

ARSINE AND PHOSPHINE GAS

NOTES ON ARSINE GAS

BACKGROUND:

Arsine (AsH₃) is an extremely toxic and nearly odorless gas (it has a slight odor of garlic). It is used widely in the microelectronics industry and occasionally occurs as a by-product in metallurgy and pesticide manufacturing. Arsine's effects are quite distinct from other arsenic compounds. Even in very small quantities, inhaled arsine produces acute hemolysis (rupture of red blood cells), which can result in cardiac decompensation due to anemia, or renal failure due to massive kidney deposition of hemoglobin. Symptoms may be delayed for 2 – 24 hours, and include weakness, abdominal and flank pain, brown urine and jaundice. Massive acute exposure appears capable of causing immediate death by an unknown mechanism.

NOTES ON PHOSPHINE

BACKGROUND:

Phosphine (PH₃) is an extremely toxic gas with a nauseating odor, used in the electronics industry as an insect fumigant, and occasionally occurring as a by-product in manufacturing. Its toxicology is not well understood, but it appears to affect the central nervous system, the heart, lungs and liver. Symptoms flowing low to moderate exposure include nausea, vomiting, headache, cough, dizziness, diarrhea, muscle aches, fever and chills. Severe exposure may produce shncope, stupor, coma, pulmonary edema and death. Unlike arsine, phosphine does not produce hemolysis.

INITIAL DECONTAMINATIO PROR TO PREHOSPITAL MANAGEMENT:

Decontamination should include flushing of the victim with water spray, and if gas is likely to be trapped in clothing, clothes should be removed and double -bagged.

POTENTIAL FOR SECONDARY CONTAMINATION:

Very small amounts of arsine or phosphine can be trapped in a victim's clothing after an overwhelming exposure, but are not usually sufficient to create a hazard for health care personnel away from the scene. Therefore, decontamination of the victim is generally not required.

PREHOSPITAL MANAGEMENT AFTER INITIAL DECONTAMINATION**ARSINE**

FORMS: Gas, may be generated in metal ore processing and electronic component manufacturing.

PHOSPHINE

FORMS: Gas. Extremely flammable, may ignite spontaneously in air or explode on contact with flame.

- Evaluate Airway *
- Oxygen – High Flow/ NRM
- Cardiac Monitor
- Transport

BASE:**CONSIDER:**

- IV
- I.V. NS or LR Bolus 500cc for ARSINE exposure with severe hemolysis.

* Intubation should be considered if the victim develops severe respiratory distress.

NOTE: With ARSINE GAS exposures, massive hemolysis may occur causing the urine to appear dark orange, red or brown. If urine sample is available, the color should be noted.