
DEVELOPMENT OF ODORANTS, 1880 TO 1970

- 1880 – first documented use of an odorant (ethyl mercaptan) in Germany. Odorants were originally investigated as a way of reducing carbon monoxide fatalities resulting from the misuse of manufactured fuel gases.
- 1898 (Austria) – Tschany, an Austrian gas engineer, proposes using petroleum-based chemicals to odorize “water gas”. In the following years, several odorants are developed based on his ideas.
- 1911 (Germany) – acetylene used as an odorant for blast furnace gas being used as a fuel.
- 1918 (Germany) – first laws passed requiring odorization of odorless manufactured gases. Main technological hurdle is the lack of a suitable odorant.
- 1917-1920 (United States) – odorization studies began at the Edgewood Arsenal. Odorants were investigated as to their usefulness as a warning agent in mines and for gas leak detection. Results published by the Bureau of Mines in 1919-1920.
- 1920 – start of small-scale odorization in the United States, although, as in Germany the lack of an effective odorant limits use. Most companies using manufactured gas rely on that product’s naturally strong odor for warning.
- 1920s – the rise of the automobile brings the need for new sources of petroleum. Large quantities of natural gas are also found and transported via pipeline to ever-more-distant towns and cities. Utilities are concerned over the fuel’s lack of odor, and many distribution companies start adding odorant.
- 1926-1931 – Bureau of Mines conducts research into odorants for natural gas.
- 1930-1935 – first commercially viable odorants produced (“Calodorant #3” by Oronite (part of Standard Oil of California) and the amyl mercaptan “Pentalarm 86” by the Sharples Chemical Company.)
- March 18, 1937 – almost 300 people, mostly children, die in an explosion at a school in New London, Texas. The cause is traced to a leak from an unodorized natural gas line. The State of Texas proposes and legislates into law the first comprehensive state law regulating the odorization of fuel gases. Other states follow suit and enact their own laws.
- 1942 – Natural Gas Odorizing markets Captan, a blend of isopropyl, secondary butyl and propyl mercaptans. Starting in the late 1940s, tertiary butyl mercaptan (a byproduct from a process for reclaiming old rubber) becomes the a major component of most odorant blends.
- 1951 – first reference to an industry standard to odorization found in paragraph 861 “Odorization” of the ASME-ASA B31.8—1951 “Code for Gas Transmission and Distribution Piping Systems”.
- 1950s-1970s – research into odorants continues, driven by basic research into such topics as odorant adsorption and absorption within the pipe, soil penetration, odor fading and masking, and human olfactory responses to odorants. Another factor driving research is the changing

availability of odorant components. Most research on odorant blends centers on adding various mixtures of mercaptans and sulfides to tertiary butyl mercaptans in a quest for the “perfect” odorant. “Calodorant #3” (a mixture of sulfides and gasoline) is phased out. The thiophane-rich “Calodorant C” is developed and finds a following with West Coast users. Most modern odorants are variations of the blends developed during this era.

- 1968-1970 – first federal standard for odorization, based on ASME B31.8, published as part of the Title 48, Part 192 of the Code of Federal Regulations.

Selected Bibliography

American Gas Association. 2000. *Odorization Manual*. Washington, D.C.: American Gas Association.

Attari, Amir A. and Wilson, Gerald G. eds. 1992. *Odorization III*, Chicago: Institute of Gas Technology.

Plunkett, Gordon R. “Odorization of Natural Gas in the United States of America.” Paper presented at the Institute of Gas Technology’s *Odorization Fundamentals* program, Des Plaines, Illinois, 1997.