

"COOK" FAILS CHEM 101; HYDROGEN SULFIDE FATALITY

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ABSTRACT

A methamphetamine "cook" equipped with an APR apparently mistakenly attempted to salt out his finished product with hydrogen sulfide rather than hydrogen chloride, leading to his demise.

TEXT

On January 30, 1997, Criminalists Mehul B. Anjaria and Blaine M. Kern responded to a suspected clandestine drug laboratory in the Muscoy area of San Bernardino, CA. On arrival, they were directed by Sheriff's Narcotics Detectives to the body of a deceased Hispanic male in his late twenties, lying supine on the driveway adjacent to what had been the garage, located to the rear of the residence. Near the body of the deceased was a half-face air purifying respirator (APR) equipped with organic vapor cartridges. The garage, converted to living quarters, had been previously entered by a Sheriff's Sergeant wearing self-contained breathing apparatus (SCBA) only long enough to ascertain that no other victims/suspects were present and to note a gas cylinder, the open valve on which he was unable to close.

Criminalists Anjaria and Kern donned protective clothing and SCBAs and entered the converted garage, noting a gas cylinder labeled "hydrogen sulfide" with ice formed on the bottom portion of the cylinder, indicating that the cylinder was freely discharging. The cylinder was connected via tubing to a 5 gallon bucket containing liquid, consistent with the final step of methamphetamine manufacture in which the drug is salted out using hydrogen chloride gas. Also present in the building were two-phase liquids, red phosphorus, hydriodic acid, lye, a mop bucket equipped with a press, and other items commonly associated with the clandestine manufacture of methamphetamine. Due to the hazardous nature of the environment, additional air cylinder for the SCBAs were requested.

After conferral between the various law enforcement, fire department and Coroner's representatives, it was decided to move the body of the deceased upwind from his original position to facilitate the examination of the body.

Criminalists Anjaria and Kern processed the interior of the garage. Supervising Criminalist Hiram Evans and Forensic Specialist Karen Rice assisted the Deputy Coroner with an examination of the body of the deceased, including rolling set of inked fingerprints and recovery of his wallet. The wallet contained some peso notes and a California Driver's License (CDL), although the CDL photograph did not particularly resemble the victim. Forensic Specialist Rice also assisted in photographing the exterior of the scene.

The inked fingerprints of the deceased were submitted to the Lab's Cal-ID unit and subsequently identified as those of a Mexican National, but not the name given on the CDL.

Hydrogen sulfide (H₂S) is a colorless, heavier than air, flammable gas having the characteristic, pungent odor of rotten eggs. Vapor concentrations as low as 50 ppm in air cause toxic symptoms, 300 ppm is immediately dangerous to life and health (IDLH), and 1000-2000 ppm is usually fatal within minutes [1]. By the way of comparison, hydrogen cyanide (HCN) is also a colorless, flammable gas, having a characteristic faint odor, but in contrast is lighter than air, with a 50 ppm IDLH level. Fatal H₂S poisoning may occur even more rapidly than following an exposure to similar concentrations of HCN as hydrogen sulfide does not combine with hemoglobin, but kills through respiratory paralysis [2].

Acid gas, organic vapor, and base cartridges generally utilized in APRs are marked to be used with hydrogen sulfide "for escape only." While the odor of hydrogen sulfide is detectable at very low concentrations, it is an insidious irritant and chemical asphyxiant which fatigues the sense of smell. With the sense of smell fatigued, those exposed fail to get warning of high concentrations, leading to respiratory paralysis and sudden collapse [3].

Hydrogen sulfide has been used by Mexican National methamphetamine "cooks" for the clandestine manufacture of hydriodic acid and it is likely the deceased obtained it mistakenly for hydrogen chloride gas. Whether the "cook" obtained it on his own or through others is unknown at this time.

REFERENCES

1. Clinical Toxicology of Commercial Products, Marion N. Gleason, Robert E. Gosselin, and Harold N. Page, Williams & Wilkins Co., Baltimore, MD, 1957, p. 147.
2. Dangerous Properties of Industrial Materials, N. Irving Sax, 2nd ed., Reinhold Pub. Co., New York, NY, 1963, p. 888.
3. Merck Index, Susan Budavari, ed., 12th ed., Rahway, NJ, 1996, p. 823.