Suicide from Internet-directed hydrogen sulfide (H2S) suicide has been seen in the United States since August 2008, following a trend observed in Japan earlier that year. Instructions posted on the Internet include chemical names and basic instructions for how to mix these commercially available chemicals to create the gas, and on same sites, a note to print out to caution first responders to the presence of H2S gas.

Hydrogen sulfide is poisonously in the gaseous form, which is characterized by a "rotten egg smell" at low concentrations. Continued exposure to H2S results in desensitization of the olfactory senses so that it is no longer detected. Normal healthy subjects have thiosulfate levels of less than 0.3 mg/L. Sulfite in the body is partially converted to sulfide and thiosulfate through oxidation. Baseline requires that thiosulfate levels should be assessed to establish fatal intoxications. H2S inhibits cellular respiration by binding with the iron of cytochrome oxidase. In the same path as hydrogen cyanide, thereby inhibiting binding of oxygen and stopping cellular respiration, resulting in death. A 26 year old white male was found dead in his car with a note that he had broken up with his girlfriend three weeks prior and had a history of depression. He had broken up with his girlfriend three weeks prior and had a history of depression. He had broken up with his girlfriend three weeks prior and had a history of depression.

Toxicology was performed at the Cuyahoga County Medical Examiner’s Office (CCMEO). The primary source of hydrogen sulfide death 12.

A characteristic "rotten egg smell" results from even small quantities of H2S gas. Hydrogen sulfide gas kills similar to hydrogen cyanide gas. The central nervous system and respiratory system are most affected; death results quickly with exposure to high enough concentrations 2. The gas is absorbed through the respiratory and gastrointestinal systems and expelled through exhalation, in feces or as metabolites in urine 3.

Thiosulfate is a naturally occurring sulfuric compound in the body, and is also a metabolite of hydrogen sulfide gas. When testing for postmortem hydrogen sulfide levels, thiosulfate levels exceed 0.3 mg/L, to account for the natural level 4. This particular method of suicide began in Japan in 2008 and spread through the use of internet forums. The first instance of hydrogen sulfide suicide in America was in 2008 in California 5.

Based on comments in internet forums, it appears this delay resulted from the need to translate the instructions from Japanese to English. A quick internet search on suicide yielded many web sites devoted to discussing ways and reasons to kill oneself. A forum discussed this method, including its origin in Japan, and how to mix the chemicals across the country, and is about the dangers of this method.

The forum and another site discussed methods of suicide, the statistics regarding success rate and the user’s need to be cognizant of methods that do not cause harm to first responders.

A number of first responder websites 6 also posted bulletins, at roughly the same time the suicide forums began mentioning hydrogen sulfide suicide, offering precautions for dealing with this method.

While the trend has been towards leaving warning messages during this type of suicide, it is possible that some may not. These professional bulletins help avoid secondary casualties.

The main routes of hydrogen sulfide is through oxidation: sulfide → thiosulfate → sulfate

Alkylation and reaction with metallo- or disulfide-containing products are additional metabolic pathways.

In fatal cases, blood thiosulfate levels are used for diagnosis of hydrogen sulfide poisoning.

The body was that of a normally developed 26-year-old adult male. The manner of death was ruled as suicide.

Conclusions

Despite the lower H2S concentration (<1 ppm) detected in the car, the decedent’s blood was 143 times greater than what would be expected in a normal background level when the thiosulfate level in the blood, the physical observations of the decedent, and the smell noted at the scene, it determined that the cause of death was asphyxia due to hydrogen sulfide by manner of suicide.

References
(3) Kaspar for their help. The doors and windows of the car were closed when first responders arrived. There were no visible marks or bruises. The deceased was ruled as suicide.

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Scene:

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Results

28. Brain after H2S intoxication

2A. Healthy brain

2B. Brain with hydrogen sulfide intoxication

Figure 1: Decedent’s car with warning note

Figure 2 A-B: Brain color comparison between a healthy brain (2A) and a brain after hydrogen sulfide intoxication (2B).