DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

Medical

ARSINE (AsH_3)

Agent information: Arsine is also known as arsenic hydride, arsenic trihydride, and hydrogen arsenide. It is a highly toxic industrial chemical with the potential to cause mass casualties. Arsine is a flammable gas with a garlic-like or fishy odor that does not provide adequate warning of hazardous levels. Inhaling arsine gas can be fatal.

Route of exposure: Inhalation is the major route of arsine exposure. There is little information about absorption through the skin or toxic effects on the skin or eyes. Skin contact with liquid arsine may result in frostbite injury.

Signs and symptoms: Initially, patients may look relatively well. Usually within 30 to 60 minutes with heavy exposure, common symptoms include malaise, headache, thirst, shivering, abdominal pain, and dyspnea. These symptoms can be delayed for two to 24 hours. Hemoglobinuria usually occurs within hours, and jaundice occurs within one or two days. Arsine poisoning causes acute intravascular hemolysis, which may lead to renal failure. Arsine gas does not produce arsenic intoxication.

Protective measures: Persons exposed to arsine pose no serious risks of secondary contamination to personnel outside the hot zone. Small amounts of arsine gas can be trapped in the victim's clothing or hair after a large exposure but are unlikely to create a hazard for personnel outside the hot zone. Emergency department personnel should observe Standard Precautions.

Evaluation: Laboratory tests to determine hemolysis. Other useful studies include renal-function tests (BUN, creatinine); and determinations of serum electrolytes and bilirubin levels (all chemistries use red/black top tubes).

Prophylaxis: Appropriate Personal Protective Equipment (PPE).

Treatment: There is no specific antidote for arsine. Treatment is symptomatic and consists of measures to support respiratory, vascular, and renal function. Even if arsine's odor was not detected at the scene, those present could have been seriously exposed. Patients who have suspected exposure should be observed for 24 hours, including hourly urine output. Onset of hemolysis may be delayed for up to 24 hours. Acute renal failure may not become evident for as long as 72 hours. Do not administer arsenic chelating drugs. Although BAL (British Anti-Lewisite, dimercaprol) and other chelating agents are acceptable for arsenic poisoning, they are not effective antidotes for arsine poisoning and are not recommended.

Reporting: Report suspect cases immediately to the Division of Public Health, 1-888-295-5156 (24/7 coverage).

For more information: Visit the Centers for Disease Control and Prevention's website: https://www.cdc.gov/.