

# Man, 13 Cattle Die from Manure Gas



By Alex Berezow — August 17, 2017



Credit: Daniel Schwen/Wikipedia <sup>[1]</sup>

There are three basic facts about death: (1) We all have to die. (2) All young deaths are tragic deaths. (3) Some of us die in ways that are more interesting than others, and those deaths often make their way into case reports. This story involves all three.

The CDC reports that a 29-year-old man in Wisconsin, along with 13 cattle, died from manure gas. Three more cattle were euthanized. The gas emanated from a manure basin that covered 60,400 square feet and was 15 feet deep. Because it was nearly full, the total volume of manure was 906,000 cubic feet (about 6.8 million gallons). The young man was mixing the manure prior to having it spread on fields as fertilizer.

His death was originally ruled as suffocation from methane. Methane, which is odorless and non-toxic, causes death because it prevents a person from breathing sufficient oxygen. The coroner was asked to investigate further, and the cause of death now appears to be hydrogen sulfide.

Hydrogen sulfide is atrocious. It's one of the gases that makes flatulence smell bad, and it's also the gas responsible for the foul odor of [over-boiled eggs](#) <sup>[2]</sup>. Human noses are very sensitive to it. According to [Dr. Geophysics](#) <sup>[3]</sup>, our noses are more sensitive to hydrogen sulfide than sharks are to blood in the water. Some of us can sniff out hydrogen sulfide at concentrations as low as 10 parts per billion. Put another way, that's about 10 drops in an Olympic-sized swimming pool ([PDF](#) <sup>[4]</sup> ).

100	Coughing, eye irritation, loss of smell after 2-15 minutes (olfactory fatigue). Altered breathing, drowsiness after 15-30 minutes. Throat irritation after 1 hour. Gradual increase in severity of symptoms over several hours. Death may occur after 48 hours.
100-150	Loss of smell (olfactory fatigue or paralysis).
200-300	Marked conjunctivitis and respiratory tract irritation after 1 hour. Pulmonary edema may occur from prolonged exposure.
500-700	Staggering, collapse in 5 minutes. Serious damage to the eyes in 30 minutes. Death after 30-60 minutes.
700-1000	Rapid unconsciousness, "knockdown" or immediate collapse within 1 to 2 breaths, breathing stops, death within minutes.
1000-2000	Nearly instant death

Higher concentrations of hydrogen sulfide cause health problems. The Occupational Safety and Health Administration (OSHA) has a [chart](#) [5] showing the effects of various concentrations on the human body. At 20 parts per million (ppm), people may experience dizziness and a headache. Concentrations above 100 ppm can be deadly, while concentrations above 700 ppm cause almost immediate death (See chart.)

The young man's lungs were filled with fluid (pulmonary edema), and his blood had high levels of a sulfur-containing compound. Furthermore, the cattle had been fed a diet high in sulfur, and their feces contained about 4 to 6 times more sulfur than that of other Wisconsin beef cattle. All of this evidence points to hydrogen sulfide as the cause of death.

Making the case even stranger is the fact that the deaths occurred outdoors. Lack of wind and other weather conditions likely contributed to the fatal outcome.

What a bizarre, unexpected, and tragic way to go.

**Source** [6]: "Shutske JM, Larson RA, Schaefer DM, Binversie LY, Rifleman S, Skjolaas C. Notes from the Field: Death of a Farm Worker After Exposure to Manure Gas in an Open Air Environment — Wisconsin, August 2016." *MMWR* 66 (32): 861-862. Published: 18-Aug-2017. DOI: 10.15585/mmwr.mm6632a6.

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**Links**

[1] [https://en.wikipedia.org/wiki/File:CH\\_cow\\_2\\_cropped.jpg](https://en.wikipedia.org/wiki/File:CH_cow_2_cropped.jpg)

[2] <http://io9.gizmodo.com/when-you-overcook-eggs-you-turn-them-into-chemical-wea-1682497376>

[3] <https://drgeophysics.wordpress.com/2012/06/08/h2s-the-smell-of-geology/>

[4] [http://dec.alaska.gov/spar/csp/guidance/cont\\_concentrations.pdf](http://dec.alaska.gov/spar/csp/guidance/cont_concentrations.pdf)

[5] <https://www.osha.gov/SLTC/hydrogensulfide/hazards.html>

[6] <https://www.cdc.gov/mmwr/volumes/66/wr/mm6632a6.htm>