

## 9. REFERENCES

- Abe K, Kimura H. 1996. The possible role of hydrogen sulfide as an endogenous neuromodulator. *J Neurosci* 16:1066-1071.
- ACGIH. 1991. Documentation of the threshold limit values and biological exposure indices. 6th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, Inc., 786-788.
- ACGIH. 2012a. Carbonyl sulfide. Threshold limit values for chemical substances and physical agents and biological exposure indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 18.
- ACGIH. 2012b. Hydrogen sulfide. Threshold limit values for chemical substances and physical agents and biological exposure indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 35.
- Adams DF, Frohlinger JO, Falgout D, et al. 1975. Hydrogen sulfide in air analytical method. *Health Lab Sci* 12(4):362-368.
- Adelson L, Sunshine I. 1966. Fatal hydrogen sulfide intoxication: Report of three cases occurring in a sewer. *Arch Pathol* 81:375-380.
- Adlercreutz H. 1995. Phytoestrogens: Epidemiology and a possible role in cancer protection. *Environ Health Perspect Suppl* 103(7):103-112.
- Ago M, Ago K, Ogata M. 2008. Two fatalities by hydrogen sulfide poisoning: Variation of pathological and toxicological findings. *Leg Med (Tokyo)* 10(3):148-152.
- Ahlborg G. 1951. Hydrogen sulfide poisoning in shale oil industry. *Arch Ind Hyg Occup Med* 3:247-266.
- AIHA. 2011. Emergency response planning guidelines (ERPG). Fairfax, VA: American Industrial Hygiene Association.  
<http://www.aiha.org/INSIDEAIHA/GUIDELINEDEVELOPMENT/ERPG/Pages/default.aspx>. April 24, 2013.
- Al-Haddad AA, Abdo MSE, Abdul-Wahab SA. 1989. Evaluation of Henry's constant for H<sub>2</sub>S in water and sewage effluents. *J Environ Sci Health Part A, Environ Sci Engin* 24:207-227.
- Allen HE, Fu G, Boothman W, et al. 1994. Determination of acid volatile sulfide and selected simultaneously extractable metals in sediment. U.S. Environmental Protection Agency. PB94183852.
- Allyn LB. 1931. Notes on hydrogen sulfide poisoning. *Ind Eng Chem* 23(2):234.
- Altman PL, Dittmer DS. 1974. Biological handbooks: Biology data book. Volume III, 2nd ed. Bethesda, MD: Federation of American Societies for Experimental Biology.

---

\* Not cited in text

## 9. REFERENCES

- American Gas and Chemical Co. 2005. Personal protection indicators. <http://www.amgas.com/ttpage.htm>. October 05, 2005.
- Ammann HM. 1986. A new look at physiologic respiratory response to hydrogen sulfide poisoning. *J Hazard Mater* 13:369-374.
- Amoore JE, Hautala E. 1983. Odor as an aid to chemical safety: Odor thresholds compared with threshold limit values and volatilities for 214 industrial chemicals in air and water dilution. *J Appl Toxicol* 3:272-290.
- Andersen ME, Krishnan K. 1994. Relating *in vitro* to *in vivo* exposures with physiologically based tissue dosimetry and tissue response models. In: Salem H, ed. *Animal test alternatives: Refinement, reduction, and replacement*. New York, NY: Marcel Dekker, Inc., 9-25.
- Andersen ME, Clewell HJ, III, Gargas ML, et al. 1987. Physiologically-based pharmacokinetics and the risk assessment process for methylene chloride. *Toxicol Appl Pharmacol* 87(2):185-205.
- Aneja VP. 1990. Natural sulfur emissions into the atmosphere. *J Air Waste Manage Assoc* 40(4):469-476.
- APHA. 1998. 450-S<sup>2</sup>- Sulfide. In: Clesceri LS, Greenberg AE, Eaton AD, et al., eds. *Standard methods for the examination of water and wastewater*. Washington, DC: American Public Health Association/American Water Works Association/Water Environment Federation, 4-162-4-173.
- API. 2005. H<sub>2</sub>S and TRS analyzers for ambient air quality monitoring. Advanced Pollution Instrumentation, Inc. <http://www.teledyne-api.com/products/Model.101A.102A.pdf>. September 29, 2005.
- Arnold IMF, Dufresne RM, Alleyne BC, et al. 1985. Health implication of occupational exposures to hydrogen sulfide. *J Occup Med* 27(5):373-376.
- Asif MJ, Exline MC. 2012. Utilization of hyperbaric oxygen therapy and induced hypothermia after hydrogen sulfide exposure. *Respir Care* 57(2):307-310.
- ASTM International. 2012. ASTM D5303. Standard test method for trace carbonyl sulfide in propylene by gas chromatography. West Conshohocken, PA: ASTM International. <http://www.astm.org/Standards/D5303.htm>. May 22, 2013.
- ATSDR. 1989. Decision guide for identifying substance-specific data needs related to toxicological profiles; Notice. Agency for Toxic Substances and Disease Registry. *Fed Regist* 54(174):37618-37634.
- ATSDR. 1997. Exposure investigation for Dakota City/South Sioux City: Hydrogen sulfide in ambient air. Atlanta, GA: Agency for Toxic Substances and Disease Registry. [http://www.atsdr.cdc.gov/HAC/PHA/dakcity/dak\\_toc.html](http://www.atsdr.cdc.gov/HAC/PHA/dakcity/dak_toc.html). June 21, 2004.
- ATSDR. 2000. Petitioned Public Health Assessment: Fresh Kills Landfill– Staten Island, Richmond County, New York. EPA Facility ID: NYD980506943. Atlanta, GA: Agency for Toxic Substances and Disease Registry. [http://www.atsdr.cdc.gov/HAC/PHA/freshkills/fkl\\_toc.html](http://www.atsdr.cdc.gov/HAC/PHA/freshkills/fkl_toc.html). June 21, 2004.

## 9. REFERENCES

- ATSDR. 2001a. Medical management guidelines (MMGs) for hydrogen sulfide (H<sub>2</sub>S). Managing hazardous material incidents (MHMI). Volume III. Atlanta, GA: Agency for Toxic Substances and Disease Registry. <http://www.atsdr.cdc.gov/MMG/MMG.asp?id=385&tid=67>. June 24, 2016.
- ATSDR. 2001b. Landfill gas primer: An overview for environmental health professionals. <http://www.atsdr.cdc.gov/HAC/landfill/html/intro.html>. July 27, 2004.
- ATSDR. 2015. Hydrogen sulfide and carbonyl sulfide. Full SPL data. Substance priority list (SPL) resource page. Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention. <http://www.atsdr.cdc.gov/SPL/resources/index.html>. August 3, 2016.
- Audeau FM, Gnanaharan C, Davey K. 1985. Hydrogen sulphide poisoning: Associated with pelt processing. *N Z Med J* 98(774):145-147.
- Babidge W, Millard S, Roediger W. 1998. Sulfides impair short chain fatty acid  $\beta$ -oxidation at acyl-CoA dehydrogenase level in colonocytes: Implications for ulcerative colitis. *Mol Cell Biochem* 181:117-124.
- Baldelli RJ, Green FHY, Auer RN. 1993. Sulfide toxicity: Mechanical ventilation and hypotension determine survival rate and brain necrosis. *J Appl Physiol* 75:1348-1353.
- Balls PW, Liss PS. 1983. Exchange of H<sub>2</sub>S between water and air. *Atmos Environ* 17:735-742.
- Bandy AR, Thornton DC, Driedger AR, III. 1993. Airborne measurements of sulfur dioxide, dimethyl sulfide, carbon disulfide, and carbonyl sulfide by isotope dilution gas chromatography/mass spectrometry. *J Geophys Res Atmos* 98(D12):23423-23433.
- Barik S, Corder RE, Clausen EC, et al. 1987. Biological conversion of coal synthesis gas to methane. *Energy Progress* 7:157-160.
- Barilyak IR, Vasiljeva IA, Kalinovshaja LP. 1975. [Effects of small concentrations of carbon disulphide and hydrogen sulphide on the intrauterine development of rats.] *Arkh Anat Gistol Embriol* 68(5):77-81. (Russian)
- Barnes DG, Dourson M. 1988. Reference dose (RfD): Description and use in health risk assessments. U.S. Environmental Protection Agency. *Regul Toxicol Pharmacol* 8(4):471-486.
- Bartholomaeus AR, Haritos VS. 2005. Review of the toxicology of carbonyl sulfide, a new grain fumigant. *Food Chem Toxicol* 43:1687-1701.
- Bartholomew TC, Powell GM, Dodgson KS, et al. 1980. Oxidation of sodium sulphide by rat liver, lungs and kidney. *Biochem Pharmacol* 29:2431-2437.
- Bates MN, Crane J, Balmes JR, et al. 2015. Investigation of hydrogen sulfide exposure and lung function, asthma and chronic obstructive pulmonary disease in a geothermal area of New Zealand. *PLoS ONE* 10(3):e0122062. 10.1371/journal.pone.0122062.
- Bates MN, Garrett N, Crane J, et al. 2013. Associations of ambient hydrogen sulfide exposure with self-reported asthma and asthma symptoms. *Environ Res* 122:81-87. 10.1016/j.envres.2013.02.002.
- Bates MN, Garrett N, Graham B, et al. 1997. Air pollution and mortality in the Rotorua geothermal area. *Aust N Z J Public Health* 21:581-586.

## 9. REFERENCES

- Bates MN, Garrett N, Graham B, et al. 1998. Cancer incidence, morbidity and geothermal air pollution in Rotorua, New Zealand. *Int J Epidemiol* 27:10-14.
- Bates MN, Garrett N, Shoemack P. 2002. Investigation of health effects of hydrogen sulfide from a geothermal source. *Arch Environ Health* 57(5):405-411.
- Beauchamp RO, Bus JS, Popp JA, et al. 1984. A critical review of the literature on hydrogen sulfide toxicity. *Crit Rev Toxicol* 13:25-97.
- Beck JF, Bradbury CM, Connors AJ, et al. 1981. Nitrite as an antidote for acute hydrogen sulfide intoxication? *Am Ind Hyg Assoc J* 42:805-809.
- Beck JF, Cormier F, Donini JC. 1979. The combined toxicity of ethanol and hydrogen sulfide. *Toxicol Lett* 3:311-313.
- Belley R, Bernard N, Cote M, et al. 2005. Hyperbaric oxygen therapy in the management of two cases of hydrogen sulfide toxicity from liquid manure. *CJEM* 7(4):257-261.
- Berger GS. 1994. Epidemiology of endometriosis. In: Berger GS, ed. *Endometriosis: Advanced management and surgical techniques*. New York, NY: Springer-Verlag, 3-7.
- Bhambhani Y. 1999. Acute effects of hydrogen sulfide inhalation in healthy men and women. *Environ Epidemiol Toxicol* 1:217-230.
- Bhambhani Y, Singh M. 1991. Physiological effects of hydrogen sulfide inhalation during exercise in healthy men. *J Appl Physiol* 71:1872-1877.
- Bhambhani Y, Burnham R, Snyder G, et al. 1994. Comparative physiological responses of exercising men and women to 5 ppm hydrogen sulfide exposure. *Am Ind Hyg Assoc J* 55:1030-1035.
- Bhambhani Y, Burnham R, Snyder G, et al. 1996a. Effects of 10-ppm hydrogen sulfide inhalation on pulmonary function in healthy men and women. *J Occup Environ Med* 38:1012-1017.
- Bhambhani Y, Burnham R, Snyder G, et al. 1996b. Effects of 5-ppm hydrogen sulfide inhalation on biochemical properties of skeletal muscle in exercising men and women. *Am Ind Hyg Assoc J* 57:464-468.
- Bhambhani Y, Burnham R, Snyder G, et al. 1997. Effects of 10-ppm hydrogen sulfide inhalation in exercising men and women. *J Occup Environ Med* 39:122-129.
- Bingham E, Cohn B, Powell CH, eds. 2001. Phosphorus, selenium, tellurium, and sulfur. In: *Patty's toxicology*. 5th ed. New York, NY: John Wiley & Sons, 495-502.
- \*Bitterman N, Talmi Y, Lerman A, et al. 1986. The effect of hyperbaric oxygen on acute experimental sulfide poisoning in the rat. *Toxicol Appl Pharmacol* 84:325-328.
- Blake NJ, Streets DG, Woo JH, et al. 2004. Carbonyl sulfide and carbon disulfide: Large-scale distributions over the western Pacific and emissions from Asia during TRACE-P. *J Geophys Res* 109:D15S05. 10.1029/2003JD004259.

## 9. REFERENCES

- Blanchette AR, Cooper AD. 1976. Determination of hydrogen sulfide and methyl mercaptan in mouth air at parts-per-billion level by gas chromatography. *Anal Chem* 48:729-731.
- Boon AG. 1992. Septicity in sewers: Causes, consequences and containment. *Water Environ Manage* 6:79-90.
- Bott E, Dodd M. 2013. Suicide by hydrogen sulfide inhalation. *Am J Forensic Med Pathol* 34(1):23-25.
- Bottenheim JW, Strausz OP. 1980. Gas-phase chemistry of clean air at 55 degrees N latitude. *Environ Sci Technol* 14:709-718.
- Brenneman KA, James RA, Gross EA, et al. 2000. Olfactory neuron loss in adult male CD rats following subchronic inhalation exposure to hydrogen sulfide. *Toxicol Pathol* 28(2):326-333.
- Brenneman KA, Meleason DF, Sar M, et al. 2002. Olfactory mucosal necrosis in male CD rats following acute inhalation exposure to hydrogen sulfide: Reversibility and the possible role of regional metabolism. *Toxicol Pathol* 30(2):200-208.
- Breyse PA. 1961. Hydrogen sulfide fatality in a poultry feather fertilizer plant. *Am Ind Hyg Assoc J* 22:220-222.
- Broderius SJ, Smith LL Jr, Lind DT. 1977. Relative toxicity of free cyanide and dissolved sulfide forms to the fathead minnow (*Pimephales promelas*). *J Fisheries Res Board Can* 34:2323-2332.
- Bronstein AC, Spyker DA, Cantilena LR, et al. 2011. 2010 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 28th Annual report. *Clin Toxicol (Phila)* 49(10):910-941.
- Budavari S, O'Neil MJ, Smith A, et al., eds. 1996. *The Merck index: An encyclopedia of chemicals, drugs, and biologicals*. 12th ed. Whitehouse Station, NJ: Merck & Co., Inc., 823.
- Burnett WW, King EG, Grace M, et al. 1977. Hydrogen sulfide poisoning: Review of 5 years' experience. *Can Med Assoc J* 117:1277-1280.
- Campagna D, Kathman SJ, Pierson R, et al. 2004. Ambient hydrogen sulfide, total reduced sulfur, and hospital visits for respiratory diseases in northeast Nebraska, 1988-2000. *J Expo Anal Environ Epidemiol* 14(2):180-187.
- Campanya M, Sanz P, Reig R, et al. 1989. Fatal hydrogen sulfide poisoning. *Med Lav* 80:251-253.
- Caravati EM. 2004. Hydrogen sulfide. In: Dart RC, ed. *Medical toxicology*, 3<sup>rd</sup> edition. Philadelphia, PA: Lippincott Williams and Wilkins, 1169-1174.
- Carlsen HK, Zoega H, Valdimarsdottir U, et al. 2012. Hydrogen sulfide and particle matter levels associated with increased dispensing of anti-asthma drugs in Iceland's capital. *Environ Res* 113:33-39.
- Carlidge E. 2015. Superconductor high spurs wave of physics. *Nature* 524:277. 10.1038/nature.2015.18191.

## 9. REFERENCES

- CDC. 2015a. Carbonyl Sulfide. Full SPL data. Substance priority list (SPL) resource page. Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention. <http://www.atsdr.cdc.gov/SPL/resources/index.html>. August 3, 2016.
- CDC. 2015b. Hydrogen sulfide. Full SPL data. Substance priority list (SPL) resource page. Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention. <http://www.atsdr.cdc.gov/SPL/resources/index.html>. August 3, 2016.
- Chan-Yeung M, Wong R, Maclean L, et al. 1980. Respiratory survey of workers in a pulp and paper mill in Powell River, British Columbia. *Am Rev Respir Dis* 122:249-257.
- Chase D, Viniski J, Raynor M. 2010. Pyrolysis-electrochemical sensor for monitoring carbonyl sulfide levels in ambient air. *Solid State Technology* 53(7):38-40.
- ChemFinder. 2006. Hydrogen sulfide. ChemFinder.com. Database and internet searching. <http://chemfinder.cambridgesoft.com/result.asp>. June 14, 2006.
- ChemID. 2015. Hydrogen sulfide and carbonyl sulfide. ChemIDplus. National Library of Medicine. <http://chem.sis.nlm.nih.gov/chemidplus>. November 24, 2015.
- Chen X, Jhee K-H, Kruger WD. 2004. Production of the neuromodulator H<sub>2</sub>S by cystathionine β-synthase via the condensation of cysteine and homocysteine. *J Biol Chem* 279:52082-52086.
- Chénard L, Lemay SP, Lague C. 2003. Hydrogen sulfide assessment in shallow-pit swine housing and outside manure storage. *J Agric Saf Health* 9(4):285-302.
- Chengelis CP, Neal RA. 1979. Hepatic carbonyl sulfide metabolism. *Biochem Biophys Res Commun* 90(3):993-999.
- Chengelis CP, Neal RA. 1980. Studies of carbonyl sulfide toxicity: Metabolism by carbonic anhydrase. *Toxicol Appl Pharmacol* 55:198-202.
- Chin M, Davis DD. 1993. Global sources and sinks of OCs and CS<sub>2</sub> and their distribution. *Global Geochem Cycles* 7(2):321-337.
- Cho K-S, Hirai M, Shoda M. 1992. Degradation of hydrogen sulfide by *Xanthomonas* sp. strain DY44 isolated from peat. *Appl Environ Microbiol* 58:1183-1189.
- Choi J, Hirai M, Shoda M. 1991. Catalytic oxidation of hydrogen sulphide by air over an activated carbon fibre. *Applied Catalysis A: General* 79:241-248.
- Christia-Lotter A, Bartoli C, Piercecchi-Marti MD, et al. 2007. Fatal occupational inhalation of hydrogen sulfide. *Forensic Sci Int* 169(2-3):206-209.
- Cihacek LJ, Bremner JM. 1993. Characterization of the sulfur retained by soils exposed to hydrogen sulfide. *Commun Soil Sci Plant Anal* 24:85-92.
- CIIT. 1983a. 90-Day vapor inhalation toxicity study of hydrogen sulfide in B6C3F<sub>1</sub> mice. Research Triangle Park, NC: Chemical Industry Institute of Toxicology. CIIT docket #42063.

## 9. REFERENCES

- CIIT. 1983b. 90-Day vapor inhalation toxicity study of hydrogen sulfide in Fischer 344 rats. Research Triangle Park, NC: Chemical Industry Institute of Toxicology. CIIT docket #22063.
- CIIT. 1983c. 90-Day vapor inhalation toxicity study of hydrogen sulfide in Sprague-Dawley rats. Research Triangle Park, NC: Chemical Industry Institute of Toxicology. CIIT docket #32063.
- Clewell HJ, Andersen ME. 1985. Risk assessment extrapolations and physiological modeling. *Toxicol Ind Health* 1:111-131.
- Collier A, Hillebrand C, Kelly G, et al. 2002. Investigation into testing and controlling emissions of hydrogen sulfide from gasoline vehicles. General emissions research and technology. Warrendale, PA: Society of Automotive Engineers, 13-22.
- Conrad R, Meuser K. 2000. Soils contain more than one activity consuming carbonyl sulfide. *Atmos Environ* 34(21):3635-3639.
- Cooper WJ, Cooper DJ, Saltzman ES, et al. 1987. Emissions of biogenic sulphur compounds from several wetland soils in Florida. *Atmos Environ* 21:1491-1496.
- Costa LG, Aschner M, Vitalone A, et al. 2004. Developmental neuropathology of environmental agents. *Annu Rev Pharmacol Toxicol* 44:87-110. 10.1146/annurev.pharmtox.44.101802.121424.
- Cox RA. 1975. Atmospheric photo-oxidation reactions: The gas phase reaction of OH radicals with some sulphur compounds. AERE-R8132. Harwell, Oxfordshire, England: United Kingdom Atomic Authority.
- CPSC. 2010a. Final report on an indoor environmental quality assessment of residences containing Chinese drywall. U.S. Consumer Product Safety Commission. <http://www.cpsc.gov/PageFiles/99196/51homeFinal.pdf>. February 27, 2014.
- CPSC. 2010b. Small-chamber measurements of chemical-specific emission factors for drywall. U.S. Consumer Product Safety Commission. LBNL-3986E. <http://www.cpsc.gov/PageFiles/114649/lblreport.pdf>. September 3, 2014.
- \*Curtis CG, Bartholomew TC, Rose FA, et al. 1972. Detoxification of sodium <sup>35</sup>S-sulfide in the rat. *Biochem Pharmacol* 21:2313-2321.
- Curtis SE, Anderson CR, Simon J, et al. 1975. Effects of aerial ammonia, hydrogen sulfide and swine-house dust on rate of gain and respiratory-tract structure in swine. *J Anim Sci* 41:735-739.
- Dalvi RR, Hunter AL, Neal RA. 1975. Toxicological implications of the mixed-function oxidase catalyzed metabolism of carbon disulfide. *Chem Biol Interact* 10(5):347-361.
- Daubert TE, Danner RP. 1989. Hydrogen sulfide. In: Physical and thermodynamic properties of pure chemicals data compilation. Washington, DC: Taylor and Francis.
- Deane M, Sanders G, Jonsson E. 1977. Trends and community annoyance reactions to odors from pulp mills. Eureka, California 1969-1971. *Environ Res* 14:232-244.
- Decsi T, Koletzko B. 1993. Hydrogen sulfide in pediatric parenteral amino acid solutions. *J Pediatr Gastroenterol Nutr* 17:421-423.

## 9. REFERENCES

- De Kok LJ, Maas FM, Stulen I, et al. 1988. Sulfur containing air pollutants and their effects on plant metabolism. EUR 11244:620-625.
- De Kok LJ, Rennenberg H, Kuiper PJC. 1991. The internal resistance in spinach leaves to atmospheric hydrogen sulfide deposition is determined by metabolic processes. Plant Physiol Biochem 29:463-470.
- De Kok LJ, Thompson CR, Mudd JB, et al. 1983. Effect of hydrogen sulfide fumigation on water-soluble sulfhydryl compounds in shoots of crop plants. Z Pflanzenphysiol Bd 111:85-89.
- Delphian Corporation. 2005. Delphian detection technology. Sensor technology. <http://www.delphian.com/sensor-tech.htm>. October 12, 2005.
- Deng JF. 1992. Hydrogen sulfide. In: Sullivan JB Jr., Krieger GR, eds. Hazardous materials toxicology, clinical principles of environmental health. Baltimore, MD: Williams and Wilkins, 711-717.
- Deng JF, Chang S-C. 1987. Hydrogen sulfide poisonings in hot-spring reservoir cleaning: Two case reports. Am J Ind Med 11:447-451.
- Devai I, DeLaune RD. 1999. Emission of reduced malodorous sulfur gases from wastewater treatment plants. Water Environ Res 71:203-208.
- Dillon TM, Moore DW, Gibson AB. 1993. Development of a chronic sublethal bioassay for evaluating contaminated sediment with the marine polychaete worm *Nereis (Neanthes) arenaceodentata*. Environ Toxicol Chem 12:589-605.
- DOE. 2012. Protective action criteria (PAC). Oak Ridge, TN: U.S. Department of Energy and Subcommittee on Consequence Assessment and Protective Actions (SCAPA). <http://orise.orau.gov/emi/scapa/chem-pacs-teels/default.htm>. April 24, 2013.
- Dominy JE, Stipanuk MH. 2004. New roles for cysteine and transsulfuration enzymes: Production of H<sub>2</sub>S: A neuromodulator and smooth muscle relaxant. Nutr Rev 62(9):348-353.
- Dong JZ, Glass JN, Moldoveanu SC. 2000. A simple GC-MS technique for the analysis of vapor phase mainstream cigarette smoke. J Microcolumn Sep 12(3):145-152.
- Dongo K, Tiembre I, Kone BA, et al. 2012. Exposure to toxic waste containing high concentrations of hydrogen sulphide illegally dumped in Abidjan, Cote d'Ivoire. Environ Sci Pollut Res Int 19(8):3192-3199.
- Dorevitch S, Forst L, Conroy L, et al. 2002. Toxic inhalation fatalities of US construction workers, 1990-1999. J Occup Environ Med 44(7):657-662.
- Dorman DC, Brenneman KA, Struve MF, et al. 2000. Fertility and developmental neurotoxicity effects of inhaled hydrogen sulfide in Sprague-Dawley rats. Neurotoxicol Teratol 22:71-84.
- Dorman DC, Struve MF, Gross EA, et al. 2004. Respiratory tract toxicity of inhaled hydrogen sulfide in Fischer-344 rats, Sprague-Dawley rats, and B6C3F1 mice following subchronic (90-day) exposure. Toxicol Appl Pharmacol 198:29-39.



## 9. REFERENCES

- \*Dougherty RW, Wong R, Christensen BE. 1943. Studies on hydrogen-sulfide poisoning. *Am J Vet Res* 4:254-256.
- Draeger Safety. 2005. Draeger safety. <http://www.afcintl.com/pdf/tubes.pdf>. October 05, 2005.
- Drozдов AP, Eremets MI, Troyan IA, et al. 2015. Conventional superconductivity at 203 kelvin at high pressures in the sulfur hydride system. *Nature* 525(7567):73-76. 10.1038/nature14964.
- Duong TX, Suruda AJ, Maier LA. 2001. Interstitial fibrosis following hydrogen sulfide exposure. *Am J Ind Med* 40:221-224.
- DuPont. 1981. Initial submission: Acute inhalation toxicity of carbon oxide sulfide in rats with cover letter dated 081092. DuPont Chem. Submitted to the U.S. Environmental Protection Agency under TSCA Section 8E. OTS0571009.
- Durand M, Scott BJ. 2005. Geothermal ground gas emissions and indoor air pollution in Rotorua, New Zealand. *Sci Total Environ* 345:69-80.
- Eduard W, Douwes J, Mehl R, et al. 2001. Short term exposure to airborne microbial agents during farm work: Exposure-response relations with eye and respiratory symptoms. *Occup Environ Med* 58:113-118.
- Ehman DL. 1976. Determination of parts-per-billion levels of hydrogen sulfide in air by potentiometric titration with a sulfide ion-selective electrode as an indicator. *Anal Chem* 48:918-920.
- Ek CJ, Dziegielewska KM, Habgood MD, et al. 2012. Barriers in the developing brain and neurotoxicology. *Neurotoxicology* 33(3):586-604. 10.1016/j.neuro.2011.12.009.
- Ellenhorn MJ. 1997. Hydrogen sulfide. In: *Ellenhorn's medical toxicology: Diagnosis and treatment of human poisoning*. 2nd ed. Baltimore, MD: Williams and Wilkins, 1489-1493.
- Elliott S, Rowland FS. 1990. The effect of metal complexation on the hydrogen sulfide transport across the sea-air interface. *J Atmos Chem* 10:315-327.
- Elovaara E, Tossavainen A, Savolainen H. 1978. Effects of subclinical hydrogen sulfide intoxication on mouse brain protein metabolism. *Exp Neurol* 62:93-98.
- EPA. 1978. Hydrogen sulfide. Research Triangle Park, NC: U.S. Environmental Protection Agency, Health Effects Research Laboratory. EPA600178018. PB278576.
- EPA. 1984. Validation of chemical and biological techniques for evaluation of vapors in ambient air/mutagenicity testing of twelve (12) vapor-phase compounds. Research Triangle Park, NC: U.S. Environmental Protection Agency, Health Effects Research Laboratory. EPA600184005. PB84164219.
- EPA. 1987. A new look at physiologic respiratory response to hydrogen sulfide poisoning. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development.
- EPA. 1988. Recommendations for and documentation of biological values for use in risk assessment. Cincinnati, OH: U.S. Environmental Protection Agency, Office of Research and Development, Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office. EPA600687008.

## 9. REFERENCES

- EPA. 1990. Interim methods for development of inhalation reference doses. U.S. Environmental Protection Agency. EPA600890066A.
- EPA. 1993. Report to Congress on hydrogen sulfide air emissions associated with the extraction of oil and natural gas. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. EPA453R93045. PB94131224.
- EPA. 1994a. Hydrogen sulfide; methyl mercaptan; toxic chemicals release reporting; community right-to-know; stay of reporting requirements. U.S. Environmental Protection Agency. Fed Regist 59(161):43048-43050.
- EPA. 1994b. Methods for derivation of inhalation reference concentrations and application of inhalation dosimetry. U.S. Environmental Protection Agency. EPA600890066F.
- EPA. 1994c. Chemical summary for carbonyl sulfide. U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. [http://www.epa.gov/chemfact/s\\_carbns.txt](http://www.epa.gov/chemfact/s_carbns.txt). May 22, 2013.
- EPA. 1994d. OPPT chemical fact sheet. Chemicals in the environment: Carbonyl sulfide (CAS No. 436-58-1). U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. [http://www.epa.gov/chemfact/f\\_carbns.txt](http://www.epa.gov/chemfact/f_carbns.txt). March 25, 2013.
- EPA. 1997. Special report on environmental endocrine disruption: An effects assessment and analysis. Washington, DC. U.S. Environmental Protection Agency. EPA630R96012.
- EPA. 1998. RCRA waste minimization PBT priority chemical list. U.S. Environmental Protection Agency. Fed Regist 63(216):60332-60343. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2000a. Method 11: Determination of hydrogen sulfide content of fuel gas streams in petroleum refineries. In: CFR promulgated test methods. U.S. Environmental Protection Agency. <http://www.epa.gov/ttn/emc/promgate/m-11.pdf>. June 15, 2006.
- EPA. 2000b. Method 15: Hydrogen sulfide, carbonyl sulfide, and carbon disulfide. CFR promulgated test methods. U.S. Environmental Protection Agency. <http://www.epa.gov/ttn/emc/promgate/m-15.pdf>. June 15, 2006.
- EPA. 2005. Toxic chemical release inventory reporting forms and instructions: Revised 2004 version. Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986).
- EPA. 2009a. Drinking water contaminant candidate list. U.S. Environmental Protection Agency. Fed Regist 74(194):51850-51862. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2009b. National primary drinking water regulations. Washington, DC: U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water. EPA816F090004. <http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>. April 24, 2013.
- EPA. 2009c. National recommended water quality criteria. Washington, DC: U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology. <http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>. April 24, 2013.

## 9. REFERENCES

- EPA. 2009d. Hazardous air pollutants. U.S. Environmental Protection Agency. 7412 US Code 5840-5868. <http://www.gpo.gov/fdsys/pkg/USCODE-2009-title42/pdf/USCODE-2009-title42-chap85-subchapI-partA-sec7412.pdf>. May 24, 2013.
- EPA. 2012a. Reportable quantities of hazardous substances designated pursuant to section 311 of the Clean Water Act. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 117.3. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012b. Identification and listing of hazardous waste. Hazardous constituents. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 261, Appendix VIII. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012c. Designated as hazardous substances in accordance with section 311(b)(2)(a) of the Clean Water Act. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 116.4. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012d. Drinking water standards and health advisories. Washington, DC: U.S. Environmental Protection Agency, Office of Water. EPA822S12001. <http://water.epa.gov/drink/standards/hascience.cfm>. April 24, 2013.
- EPA. 2012e. Standards for owners and operators of hazardous waste TSD facilities. Groundwater monitoring list. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 264, Appendix IX. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012f. Superfund, emergency planning, and community right-to-know programs. Designation, reportable quantities, and notifications. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 302.4. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012g. Superfund, emergency planning, and community right-to-know programs. Toxic chemical release reporting. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 372.65. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012h. Superfund, emergency planning, and community right-to-know programs. Extremely hazardous substances and their threshold planning quantities. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 355, Appendix A. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012i. Toxic substances control act. Chemical lists and reporting periods. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 712.30. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2012j. Toxic Substances Control Act. Health and safety data reporting. U.S. Environmental Protection Agency. Code of Federal Regulations. 40 CFR 716.120. <http://www.gpo.gov/fdsys>. April 24, 2013.
- EPA. 2013a. Master testing list. Washington, DC: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. <http://www.epa.gov/opptintr/chemtest/pubs/mtl.html>. April 24, 2013.
- EPA. 2013b. Acute exposure guideline levels (AEGLs). Washington, DC: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. <http://www.epa.gov/oppt/aegl/>. April 24, 2013.

## 9. REFERENCES

- EPA. 2013c. Inert ingredients permitted for use in nonfood pesticide products. Washington, DC: U.S. Environmental Protection Agency. <http://iaspub.epa.gov/apex/pesticides/f?p=124:1>. April 24, 2013.
- EPA. 2013d. National ambient air quality standards (NAAQS). Washington, DC: U.S. Environmental Protection Agency, Office of Air and Radiation. <http://www.epa.gov/air/criteria.html>. April 24, 2013.
- EPA. 2013e. Air toxics data. Hydrogen sulfide. Air toxics-data analysis. U.S. Environmental Protection Agency. <http://www.epa.gov/ttnamti1/toxdat.html#data>. May 14, 2013.
- EPA. 2013f. Carbonyl sulfide. 2008 National Emissions Inventory Data. U.S. Environmental Protection Agency. <http://www.epa.gov/ttn/chief/net/2008inventory.html>. May 14, 2013.
- EPA. 2015a. Technology transfer network. Clearinghouse for inventories and emissions factors. National Emissions Inventory (NEI) air pollutant emissions trends data. U.S. Environmental Protection Agency. <http://www3.epa.gov/ttnchie1/trends/>. November 17, 2015.
- EPA. 2015b. Air quality system (AQS). Data files. Annual summary data (2010-2015). U.S. Environmental Protection Agency. [http://aqsdrl.epa.gov/aqsweb/aqstmp/airdata/download\\_files.html](http://aqsdrl.epa.gov/aqsweb/aqstmp/airdata/download_files.html). December 2, 2015.
- \*Evans CL. 1967. The toxicity of hydrogen sulphide and other sulphides. *Q J Exp Physiol* 52:231-248.
- Farahat SA, Kishk NA. 2010. Cognitive functions changes among Egyptian sewage network workers. *Toxicol Ind Health* 26(4):229-238.
- FDA. 2013. Everything added to food in the United States (EAFUS). Washington, DC: U.S. Food and Drug Administration. <http://www.accessdata.fda.gov/scripts/fcn/fcnnavigation.cfm?rpt=eafuslisting>. April 24, 2013.
- Ferguson SA. 1996. Neuroanatomical and functional alterations resulting from early postnatal cerebellar insults in rodents. *Pharmacol Biochem Behavior* 55:663-671.
- Fiedler N, Kipen H, Ohman-Strickland P, et al. 2008. Sensory and cognitive effects of acute exposure to hydrogen sulfide. *Environ Health Perspect* 116(1):78-85.
- Fiorucci S. 2011. Hydrogen sulfide: From physiology to pharmacology. *Inflamm Allergy Drug Targets* 10:77-84.
- Fomon SJ. 1966. Body composition of the infant: Part 1: The male reference infant. In: Faulkner F, ed. *Human development*. Philadelphia, PA: WB Saunders, 239-246.
- Fomon SJ, Haschke F, Ziegler EE, et al. 1982. Body composition of reference children from birth to age 10 years. *Am J Clin Nutr* 35(Suppl 5):1169-1175.
- Freireich AW. 1946. Hydrogen sulfide poisoning: Report of two cases, one with fatal outcome, from associated mechanical asphyxia. *Am J Pathol* 22:147-155.
- Fuller DC, Suruda AJ. 2000. Occupationally related hydrogen sulfide deaths in the United States from 1984 to 1994. *J Occup Environ Med* 42(9):939-942.

## 9. REFERENCES

- Fulton JP, Vanderslice R, Marshall RJ, et al. 2003. Hydrogen sulfide exposure on Rhode Island's shoreline. *Med Health R I* 86(11):365-366.
- Gagnaire F, Simon P, Bonnet P, et al. 1986. The influence of simultaneous exposure to carbon disulfide and hydrogen sulfide on the peripheral nerve toxicity and metabolism of carbon disulfide in rats. *Toxicol Lett* 34:175-183.
- Gaitonde UB, Sellar RJ, O'Hare AE. 1987. Long term exposure to hydrogen sulphide producing subacute encephalopathy in a child. *Br Med J (Clin Res Ed)* 294:614.
- Giwercman A, Carlsen E, Keiding N, et al. 1993. Evidence for increasing incidence of abnormalities of the human testis: A review. *Environ Health Perspect* 101(Supp 2):65-71.
- Goodwin LR, Francom D, Dieken FP, et al. 1989. Determination of sulfide in brain tissue by gas dialysis/ion chromatography: Postmortem studies and two case reports. *J Anal Toxicol* 13:105-109.
- Goyer N. 1990. Evaluation of occupational exposure to sulfur compounds in paper pulp kraft mills. *Am Ind Hyg Assoc J* 51:390-394.
- Grant WM, Schuman JS. 1993. Hydrogen sulfide. *Toxicology of the eye. Effects on the eyes and visual system from chemicals, drugs, metals and minerals, plants, toxins and venoms; also, systemic side effects from eye medications.* 4th ed. Springfield, IL: Charles C. Thomas, 797-801.
- Green FHY, Schurch S, De Sanctis GT, et al. 1991. Effects of hydrogen sulfide exposure on surface properties of lung surfactant. *J Appl Physiol* 70:1943-1949.
- Guidotti TL. 1994. Occupational exposure to hydrogen sulfide in the sour gas industry: Some unresolved issues. *Int Arch Occup Environ Health* 66:153-160.
- Guidotti TL. 1996. Hydrogen sulphide. *Occup Med* 46:367-371.
- Guidotti TL. 2007. Hydrogen sulfide. In: Shannon MW, Borron SW, Burns MJ, eds. *Haddad and Winchester's clinical management of poisoning and drug overdose*, 4<sup>th</sup> edition. Philadelphia, PA: Saunders Elsevier, 1335-1342.
- Guzelian PS, Henry CJ, Olin SS. 1992. Similarities and differences between children and adults: Implications for risk assessment. Washington, DC: International Life Sciences Institute Press.
- Haahtela T, Marttila O, Vilkkä V, et al. 1992. The South Karelia air pollution study: Acute health effects of malodorous sulfur air pollutants released by a pulp mill. *Am J Public Health* 82:603-605.
- Hagley SR, South DL. 1983. Fatal inhalation of liquid manure gas. *Med J Aust* 2:459-460.
- Haider SS, Hasan M, Islam F. 1980. Effect of air pollutant hydrogen sulfide on the levels of total lipids, phospholipids & cholesterol in different regions of the guinea pig brain. *Indian J Exp Biol* 18:418-420.
- Hall AH. 1996. Systemic asphyxiants. In: Rippe JM, Irwin RS, Fink MP, et al., eds. *Intensive care medicine*, 3rd ed. Boston, MA: Little, Brown, and Company, 1706-1718.
- Hall AH, Rumack BH. 1997. Hydrogen sulfide poisoning: An antidotal role for sodium nitrite? *Vet Hum Toxicol* 39:152-154.

## 9. REFERENCES

- Hannah RS, Roth SH. 1991. Chronic exposure to low concentrations of hydrogen sulfide produces abnormal growth in developing cerebellar Purkinje cells. *Neurosci Lett* 122:225-228.
- Hannah RS, Bennington R, Roth SH. 1990. A relationship between hydrogen sulfide exposure and taurine levels in maternal rats. *Proc West Pharmacol Soc* 33:177-179.
- Hannah RS, Hayden LJ, Roth SH. 1989. Hydrogen sulfide exposure alters the amino acid content in developing rat CNS. *Neurosci Lett* 99:323-327.
- Haouzi P, Chenuel B, Sonobe T. 2015. High-dose hydroxocobalamin administered after H<sub>2</sub>S exposure counteracts sulfide-poisoning-induced cardiac depression in sheep. *Clin Toxicol (Phila)* 53(1):28-36. 10.3109/15563650.2014.990976.
- Hayden LJ, Goeden H, Roth SH. 1990a. Exposure to low levels of hydrogen sulfide elevates circulating glucose in maternal rats. *J Toxicol Environ Health* 31:45-52.
- Hayden LJ, Goeden H, Roth SH. 1990b. Growth and development in the rat during sub-chronic exposure to low levels of hydrogen sulfide. *Toxicol Ind Health* 6:389-401.
- Hemminki K, Niemi M-L. 1982. Community study of spontaneous abortions: Relation to occupation and air pollution by sulfur dioxide, hydrogen sulfide, and carbon disulfide. *Int Arch Occup Environ Health* 51:55-63.
- Herr DW, Graff JE, Moser VC, et al. 2007. Inhalational exposure to carbonyl sulfide produces altered brainstem auditory and somatosensory-evoked potentials in Fischer 344N rats. *Toxicol Sci* 95(1):118-135.
- Hessel PA, Herbert FA, Melenka LS, et al. 1997. Lung health in relation to hydrogen sulfide exposure in oil and gas workers in Alberta, Canada. *Am J Ind Med* 31:554-557.
- Higuchi Y, Fukamachi M. 1977. [Behavioral studies on toxicity of hydrogen sulfide by means of conditioned avoidance responses in rats.] *Folia Pharmacol Jap* 73:307-319. (Japanese)
- Hill FB. 1973. Atmospheric sulfur and its links to the biota. *Brookhaven Symp Biol* 30:159-181.
- Ho CK, Kelley M, Itamura MT, et al. 2001. Review of chemical sensors for in-situ monitoring of volatile contaminants. Albuquerque, New Mexico: Sandia National Laboratories, 1-28.
- Hoel DG, Davis DL, Miller AB, et al. 1992. Trends in cancer mortality in 15 industrialized countries, 1969-1986. *J Natl Cancer Inst* 84(5):313-320.
- Hoffman RS, Howland MA, Lewin NA, et al., eds. 2015. *Goldfrank's toxicologic emergencies*, 10th edition. New York, NY: McGraw Hill, 1606-1611.
- Hoidal CR, Hall AH, Robinson MD, et al. 1986. Hydrogen sulfide poisoning from toxic inhalations of roofing asphalt fumes. *Ann Emerg Med* 15:826-830.
- Hoke RA, Giesy JP, Zabik M, et al. 1993. Toxicity of sediments and sediment pore waters from the Grand Calumet River—Indiana Harbor, Indiana area of concern. *Ecotoxicol Environ Safety* 26:86-112.

## 9. REFERENCES

- Hollis JP. 1985. Hydrogen sulfide in Louisiana rice fields. *Acta Phytopathol Acad Sci Hungar* 20:321-326.
- Horton RA, Wing S, Marshall SW, et al. 2009. Malodor as a trigger of stress and negative mood in neighbors of industrial hog operations. *Am J Public Health* 99 Suppl 3:S610-S615.
- Hosoki R, Matsuki N, Kimura H. 1997. The possible role of hydrogen sulfide as an endogenous smooth muscle relaxant in synergy with nitric oxide. *Biochem Biophys Res Commun* 237:527-531.
- HSDB. 2007. Carbonyl sulfide. National Library of Medicine, Hazardous Substances Data Bank. <http://toxnet.nlm.nih.gov>. May 22, 2013.
- HSDB. 2013. Hydrogen sulfide. National Library of Medicine, Hazardous Substances Data Bank. <http://toxnet.nlm.nih.gov>. May 22, 2013.
- Hugod C. 1981. Myocardial morphology in rabbits exposed to various gas-phase constituents of tobacco smoke--an ultrastructural study. *Atherosclerosis* 40(2):181-190.
- Hugod C, Astrup P. 1980. Exposure of rabbits to carbon monoxide and other gas phase constituents of tobacco smoke. *MMW Munch Med Wochenschr* 122 Suppl 1:18-24.
- IARC. 2013. Agents classified by the IARC monographs. Volumes 1-107. Lyon, France: International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Classification/index.php>. April 24, 2013.
- Imamura T, Kage S, Kudo K, et al. 1996. A case of drowning linked to ingested sulfides—a report with animal experiments. *Int J Legal Med* 109:42-44.
- Ingram TI, Hull T, Black M. 1997. A public health assessment tool used to analyze the health and safety effects of a major landfill landslide. *J Environ Health* 60(2):8-13.
- Inserra SG, Phifer BL, Anger WK, et al. 2004. Neurobehavioral evaluation for a community with chronic exposure to hydrogen sulfide gas. *Environ Res* 95:53-61.
- Iowa DNR. 2004. Iowa air sampling manual. The Iowa Department of Natural Resources. <http://www.iowadnr.com/air/afo/files/samplingmanual.pdf>. September 29, 2005.
- Iowa DNR. 2005. Air quality bureau - Animal feeding operations. The Iowa Department of Natural Resources. <http://www.iowadnr.com/air/afo/afo.html>. October 05, 2005.
- Inserra SG, Phifer BL, Anger WK, et al. 2004. Neurobehavioral evaluation for a community with chronic exposure to hydrogen sulfide gas. *Environ Res* 95:53-61.
- IRIS. 2002. Carbonyl sulfide. Integrated Risk Information System. Washington, DC: U.S. Environmental Protection Agency. <http://www.epa.gov/iris/>. April 24, 2013.
- IRIS. 2003. Hydrogen sulfide. Integrated Risk Information System. Washington, DC: U.S. Environmental Protection Agency. <http://www.epa.gov/iris/>. April 24, 2013.
- Isidorov V, Jdanova M. 2002. Volatile organic compounds from leaves litter. *Chemosphere* 48:975-979.

## 9. REFERENCES

- Jaakkola JJ, Vilkka V, Marttila O, et al. 1990. The South Karelia air pollution study. The effects of malodorous sulfur compounds from pulp mill on respiratory and other symptoms. *Am Rev Respir Dis* 142:1344-1350.
- Jappinen P, Tenhunen R. 1990. Hydrogen sulphide poisoning: Blood sulphide concentration and changes in haem metabolism. *Br J Ind Med* 47:283-285.
- Jappinen P, Vilkka V, Marttila O, et al. 1990. Exposure to hydrogen sulphide and respiratory function. *Br J Ind Med* 47:824-828.
- Jiang T, Suarez FL, Levitt MD, et al. 2001. Gas production by feces of infants. *J Pediatr Gastroenterol Nutr* 32:535-541.
- Jørgensen BB. 1982. Ecology of the bacteria of the sulphur cycle with special reference to anoxic-oxic interface environments. *Philos Trans R Soc Lond B Biol Sci* 298:543-561.
- Kage S, Nagata T, Kimura K, et al. 1992. Usefulness of thiosulfate as an indicator of hydrogen sulfide poisoning in forensic toxicological examination: A study with animal experiments. *Jpn J Forensic Toxicol* 10(3):223-227.
- Kage S, Ito S, Kishida T, et al. 1998. A fatal case of hydrogen sulfide poisoning in a geothermal power plant. *J Forensic Sci* 43(4):908-910.
- Kage S, Takekawa K, Kurosaki K, et al. 1997. The usefulness of thiosulfate as an indicator of hydrogen sulfide poisoning: Three cases. *Int J Legal Med* 110:220-222.
- Kamijo Y, Takai M, Fujita Y, et al. 2013. A multicenter retrospective survey on a suicide trend using hydrogen sulfide in Japan. *Clin Toxicol (Phila)* 51(5):425-428. 10.3109/15563650.2013.799676.
- Kamoun P. 2004. Endogenous production of hydrogen sulfide in mammals. *Amino Acids* 26(3):243-254.
- Kamstrup O, Hugod C. 1979. Exposure of rabbits to 50 ppm carbonyl sulfide. A biochemical and histomorphological study. *Int Arch Occup Environ Health* 44(2):109-116.
- Kangas J, Savolainen H. 1987. Urinary thiosulphate as an indicator of exposure to hydrogen sulphide vapour. *Clin Chim Acta* 164(1):7-10.
- Kangas J, Jappinen P, Savolainen H. 1984. Exposure to hydrogen sulfide, mercaptans and sulfur dioxide in pulp industry. *Am Ind Hyg Assoc J* 45(12):787-790.
- Kato H, Saito M, Nagahata Y, et al. 2008. Mycobacterium for degradation of carbonyl sulfide in the air. *Microbiology* 154(Pt 1):249-255.
- Kauppinen T, Teschke K, Savela A, et al. 1997. International data base of exposure measurements in the pulp, paper and paper products industries. *Int Arch Occup Environ Health* 70:119-127.
- Kearns GL, Abdel-Rahman SM, Alander SW, et al. 2003. Developmental pharmacology--drug disposition, action, and therapy in infants and children. *N Engl J Med* 349(12):1157-1167. 10.1056/NEJMra035092.



## 9. REFERENCES

- Khalil MAK, Rasmussen RA. 1984. Global sources, lifetimes and mass balances of carbonyl sulfide (OCS) and carbon disulfide (CS<sub>2</sub>) in the earth's atmosphere. *Atmos Environ* 18(9):1805-1813. 10.1016/0004-6981(84)90356-1.
- Khan AA, Coppock RW, Schuler MM, et al. 1998. Biochemical effects of subchronic repeated exposures to low and moderate concentrations of hydrogen sulfide in Fischer 344 rats. *Inhal Toxicol* 10:1037-1044.
- Khan AA, Schuler MM, Prior MG, et al. 1990. Effects of hydrogen sulfide exposure on lung mitochondrial respiratory chain enzymes in rats. *Toxicol Appl Pharmacol* 103:482-490.
- Khan AA, Yong S, Prior MG, et al. 1991. Cytotoxic effects of hydrogen sulfide on pulmonary alveolar macrophages in rats. *J Toxicol Environ Health* 33:57-64.
- Kilburn KH. 1993. Case report: Profound neurobehavioral deficits in an oil field worker overcome by hydrogen sulfide. *Am J Med Sci* 306:301-305.
- Kilburn KH. 1997. Exposure to reduced sulfur gases impairs neurobehavioral function. *South Med J* 90:997-1006.
- Kilburn KH. 2012. Human impairment from living near confined animal (hog) feeding operations. *J Environ Public Health* 2012:565690.
- Kilburn KH, Warshaw RH. 1995. Hydrogen sulfide and reduced-sulfur gases adversely affect neurophysiological functions. *Toxicol Ind Health* 11:185-197.
- Kilburn KH, Thrasher JD, Gray MR. 2010. Low-level hydrogen sulfide and central nervous system dysfunction. *Toxicol Ind Health* 26(7):387-405.
- Kimura K, Hasegawa M, Matsubara K, et al. 1994. A fatal disaster case based on exposure to hydrogen sulfide - an estimation of the hydrogen sulfide concentration at the scene. *Forensic Sci Int* 66:111-116.
- Kimura Y, Kimura H. 2004. Hydrogen sulfide protects neurons from oxidative stress. *FASEB J* 18:1165-1167.
- Kirk E. 1949. The quantity and composition of human colonic flatus. *Gastroenterology* 12:782-794.
- \*Kleinfeld M, Giel C, Rosso A. 1964. Acute hydrogen sulfide intoxication; an unusual source of exposure. *Ind Med Surg* 33:656-660.
- Knight LD, Presnell SE. 2005. Death by sewer gas: Case report of a double fatality and review of the literature. *Am J Forensic Med Pathol* 26(2):181-185.
- Koe LCC. 1985. Ambient hydrogen sulfide levels at a wastewater treatment plant. *Environ Monit Assess* 5:101-108.
- Kohno M, Tanaka E, Nakamura T, et al. 1991. [Influence of short-term inhalation of hydrogen sulfide in rats.] *Jpn J Toxicol Environ Health (Eisei Kagaku)* 37:103-106. (Japanese)
- Kombian SB, Reiffenstein RJ, Colmers WF. 1993. The actions of hydrogen sulfide on dorsal raphe serotonergic neurons *in vitro*. *J Neurophysiol* 70:81-96.

## 9. REFERENCES

- \*Kombian SB, Warenycia MW, Mele FG, et al. 1988. Effects of acute intoxication with hydrogen sulfide on central amino acid transmitter systems. *Neurotoxicology* 9:587-595.
- Komori M, Nishio K, Kitada M, et al. 1990. Fetus-specific expression of a form of cytochrome P-450 in human livers. *Biochemistry* 29(18):4430-4433.
- Kosmider S, Rogala E, Pacholek A. 1967. Electrocardiographic and histochemical studies of the heart muscle in acute experimental hydrogen sulfide poisoning. *Arch Immunol Ther Exp* 15:731-740.
- Krekel K. 1964. [Electrocardiographic (ECG) changes in two workers after hydrogen sulfide poisoning.] *Zentralbl Arbeitsmed* 14:159-163. (German)
- Krishnan K, Andersen ME. 1994. Physiologically based pharmacokinetic modeling in toxicology. In: Hayes AW, ed. *Principles and methods of toxicology*. 3rd ed. New York, NY: Raven Press, Ltd., 149-188.
- Krishnan K, Anderson ME, Clewell HJ, et al. 1994. Physiologically based pharmacokinetic modeling of chemical mixtures. In: Yang RSH, ed. *Toxicology of chemical mixtures. Case studies, mechanisms, and novel approaches*. San Diego, CA: Academic Press, 399-437.
- Kump LR, Pavlov A, Arthur MA. 2005. Massive release of hydrogen sulfide to the surface ocean and atmosphere during intervals of ocean anoxia. *Geology* 33:397-400.
- Lai MW, Klein-Schwartz W, Rodgers GC, et al. 2006. 2005 Annual Report of the American Association of Poison Control Centers' National Poisoning And Exposure Database. *Clin Toxicol (Phila)* 44(6-7):803-932.
- Laug EP, Draize JH. 1942. The percutaneous absorption of ammonium hydrogen sulfide and hydrogen sulfide. *J Pharmacol Exp Ther* 76:179-188.
- Lay MDS, Sauerhoff MW, Saunders DR. 2012. Carbon disulfide. In: *Ullmann's encyclopedia of industrial chemistry*. Wiley-VCH Verlag GmbH & Co. KGaA, 10.1002/14356007.a05\_185.
- Layton DW, Cederwall RT. 1986. Assessing and managing the risks of accidental releases of hazardous gas: A case study of natural gas wells contaminated with hydrogen sulfide. *Environ Int* 12:519-532.
- Leahey DM, Schroeder MB. 1986. Predictions of maximum ground-level hydrogen sulfide concentrations resulting from two sour gas well blowouts. *J Air Pollut Control Assoc* 36:1147-1149.
- Leeder JS, Kearns GL. 1997. Pharmacogenetics in pediatrics: Implications for practice. *Pediatr Clin North Am* 44(1):55-77.
- Legator MS, Singleton CR, Morris DL, et al. 2001. Health effects from chronic low-level exposure to hydrogen sulfide. *Arch Environ Health* 56(2):123-131.
- Lehman AT. 1996. Emissions of toxic release inventory listed chemicals from MSW landfills and Federal Right to Know programs. *Proceedings of the Biennial Waste Processing Conference* 17:289-303.
- Leonardos G, Kendall D, Bernard N. 1969. Odor threshold determinations of 53 odorant chemicals. *J Air Pollut Control Assoc* 19:91-95.

## 9. REFERENCES

- Leung H. 1993. Physiologically-based pharmacokinetic modelling. In: Ballantyne B, Marrs T, Turner P, eds. General and applied toxicology. Vol. 1. New York, NY: Stockton Press, 153-164.
- Lewis RJ. 2007. Hawley's condensed chemical dictionary. New York, NY: John Wiley & Sons, Inc., 234, 668.
- Lide DR, Frederikse HPR, eds. 1993. CRC handbook of chemistry and physics. 74th ed. Ann Arbor, MI: CRC Press, 6-91, 6-94, 6-101.
- Lim TT, Heber AJ, Ni JQ, et al. 2003. Atmospheric pollutants and trace gases: Odor and gas release from anaerobic treatment lagoons for swine manure. *J Environ Qual* 32(2):406-416.
- Lindell H, Jappinen P, Savolainen H. 1988. Determination of sulphide in blood with an ion-selective electrode by pre-concentration of trapped sulphide in sodium hydroxide solution. *Analyst* 113:839-840.
- Lindenmann J, Matzi V, Anegg U, et al. 2010. Hyperbaric oxygen in the treatment of hydrogen sulphide intoxication. *Acta Anaesthesiol Scand* 54(6):784-785.
- Litovitz T, Felberg L, White S, et al. 1996. 1995 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med* 14:487-494, 521.
- Litovitz TL, Klein-Schwartz W, White S, et al. 2001. 2000 Annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med* 19(5):337-395.
- Liu J, Geng C, Mu Y, et al. 2010. Exchange of carbonyl sulfide (COS) between the atmosphere and various soils in China. *Biogeosciences* 7:753-762.
- Liu J, Mu Y, Geng C, et al. 2007. Uptake and conversion of carbonyl sulfide in a lawn soil. *Atmos Environ* 41:5697-5706.
- Livingston AL. 1978. Forage plant estrogens. *J Toxicol Environ Health* 4(2-3):301-324.
- Lopez A, Prior M, Lillie LE, et al. 1988a. Histologic and ultrastructural alterations in lungs of rats exposed to sub-lethal concentrations of hydrogen sulfide. *Vet Pathol* 25:376-384.
- Lopez A, Prior MG, Reiffenstein RJ, et al. 1989. Peracute toxic effects of inhaled hydrogen sulfide and injected sodium hydrosulfide on the lungs of rats. *Fundam Appl Toxicol* 12:367-373.
- Lopez A, Prior M, Yong S, et al. 1987. Biochemical and cytological alterations in the respiratory tract of rats exposed for 4 hours to hydrogen sulfide. *Fundam Appl Toxicol* 9:753-762.
- Lopez A, Prior M, Yong S, et al. 1988b. Nasal lesions in rats exposed to hydrogen sulfide for four hours. *Am J Vet Res* 49:1107-1111.
- Luck J, Kaye SB. 1989. An unrecognized form of hydrogen sulphide keratoconjunctivitis. *Br J Ind Med* 46:748-749.
- Maebashi K, Iwadate K, Sakai K, et al. 2011. Toxicological analysis of 17 autopsy cases of hydrogen sulfide poisoning resulting from the inhalation of intentionally generated hydrogen sulfide gas. *Forensic Sci Int* 207(1-3):91-95.

## 9. REFERENCES

- Mariggio MA, Pettini F, Fumarulo R. 1997. Sulfide influence on polymorphonuclear functions: A possible role for  $\text{Ca}^{2+}$  involvement. *Immunopharmacol Immunotoxicol* 19:393-404.
- Marttila O, Haahtela T, Silakoski I, et al. 1994a. The South Karelia air pollution study: Relationship of outdoor and indoor concentrations of malodorous sulfur compounds released by pulp mills. *J Air Waste Manage Assoc* 44:1093-1096.
- Marttila O, Jaakkola JJK, Partti-Pellinen K, et al. 1995. South Karelia air pollution study: Daily symptom intensity in relation to exposure levels of malodorous sulfur compounds from pulp mills. *Environ Res* 71:122-127.
- Marttila O, Jaakkola JJK, Vilkkä V, et al. 1994b. The South Karelia air pollution study: The effects of malodorous sulfur compounds from pulp mills on respiratory and other symptoms in children. *Environ Res* 66:152-159.
- Mayr U, Butsch A, Schneider S. 1992. Validation of two *in vitro* test systems for estrogenic activities with zearalenone, phytoestrogens and cereal extracts. *Toxicology* 74(2-3):135-149.
- McDonald JM, McIntosh AP. 1951. Fatalities from hydrogen sulfide in wells. *Arch Ind Hyg Occup Med* 3:445-447.
- McMeekin TA, Patterson JT. 1975. Characterization of hydrogen sulfide-producing bacteria isolated from meat and poultry plants. *Appl Microbiol* 29:165-169.
- MDH. 2004. Why does my water smell like rotten eggs? Hydrogen sulfide and sulfur bacteria in well water. St. Paul, MN: Minnesota Department of Health.
- Meinrat O, Andreae R, Ferek J. 1992. Photochemical production of carbonyl sulfide in seawater and its emission to the atmosphere. *Global Biogeochem Cycles* 6(2):175-183.
- Milby TH. 1962. Hydrogen sulfide intoxication: Review of the literature and report of an unusual accident resulting in two cases of nonfatal poisoning. *J Occup Med* 4:431-437.
- Milby TH, Baselt RC. 1999. Hydrogen sulfide poisoning: Clarification of some controversial issues. *Am J Ind Med* 35:192-195.
- Millero FJ, Hubinger S, Fernandez M, et al. 1987. Oxidation of  $\text{H}_2\text{S}$  in sea water as a function of temperature, pH and ionic strength. *Environ Sci Technol* 21:439-443.
- Millero FJ, LeFerriere A, Fernandez M, et al. 1989. Oxidation of hydrogen sulfide with  $\text{H}_2\text{O}_2$  in natural waters. *Environ Sci Technol* 23(2):209-213.
- Mitchell TW, Savage JC, Gould DH. 1993. High-performance liquid-chromatography detection of sulfide in tissues from sulfide-treated mice. *J Appl Toxicol* 13:389-394.
- Monsanto. 1985a. Initial submission: Acute toxicity of carbon oxysulfide administered by inhalation to male and female Sprague-Dawley rats (final report) with attachments and letter dated 112791. Monsanto Agric Co. Submitted to the U.S. Environmental Protection Agency under TSCA Section 8ECP. EPA88-920003400. OTS0540051.

## 9. REFERENCES

- Monsanto. 1985b. Initial submission: Two week study with carbonyl sulfide administered by inhalation to rats with cover letter dated 052892. Monsanto Co. Submitted to the U.S. Environmental Protection Agency under TSCA Section 8ECP. EPA88-920003400. OTS0540051.
- Monsanto. 1987. One-generation reproduction studies of male albino rats, female albino rats and previously-exposed male Sprague-Dawley rats to carbonyl sulfide (COS) by inhalation. In: Initial submission: Letter from E.I. Dupont De Nemours & Co to USEPA regarding toxicity studies with carbonyl sulfide with cover letter dated 09/01/92. Submitted to the U.S. Environmental Protection Agency under TSCA Section 8ECP, 22-290. EPA88-920008223. OTS0555041.
- Moore JWE, Millard S, Babidge W, et al. 1997. Hydrogen sulphide produces diminished fatty acid oxidation in the rat colon *in vivo*: Implications for ulcerative colitis. *Aust NZ J Surg* 67:245-249.
- Morgan DL, Little PB, Herr DW, et al. 2004. Neurotoxicity of carbonyl sulfide in F344 rats following inhalation exposure for up to 12 weeks. *Toxicol Appl Pharmacol* 200(2):131-145.
- Morrison JP, Ton TV, Collins JB, et al. 2009. Gene expression studies reveal that DNA damage, vascular perturbation, and inflammation contribute to the pathogenesis of carbonyl sulfide neurotoxicity. *Toxicol Pathol* 37(4):502-511.
- Morse DL, Woodbury MA, Rentmeester K, et al. 1981. Death caused by fermenting manure. *JAMA* 245:63-64.
- Morselli PL, Franco-Morselli R, Bossi L. 1980. Clinical pharmacokinetics in newborns and infants. *Clin Pharmacokinet* 5(6):485-527.
- Moulin FJ-M, Brenneman KA, Kimbell J, et al. 2002. Predicted regional flux of hydrogen sulfide correlates with distribution of nasal olfactory lesions in rats. *Toxicol Sci* 66:7-15.
- Mowry JB, Spyker DA, Cantilena LR, Jr., et al. 2013. 2012 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 30th Annual report. *Clin Toxicol (Phila)* 51(10):949-1229.
- Nagata T, Kage S, Kimura K, et al. 1990. Sulfide concentrations in postmortem mammalian tissues. *J Forensic Sci* 35:706-712.
- NAS/NRC. 1989. Report of the oversight committee. Biologic markers in reproductive toxicology. Washington, DC: 15-35.
- Nicholls P. 1975. The effect of sulphide on cytochrome *aa*<sub>3</sub>. Isoteric and allosteric shifts of the reduced a-peak. *Biochim Biophys Acta* 396:24-35.
- Nicholls P, Peterson LC, Miller M, et al. 1976. Ligand-induced spectral changes in cytochrome c oxidase and their possible significance. *Biochim Biophys Acta* 449:188-196.
- NIOSH. 1977a. Criteria for a recommended standard: Occupational exposure to hydrogen sulfide. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, National Institute for Occupational Safety and Health. NIOSH77158. PB274196.
- NIOSH. 1977b. Walk-through survey report, Courtalds North America, Inc., Mobile, Alabama, July 21-22, 1977. Cincinnati, OH: National Institute Occupational Safety and Health. PB88251541.

## 9. REFERENCES

- NIOSH. 1979. Final report. *In situ* sampling techniques in environmental air analysis. Report no. 5-R01-OH-00632-02. Cincinnati, OH: U.S. Department of Health, Education, and Welfare, National Institute of Occupational Safety and Health. PB84241439.
- NIOSH. 1980. Technical assistance report TA 80-33, Omaha Waste Pretreatment Plant, Omaha, Nebraska. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. NIOSH-HETA8033. PB81111148.
- NIOSH. 1982a. Control technology assessment for coal gasification and liquefaction processes, Rockwell International, Santa Susana, California. Cincinnati, OH: U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, Division of Physical Sciences and Engineering. PB84182724.
- NIOSH. 1982b. Health hazard evaluation report HETA 81-327-1161, Caribbean Gulf Refining Corporation, Bayamon, Puerto Rico. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. HETA813271161. PB84150333.
- NIOSH. 1984. Health hazard evaluation report HETA 83-440-1537, Papillion Creek Wastewater Treatment Plant, Omaha, Nebraska. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. HETA834401537. PB208270.
- NIOSH. 1985a. Fatal accident circumstances and epidemiology (FACE) report: Two sanitation employees die in confined space in Kentucky, August 24, 1985. Morgantown, WV: National Institute for Occupational Safety and Health, Division of Safety Research. FACE8544. PB91197848.
- NIOSH. 1985b. Health hazard evaluation report HETA 80-13, 81-147-1644, Schlegel Tennessee, Inc., Maryville, Tennessee. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. HETA8013811471644. PB86221355.
- NIOSH. 1985c. Health hazard evaluation report HETA 84-307-1581, Big Dry Creek Plant, Westminster, Colorado. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. HETA843071581. PB86132792.
- NIOSH. 1989. Fatal accident circumstances and epidemiology (FACE) report: Two maintenance workers die after inhaling hydrogen sulfide in manhole, January 31, 1989. Morgantown, WV: National Institute for Occupational Safety and Health. PB91212761.
- NIOSH. 1990. Hazard evaluation and technical assistance report HETA 89-379 and 90-282-L2074, Stone Container Corporation, Missoula, Montana. Cincinnati, OH: National Institute for Occupational Safety and Health, Hazard Evaluations and Technical Assistance Branch. HETA8937990282L2074. PB91146241.
- NIOSH. 1994. NIOSH manual of analytical methods. 4th ed. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, National Institute for Occupational Safety and Health.
- NIOSH. 2011. Hydrogen sulfide. NIOSH pocket guide to chemical hazards. Atlanta, GA: National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. <http://www.cdc.gov/niosh/npg/>. April 24, 2013.

## 9. REFERENCES

- NIOSH. 2013. Carbonyl sulfide. NIOSH pocket guide to chemical hazards. Atlanta, GA: National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. <http://www.cdc.gov/niosh/npg/>. April 24, 2013.
- NJDEP. 2009. Right to know hazardous substances fact sheet. Carbonyl sulfide. New Jersey Department of Health and Senior Services. <http://nj.gov/health/eoh/rtkweb/documents/fs/0349.pdf>. April 1, 2013.
- NRC. 1993. Pesticides in the diets of infants and children. National Research Council, Washington DC: National Academy Press.
- NSF. 1976. Behavior of hydrogen sulfide in the atmosphere and its effects on vegetation. Washington, DC: National Science Foundation, Research Applied to National Needs. NSF/RA760398. PB262733.
- NTP. 2011. Report on carcinogens. 12th ed. Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program. <http://ntp-server.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf>. April 24, 2013.
- Oderda GM. 1975. Fatality produced by accidental inhalation of drain cleaner fumes. *Clin Toxicol* 8:547-551.
- O'Neil MJ, Smith A, Heckelman PE, et al. 2001. Hydrogen sulfide. *The Merck index. An encyclopedia of chemicals, drugs, and biologicals.* Whitehouse Station, NJ: Merck & Co., Inc., 859.
- Osbern LN, Crapo RO. 1981. Dung lung: A report of toxic exposure to liquid manure. *Ann Intern Med* 95:312-314.
- OSHA. 2013a. List of highly hazardous chemicals, toxics, and reactives. Occupational safety and health standards. Occupational Safety and Health Administration. Code of Federal Regulations 29 CFR 1910.119, Appendix A. <http://www.osha.gov/law-regs.html>. April 24, 2013.
- OSHA. 2013b. Toxic and hazardous substances. Occupational safety and health standards. Occupational Safety and Health Administration. Code of Federal Regulations 29 CFR 1910.1000, Table Z-2. <http://www.osha.gov/law-regs.html>. April 24, 2013.
- OSHA. 2013c. Toxic and hazardous substances. Occupational safety and health standards. Occupational Safety and Health Administration. Code of Federal Regulations 29 CFR 1910.1000, Table Z-1. <http://www.osha.gov/law-regs.html>. April 24, 2013.
- Owen GM, Brozek J. 1966. Influence of age, sex and nutrition on body composition during childhood and adolescence. In: Falkner F, ed. *Human development.* Philadelphia, PA: WB Saunders, 222-238.
- Parra O, Monso E, Gallego M, et al. 1991. Inhalation of hydrogen sulphide: A case of subacute manifestations and long term sequelae. *Br J Ind Med* 48:286-287.
- Partlo LA, Sainsbury RS, Roth SH. 2001. Effects of repeated hydrogen sulphide (H<sub>2</sub>S) exposure on learning and memory in the adult rat. *Neurotoxicology* 22:177-189.
- Partti-Pellinen K, Martilla O, Vilkkä V, et al. 1996. The South Karelia air pollution study: Effects of low-level exposure to malodorous sulfur compounds on symptoms. *Arch Environ Health* 51:315-320.

## 9. REFERENCES

- Parvinen P, Lajunen LHJ. 1994. Determination of sulfide as hydrogen sulfide in water and sludge samples by gas phase molecular AS. *Atom Spectrosc* 15:83-86.
- Patterson CG, Runnells DD. 1992. Dissolved gases in groundwater as indicators of redox conditions. In: Kharaka YK, Maest AS, eds. *Water Rock Interaction: Proceedings of the 7th International Symposium*. Rotterdam, Netherlands: Ashgate Pub Co., 517-520.
- PERC. 2001. Carbonyl sulfide (COS) removal from propane. Propane Education & Research Council. [http://www.propanecouncil.org/uploadedFiles/REP\\_10013%20COS%20Removal\(1\).pdf](http://www.propanecouncil.org/uploadedFiles/REP_10013%20COS%20Removal(1).pdf). May 22, 2013.
- Peters JW. 1981. Hydrogen sulfide poisoning in a hospital setting. *JAMA* 246:1588-1589.
- Petersen LC. 1977. The effect of inhibitors on the oxygen kinetics of cytochrome c oxidase. *Biochem Biophys Acta* 460:299-307.
- Phae CG, Shoda M. 1991. A new fungus which degrades hydrogen sulfide, methanethiol, dimethyl sulfide and dimethyl disulfide. *Biotechnol Lett* 13:375-380.
- Pitcher MCL, Cummings JH. 1996. Hydrogen sulphide: A bacterial toxin in ulcerative colitis? *Gut* 39:1-4.
- Poda GA. 1966. Hydrogen sulfide can be handled safely. *Arch Environ Health* 12:795-800.
- Policastro MA, Otten EJ. 2007. Case files of the University of Cincinnati fellowship in medical toxicology: Two patients with acute lethal occupational exposure to hydrogen sulfide. *J Med Toxicol* 3(2):73-81.
- Pouliquen F, Blanc C, Arretz E, et al. 1989. Hydrogen sulfide. In: Elvers B, Hawkins S, Revenscroft M, et al., eds. *Ullmann's encyclopedia of industrial chemistry*. Volume A13: High-performance fibers to imidazole and derivatives. Deerfield Beach, FL: VCH Publishers, 467-485.
- Prior M, Green F, Lopez A, et al. 1990. Capsaicin pretreatment modifies hydrogen sulphide-induced pulmonary injury in rats. *Toxicol Pathol* 18:279-288.
- Prior MG, Sharma AK, Yong S, et al. 1988. Concentration-time interactions in hydrogen sulphide toxicity in rats. *Can J Vet Res* 52:375-379.
- Puacz W, Szahun W, Linke K. 1995. Catalytic determination of sulfide in blood. *Analyst* 120:939-941.
- Radford-Knoery J, Cutter GA. 1993. Determination of carbonyl sulfide and hydrogen sulfide species in natural waters using specialized collection procedures and gas chromatography with flame photometric detection. *Anal Chem* 65:976-982.
- Rasmussen RA, Hoyt SD, Khalil MAK. 1982a. Atmospheric carbonyl sulfide techniques for measurement in air and water. *Chemosphere* 11(9):869-875.
- Rasmussen RA, Khalil MA. 1982b. Carbonyl sulfide and carbon disulfide from the eruptions of Mount St. Helens. *Science* 215(4533):665-667.
- Ravizza AG, Carugo D, Cerchiari EL, et al. 1982. The treatment of hydrogen sulfide intoxication: Oxygen versus nitrites. *Vet Hum Toxicol* 24:241-242.



## 9. REFERENCES

- Reed BR, Crane J, Garrett N, et al. 2014. Chronic ambient hydrogen sulfide exposure and cognitive function. *Neurotoxicol Teratol* 42:68-76.
- Reedy SJ, Schwartz MD, Morgan BW. 2011. Suicide fads: Frequency and characteristics of hydrogen sulfide suicides in the United States. *West J Emerg Med* 12(3):300-304.
- Reiffenstein RJ, Hulbert WC, Roth SH. 1992. Toxicology of hydrogen sulfide. *Annu Rev Pharmacol Toxicol* 32:109-134.
- Richardson CJ, Magee EAM, Cummings JH. 2000. A new method for the determination of sulphide in gastrointestinal contents and whole blood by microdistillation. *Clin Chim Acta* 293:115-125.
- Richardson DB. 1995. Respiratory effects of chronic hydrogen sulfide exposure. *Am J Ind Med* 28:99-108.
- Rimatori V, Qiao N, Staiti D, et al. 1996. Determination of pollutants in the air of textile industries. *J Occup Health* 38:128-132.
- Roberts ES, Thomas RS, Dorman DC. 2008. Gene expression changes following acute hydrogen sulfide (H<sub>2</sub>S)-induced nasal respiratory epithelial injury. *Toxicol Pathol* 36(4):560-567.
- Roediger WEW, Moore J, Babidge W. 1997. Colonic sulfide in pathogenesis and treatment of ulcerative colitis. *Dig Dis Sci* 42:1571-1579.
- Ronk R, White MK. 1985. Hydrogen sulfide and the probabilities of 'inhalation' through a tympanic membrane defect. *J Occup Med* 27:337-340.
- Rosenberg M, Septon I, Eli I, et al. 1991. Halitosis measurement by an industrial sulphide monitor. *J Periodontol* 62:487-489.
- Roth SH, Skrajny B, Reiffenstein RJ. 1995. Alteration of the morphology and neurochemistry of the developing mammalian nervous system by hydrogen sulphide. *Clin Exp Pharmacol Physiol* 22:379-380.
- Ruth JH. 1986. Odor thresholds and irritation levels of several chemical substances: A review. *Am Ind Hyg Assoc J* 47:142-151.
- Saillenfait AM, Bonnet P, de Ceaurriz J. 1989. Effects of inhalation exposure to carbon disulfide and its combination with hydrogen sulfide on embryonal and fetal development in rats. *Toxicol Lett* 48:57-66.
- Sams RN, Carver HW, 2nd, Catanese C, et al. 2013. Suicide with hydrogen sulfide. *Am J Forensic Med Pathol* 34(2):81-82. 10.1097/PAF.0b013e3182886d35.
- Sattler ML, Rosenberk RS. 2006. Removal of carbonyl sulfide using activated carbon adsorption. *J Air Waste Manage Assoc* 56(2):219-224.
- Saunders F, Larson L, Tatum V. 2002. Evaluation of passive card monitors for hydrogen sulfide for use in kraft pulp mill workplace atmospheres. *Am Ind Hyg Assoc J* 63:317-325.
- Saunders NR, Ek CJ, Habgood MD, et al. 2008. Barriers in the brain: a renaissance? *Trends Neurosci* 31(6):279-286. 10.1016/j.tins.2008.03.003.

## 9. REFERENCES

- Saunders NR, Liddelow SA, Dziegielewska KM. 2012. Barrier mechanisms in the developing brain. *Front Pharmacol* 3:46. 10.3389/fphar.2012.00046.
- Savolainen H, Tenhunen R, Elovaara E, et al. 1980. Cumulative biochemical effects of repeated subclinical hydrogen sulfide intoxication in mouse brain. *Int Arch Occup Environ Health* 46:87-92.
- Schechter MT, Spitzer WO, Hutcheon ME, et al. 1989. Cancer downwind from sour gas refineries: The perception and the reality of an epidemic. *Environ Health Perspect* 79:283-290.
- Scheuplein R, Charnley G, Dourson M. 2002. Differential sensitivity of children and adults to chemical toxicity. I. Biological basis. *Regul Toxicol Pharmacol* 35(3):429-447.
- Schinasi L, Horton RA, Guidry VT, et al. 2011. Air pollution, lung function, and physical symptoms in communities near concentrated swine feeding operations. *Epidemiology* 22(2):208-215.
- Schneider JS, Tobe EH, Mozley Jr. PD, et al. 1998. Persistent cognitive and motor deficits following acute hydrogen sulphide poisoning. *Occup Med* 48:255-260.
- Schroeter JD, Kimbell JS, Andersen ME, et al. 2006a. Use of a pharmacokinetic-driven computational fluid dynamics model to predict nasal extraction of hydrogen sulfide in rats and humans. *Toxicol Sci* 94(2):359-367.
- Schroeter JD, Kimbell JS, Bonner AM, et al. 2006b. Incorporation of tissue reaction kinetics in a computational fluid dynamics model for nasal extraction of inhaled hydrogen sulfide in rats. *Toxicol Sci* 90(1):198-207.
- Schroeter JD, Garcia GJ, Kimbell JS. 2010. A computational fluid dynamics approach to assess interhuman variability in hydrogen sulfide nasal dosimetry. *Inhal Toxicol* 22(4):277-286.
- Shim C, Williams MH. 1986. Effects of odor on asthma. *Am J Med* 80:18-22.
- Shivanthan MC, Perera H, Jayasinghe S, et al. 2013. Hydrogen sulphide inhalational toxicity at a petroleum refinery in Sri Lanka: A case series of seven survivors following an industrial accident and a brief review of medical literature. *J Occup Med Toxicol* 8(1):9. 10.1186/1745-6673-8-9.
- Siegel SM, Penny P, Siegel BZ, et al. 1986. Atmospheric hydrogen sulfide levels at the Sulfur Bay Wildlife area, Lake Rotorua, New Zealand. *Water Air Soil Pollut* 28:385-391.
- Sills RC, Morgan DL, Herr DW, et al. 2004. Contribution of magnetic resonance microscopy in the 12-week neurotoxicity evaluation of carbonyl sulfide in Fischer 344 rats. *Toxicol Pathol* 32(5):501-510.
- Simmons JS, Klemetsson L, Hultberg H, et al. 2012. Consumption of atmospheric carbonyl sulfide by coniferous boreal forest soils. *J Geophys Res* 104(D9):11569-11576.
- Sittig M. 2002. Handbook of toxic and hazardous chemicals and carcinogens. Park Ridge, NJ: Noyes Publications, 914-916.
- Skrajny B, Hannah RS, Roth SH. 1992. Low concentrations of hydrogen sulphide alter monoamine levels in the developing rat central nervous system. *Can J Physiol Pharmacol* 70:1515-1518.

## 9. REFERENCES

- Slooff W, Bont PFH, Janus JA, et al. 1991. Exploratory report, hydrogen sulphide. Bilthoven, Netherlands: National Institute of Public Health and Environmental Protection. RIVM710401011. PB92209105.
- Smith B, Cummins K. 2004. Hydrogen sulfide exposure at a waste treatment facility. *J Occup Environ Hyg* 1(3):D23-D25.
- Smith KA, Bremner JM, Tabatalag MA. 1973. Sorption of gaseous atmospheric pollutants by soils. *Soil Sci* 116:313-319.
- Smith L, Kruszyna H, Smith RP. 1977. The effect of methemoglobin on the inhibition of cytochrome *c* oxidase by cyanide, sulfide or azide. *Biochem Pharmacol* 26:2247-2250.
- Smith RP, Abbanat RA. 1966. Protective effect of oxidized glutathione in acute sulfide poisoning. *Toxicol Appl Pharmacol* 9:209-217.
- Smith RP, Gosselin RE. 1964. The influence of methemoglobinemia on the lethality of some toxic anions: II. Sulfide. *Toxicol Appl Pharmacol* 6:584-592.
- Smith RP, Gosselin RE. 1979. Hydrogen sulfide poisoning. *J Occup Med* 21:93-97.
- Smith RP, Kruszyna R, Kruszyna H. 1976. Management of acute sulfide poisoning. Effects of oxygen, thiosulfate, and nitrite. *Arch Environ Health* 33:166-169.
- Snyder JW, Safir EF, Summerville GP, et al. 1995. Occupational fatality and persistent neurological sequelae after mass exposure to hydrogen sulfide. *Am J Emerg Med* 13:199-203.
- Solis MC, Volpe AR. 1973. Determination of sulfur volatiles in putrefied saliva by a gas chromatography-microcoulometric titrating system. *J Periodontol* 44:775-778.
- Sonobe T, Chenuel B, Cooper TK, et al. 2015. Immediate and long-term outcome of acute H<sub>2</sub>S intoxication induced coma in unanesthetized rats: Effects of methylene blue. *PLoS ONE* 10(6):e0131340. 10.1371/journal.pone.0131340.
- Sorokin Y. 1993. Asphyxiants. In: Maureen P, ed. *Occupational and environmental reproductive hazards: A guide for clinicians*. Baltimore, MD: Williams & Wilkins, 253-266.
- Søstrand P, Tvedt B, Eduard W, et al. 2000. Hazardous peak concentrations of hydrogen sulfide gas related to the sewage purification process. *Am Ind Hyg Assoc J* 61:107-110.
- Spolyar LW. 1951. Three men overcome by hydrogen sulfide in starch plant. *Ind Health* 11:116-117.
- Steinbacher M, Bingemer HG, Schmidt U. 2004. Measurements of the exchange of carbonyl sulfide (OCS) and carbon disulfide (CS<sub>2</sub>) between soil and atmosphere in a spruce forest in central Germany. *Atmos Environ* 38(35):6043-6052.
- Stetter JR, Sedlak JM, Blurton KF. 1977. Electrochemical gas chromatographic detection of hydrogen sulfide at PPM and PPB levels. *J Chromatogr Sci* 15:125-128.
- Stimler K, Montzka SA, Berry JA, et al. 2010. Relationships between carbonyl sulfide (COS) and CO<sub>2</sub> during leaf gas exchange. *New Phytol* 186(4):869-878.

## 9. REFERENCES

- Stine RJ, Slosberg B, Beacham BE. 1976. Hydrogen sulfide intoxication: A case report and discussion of treatment. *Ann Intern Med* 85:756-758.
- Struve MF, Brisbois JN, James RA, et al. 2001. Neurological effects associated with short-term exposure of Sprague-Dawley rats to hydrogen sulfide. *Neurotoxicology* 22:375-385.
- \*Susman JL, Hornig JF, Thomae SC, et al. 1978. Pulmonary excretion of hydrogen sulfide, methanethiol, dimethyl sulfide and dimethyl disulfide in mice. *Drug Chem Toxicol* 1:327-338.
- Svendsen K. 2001. Hydrogen sulphide. *Arbete Och Hals* 127:1-310.
- Tabacova A. 1986. Maternal exposure to environmental chemicals. *Neurotoxicology* 7:421-440.
- Takemoto BK, Noble RD, Harrington HM. 1986. Differential sensitivity of duckweeds (*Lemnaceae*) to sulfite: II. Thiol production and hydrogen sulphide emission as factors influencing sulphite phytotoxicity under low and high irradiance. *New Phytol* 103:541-548.
- Tangerman A. 1986. Determination of volatile sulfur compounds in air at the parts per trillion level by Tenax trapping and gas chromatography. *J Chromatogr A* 366:205-216.
- Tangerman A. 1995. Analysis of carbon disulfide and carbonyl sulfide in blood subject to interference from the same components from rubber stoppers. *Clin Chem* 41(10):1541-1542.
- Tansy MF, Kendall FM, Fantasia J, et al. 1981. Acute and subchronic toxicity studies of rats exposed to vapors of methyl mercaptan and other reduced-sulfur compounds. *J Toxicol Environ Health* 8:71-88.
- Tenhunen R, Savolainen H, Jappinen P. 1983. Changes in haem synthesis associated with occupational exposure to organic and inorganic sulphides. *Clin Sci* 64:187-191.
- Teschke K, Ahrens W, Andersen A, et al. 1999. Occupational exposure to chemical and biological agents in the nonproduction departments of pulp, paper, and paper product mills: An international study. *Am Ind Hyg Assoc J* 60:73-83.
- Texas Commission on Environmental Quality. 2008. Interim carbonyl sulfide effects screening levels. [http://www.tceq.texas.gov/assets/public/permitting/air/memos/esl\\_memo\\_10\\_08.pdf](http://www.tceq.texas.gov/assets/public/permitting/air/memos/esl_memo_10_08.pdf). April 01, 2013.
- Thermo Electron Corp. 2005a. Model 45C H<sub>2</sub>S analyzer. <http://www.thermo.com/com/cda/product/detail/1,1055,14676,00.html>. October 12, 2005.
- Thermo Electron Corp. 2005b. Model 450C pulsed fluorescence analyzer. <http://www.thermo.com/com/cda/product/detail/1,1055,1984,00.html>. October 12, 2005.
- Thermo Electron Corp. 2005c. Model 450C-TL pulsed fluorescence analyzer. <http://www.thermo.com/com/cda/product/detail/1,1055,19839,00.html>. October 12, 2005.
- Thoman M. 1969. Sewer gas: Hydrogen sulfide intoxication. *Clin Toxicol* 2:383-386.
- Thomas K, Colborn T. 1992. Organochlorine endocrine disruptors in human tissue. In: Colborn T, Clement C, eds. *Chemically induced alterations in sexual and functional development: The wildlife/human connection*. Princeton, NJ: Princeton Scientific Publishing, 365-394.

## 9. REFERENCES

- Tomar M, Abdullah THA. 1994. Evaluation of chemicals to control the generation of malodorous hydrogen sulfide in waste water. *Water Res* 28:2545-2552.
- Tonzetich J, Carpenter PAW. 1971. Production of volatile sulphur compounds from cysteine, cystine and methionine by human dental plaque. *Arch Oral Biol* 16:599-607.
- TRI14 2015. Carbonyl sulfide and hydrogen sulfide. TRI explorer: Providing access to EPA's toxics release inventory data. Washington, DC: Office of Information Analysis and Access. Office of Environmental Information. U.S. Environmental Protection Agency. Toxics Release Inventory. <http://www.epa.gov/triexplorer/>. October 15, 2015.
- Tvedt B, Edland A, Skyberg K, et al. 1991a. Delayed neuropsychiatric sequelae after acute hydrogen sulfide poisoning: Affection of motor function, memory, vision and hearing. *Acta Neurol Scand* 84:348-351.
- Tvedt B, Skyberg K, Aaserud O, et al. 1991b. Brain damage caused by hydrogen sulfide: A follow-up study of six patients. *Am J Ind Med* 20:91-101.
- Tyagi RD, Tran FT, Polprasert C. 1988. Bioconversion of lignosulphonate into lignin and hydrogen sulfide by mutualistic bacterial system. *J Microbial Biotechnol* 3:90-98.
- Van Den Berge LP, Devreese A, Vanhoorne M. 1985. A simplified method for the determination of hydrogen sulfide in the work environment. *Am Ind Hyg Assoc J* 46:693-695.
- Vanhoorne M, de Rouck A, de Bacquer D. 1995. Epidemiological study of eye irritation by hydrogen sulphide and/or carbon disulphide exposure in viscose rayon workers. *Ann Occup Hyg* 39:307-315.
- Vieira I, Sonnier M, Cresteil T. 1996. Developmental expression of CYP2E1 in the human liver: Hypermethylation control of gene expression during the neonatal period. *Eur J Biochem* 238(2):476-483.
- Vismann B. 1991. Physiology of sulfide detoxification in the isopod *Saduria (Mesidotea) entomon*. *Marine Ecology Progress Series* 76:283-293.
- Wallingford KM, Snyder EM. 2001. Occupational exposures during the World Trade Center disaster response. *Toxicol Ind Health* 17:247-253.
- Walton DC, Witherspoon MG. 1925. Skin absorption of certain gases. *J Pharmacol Exp Ther* 26:315-324.
- Wang R. 2012. Physiological implications of hydrogen sulfide: A whiff exploration that blossomed. *Physiol Rev* 92:791-896.
- Wang C, Sahay P. 2009. Breath analysis using laser spectroscopic techniques: Breath biomarkers, special fingerprints, and detection limits. *Sensors* 9:8230-8262.
- Warenycia MW, Goodwin LR, Benishin CG, et al. 1989. Acute hydrogen sulfide poisoning: Demonstration of selective uptake of sulfide by the brainstem by measurement of brain sulfide levels. *Biochem Pharmacol* 38:973-981.

## 9. REFERENCES

- Warenycia MW, Goodwin LR, Francom DM, et al. 1990. Dithiothreitol liberates non-acid labile sulfide from brain tissue of hydrogen sulfide-poisoned animals. *Arch Toxicol* 64:650-655.
- Weeks SJ, Currie B, Bakun A, et al. 2004. Hydrogen sulfide eruptions in the Atlantic Ocean off southern Africa: Implications of a new view based on SeaWiFS satellite imagery. *Deep Sea Res Part I Oceanogr Res Pap* 51:153-172.
- Weil ED, Sandler SR. 1997. Sulfur compounds: Hydrogen sulfide. In: Kroschwitz JI, Howe-Grant M, eds. *Kirk-Othmer encyclopedia of chemical technology*. Volume 23: Sugar to thin films. New York, NY: John Wiley & Sons, 275-340.
- Weisiger RA, Jakoby WB. 1979. Thiol-s-methyltransferase from rat liver. *Arch Biochem Biophys* 196:631-637.
- Weisiger RA, Pinkus LM, Jakoby WB. 1980. Thiol s-methyltransferase: Suggested role in detoxication of intestinal hydrogen sulfide. *Biochem Pharmacol* 29:2885-2887.
- West JR, Smith HW, Chasis H. 1948. Glomerular filtration rate, effective renal blood flow, and maximal tubular excretory capacity in infancy. *J Pediatr* 32:10-18.
- Wetterau H, Oekert W, Knappe UG. 1964. [Tests for the application of dried green fodder with higher hydrogen sulfide content (experiments with poultry and fattened pigs).] *Fütterung* 5:383-393. (German)
- Wever R, Van Gelder BF, Der Vartanian DV. 1975. Biochemical and biophysical studies on cytochrome c oxidase XX. Reaction with sulphide. *Biochem Biophys Acta* 387:189-193.
- White MC, Inserra SG, Berger SA, et al. 1999. Health concerns for communities exposed to hydrogen sulfide—A perspective from two communities. *Environ Epidemiol Toxicol* 1(3-4):236-240.
- WHO. 1981. *Environmental health criteria: Hydrogen sulfide*. Geneva, Switzerland: World Health Organization.
- WHO. 1987. *Hydrogen sulfide*. In: *Air quality guidelines for Europe*. Copenhagen, Denmark: World Health Organization Regional Publications, European series no. 23.
- WHO. 2010. *Guidelines for indoor air quality: Selected pollutants*. Geneva, Switzerland: World Health Organization. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0009/128169/e94535.pdf](http://www.euro.who.int/__data/assets/pdf_file/0009/128169/e94535.pdf). April 24, 2013.
- WHO. 2011. *Guidelines for drinking-water quality*. 4th ed. Geneva, Switzerland: World Health Organization. [http://www.who.int/water\\_sanitation\\_health/publications/2011/dwq\\_guidelines/en/index.html](http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/index.html). April 24, 2013.
- Widdowson EM, Dickerson JWT. 1964. Chemical composition of the body. In: Comar CL, Bronner F, eds. *Mineral metabolism: An advance treatise*. Volume II: The elements Part A. New York, NY: Academic Press, 1-247.
- Wilson LG, Bressan RA, Filner P. 1978. Light-dependent emission of hydrogen sulfide from plants. *Plant Physiol* 61:184-189.
- Winek CL, Collum WD, Wecht CH. 1968. Death from hydrogen sulfide fumes. *Lancet* 1:1096.

## 9. REFERENCES

Wright EJ. 2000. Carbonyl sulfide: Progress in research and commercialization of a new commodity fumigant. Annual international research conference on methyl bromide alternatives and emissions reductions. Methyl Bromide Alternatives Outreach.

Wu N, Du X, Wang D, et al. 2011. Myocardial and lung injuries induced by hydrogen sulfide and the effectiveness of oxygen therapy in rats. *Clin Toxicol* 49:161-166.

Xu X, Cho SI, Sammel M, et al. 1998. Association of petrochemical exposure with spontaneous abortion. *Occup Environ Med* 55:31-36.

Yalamanachili C, Smith MD. 2008. Acute hydrogen sulfide toxicity due to sewer gas exposure. *Am J Emerg Med* 26:518.e5-518.e7.

Ziegler EE, Edwards BB, Jensen RL, et al. 1978. Absorption and retention of lead by infants. *Pediatr Res* 12(1):29-34.