

This information is current as of the date faxed and for the patient specified ONLY. Do not use this information for other patients without contacting the Poison Center at 1-800-222-1222.

ARSINE, STIBINE, and GALLIUM ARSENIDE: Health Care Information

Arsine (Arsenic hydride, AsH₃) is a colorless gas that is produced in the smelting and microelectronics industries. It may be used as a weapon of mass destruction by adding acid to arsenic-containing alloys or by explosion of an arsine container. Arsine is stored or transported as a liquefied compressed gas. Gallium arsenide (GaAs) and Stibine (SbH₃) are gases with similar clinical effects and treatment.

Recognition and Triage: High concentrations produce a mild garlicky odor and the rapid onset of **hemolysis** leading to **lightheadedness, headache, nausea, vomiting, dark urine and weakness**. In lower concentration exposures, a **delay of 2 to 24 hours may occur prior to hemolysis**. **Acute renal failure may occur 1 to 3 days later** and is partially due to myoglobinuria. Less common effects include hepatitis and rhabdomyolysis. Patients may be triaged as follows:

Immediate: Rapid onset symptoms or tachycardia and pallor;

Minor: Headache, nausea, vomiting, or lightheadedness without pallor or tachycardia;

Delayed: Asymptomatic

Personal Protective Equipment (PPE) (at the health care site): Arsine is a gas and is unlikely to remain on the skin or clothing of the patient; however, patients may have been exposed to multiple chemicals, so conservative PPE is recommended. Personnel who decontaminate patients should wear splash-proof PPE (waterproof outer garment) and a filtered air respirator. Personnel treating patients who have already been decontaminated require no PPE other than universal precautions.

Decontamination (at the health care site): Very little arsine is expected to bind to clothing or skin. However, because patients are often exposed to multiple chemicals, removal of clothing and brief skin decontamination is recommended. Sufficient decontamination includes removal of **ALL** clothing and jewelry and thorough washing of the skin and hair with water for 2 to 3 minutes.

Diagnosis and Treatment: Diagnosis is clinical and is made with a history of exposure and **acute anemia, acidosis (secondary to hypoperfusion), myoglobinuria, tea-colored urine and renal insufficiency**. Laboratory findings consistent with arsine-induced hemolysis include decreased haptoglobin, increased free hemoglobin, anemia and abnormalities on blood smear (schistocytes, ghost cells and Heinz bodies). A **urine test** may be sent to the State Health Laboratory for confirmation of exposure to arsine (see attached sheet).

Patients with bronchospasm may be treated with **bronchodilators**. Patients with evidence of hypoxemia or anemia should receive supplemental **oxygen**. Acute anemia may be treated with **RBC transfusions**. In the case of severe symptomatic anemia with ongoing hemolysis and adequate resources, **exchange transfusion** may be necessary. **Sodium bicarbonate** (50 to 100 mEq of sodium bicarbonate [1 to 2 ampules] in 1 liter of D5W at twice the maintenance rate)

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may decrease the risk of acute renal failure secondary to myoglobinuria. Bicarbonate should be titrated to keep the urine output adequate (2 to 3 mL/kg/hr) and the urine pH > 7. British anti-Lewisite (BAL) and other chelators (DMSA [succimer]) are not indicated in acute exposures to arsine. Urinary and serum arsenic concentrations may be elevated for several days. Contact the Poison Center (1 800 222 1222) for specific questions or advice on individual patients.

Patient Monitoring: Continuous monitoring of pulse oximetry, blood pressure and heart rate is necessary in patients with severe symptoms.

Disposition Criteria (when to send patient home): Patients who are initially asymptomatic may develop severe symptoms over 2 to 24 hours. All patients with a significant exposure should be observed for 24 hours. Any patient who is considered for discharge must be given instructions to return immediately if they develop any symptoms: lightheadedness, nausea, vomiting, shortness of breath or fatigue.

Please review the CDC Collection Protocol, which should be included with this FAX.