SYNDROME DESCRIPTION

Arsine or Stibine Poisoning

Arsine is the gaseous and the most toxic form of the element, arsenic. It is a nonirritating gas with a mild odor (odorless at low doses) that is used in the semiconductor and metals refining industries. Stibine is a toxic gas that has effects similar to those of arsine, but stibine is not encountered as frequently as arsine. The most likely route of exposure to arsine and stibine is inhalation.

Arsine toxicity is different from arsenic toxicity. Arsine causes massive hemolysis and results in anemia, jaundice, and hemoglobinuric renal failure. The intensity and length of arsine exposure, and the premorbid condition of the person exposed, will contribute to the time of onset and the severity of illness. For example, exposure of a person with underlying coronary artery disease is likely to result in greater morbidity than exposure of a healthy person at the same dose.

The following is a more comprehensive list of signs and symptoms that may be encountered in a person exposed to arsine. Symptoms are not listed in order of presentation or specificity. Also, partial presentations (an absence of some of the following signs/symptoms) do not necessarily imply less severe disease.

1. General

- Weakness
- Malaise
- Fatigue
- Fever

2. Gastrointestinal signs and symptoms

- Nausea
- Vomiting
- Abdominal pain
- Liver injury

3. Central nervous system signs and symptoms

- Headache
- Lethargy
- Convulsions
- Coma
- Peripheral neuropathy (1–3 weeks after acute exposure)
- Neuropsychological symptoms (several days after exposure): memory loss, restlessness, confusion

4. Cardiovascular signs

- Tachycardia
- Hypotension
- ECG changes (repolarization, S-T segment, and T-wave changes)

Toxic Syndrome Description: Arsine or Stibine Poisoning
(continued from previous page)

5. Respiratory signs and symptoms

- Tachypnea
- Dyspnea
- Pulmonary edema

6. Genitourinary signs

- Hemoglobinuria
- Oligouria
- Renal failure

7. Laboratory findings

- Anemia
- Elevated bilirubin (indirect)
- Hyperkalemia
- Damaged red blood cells (basophilic stippling, anisocytosis, Heinz-Ehrlich bodies)
- Low haptoglobin
- Elevated plasma-free hemoglobin levels
- Elevated urinary hemoglobin
- Elevated BUN and creatinine
- Abnormal liver function tests
- Thrombocytopenia
- Elevated blood or spot urine arsenic level

Note: The actual clinical manifestations of arsine exposure may be more variable than the syndrome described above.

Differential diagnosis

- Colchicine
- Copper sulfate
- Envenomations (snake or spider)
- Dinitrophenols
- Lead
- Naphthalene
- Phosphine
- Thallium

For more information, visit www.bt.cdc.gov/chemical, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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Page 2 of 2