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Product Stewardship Summary
Methyl Mercaptan/Sodium Methyl Mercaptide

This product stewardship summary is intended to give general information about the chemical or categories of chemicals addressed. It is not intended to provide an in-depth discussion of all health and safety information. Additional information is available through the applicable Safety Data Sheet (SDS) which should be consulted before use of any chemical. This product stewardship summary does not supplant or replace required regulatory and/or legal communication documents.

Chemical Identity

Methyl mercaptan (CAS No. 74-93-1), also known as methanethiol, is a colorless gas with a smell like rotten eggs or decaying cabbage. Sodium methyl mercaptide (CAS No. 5188-07-8), also known as sodium methanethiolate, is the sodium salt of methyl mercaptan. The commercial form of sodium methyl mercaptide is a 21% solution in water.

Product Uses

Methyl mercaptan and sodium methyl mercaptide are used as chemical intermediates for additives, modifiers and intermediates in the production of solvents, agricultural chemicals, biocides, health care products and pharmaceuticals. The most significant use of methyl mercaptan is in the production of the animal dietary supplement methionine. Sodium methyl mercaptide is typically used in smaller-volume applications, such as those for agricultural chemicals and pharmaceuticals.

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Physical/Chemical Properties

Methyl mercaptan is an extremely flammable gas with a flash point of -69 °F (-56 °C). It is normally stored under pressure. Sodium methyl mercaptide (21% in water) is a corrosive liquid (pH of >10); it is also a flammable liquid and vapor, with a flash point of 84 °F (29 °C). There is a high potential to cause fires if either methyl mercaptan or sodium methyl mercaptide is exposed to an ignitable source. However, these products are typically stable under normal ambient temperature and pressure and recommended storage and handling conditions. These products must be kept in tightly sealed containers and stored in a dry and well-ventilated place away from ignitable sources such as heat, sparks, open flames, hot surfaces and sources of static electricity.

Health Information

Methyl mercaptan gas is acutely toxic if inhaled. In addition, repeated short-term exposures of high concentrations have caused, in one reported instance, methemoglobinemia and severe hemolytic anemia in an individual with a glucose-6-phopohate dehydrogenase deficiency. Low level exposures to vapors of methyl mercaptan and sodium methyl mercaptide may cause eye and respiratory irritation, central nervous system (CNS) effects, including dizziness, headache, nausea and loss of coordination. Due to the low-odor threshold (the odor threshold for methyl mercaptan is two parts per billion), prolonged inhalation exposure is not expected to be maintained in a workplace because of the product's malodorous nature and methyl mercaptan is primarily contained within a closed system under strictly controlled conditions; however, continuous exposure may lead to olfactory fatigue (*i.e.*, decrease sense of smell) and thus may not provide adequate warning of potentially hazardous concentrations. Sodium methyl mercaptide in water is corrosive. It is harmful if swallowed, cause skin burns, and serious and irreversible effects to the eyes, including blindness. Ingestion will cause burns to the mouth and gastrointestinal tract. Methyl mercaptan and sodium methyl mercaptide are not dermal sensitizers. There were no indications of target organ toxicity when laboratory animals were exposed to repeated exposure to methyl mercaptan; however, repeated exposure to sodium methyl mercaptide by the oral route produced effects indicative of hemolytic anemia. There is a low concern that these chemicals can cause reproductive or developmental effects, and they are not considered to have mutagenic or carcinogenic properties.

Environmental Information

As a gas, methyl mercaptan is expected to volatilize in the environment. Sodium methyl mercaptide will, however, dissociate in water, forming methyl mercaptan under normal

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environmental conditions. The environmental hazard potential for methyl mercaptan and sodium methyl mercaptide is high. These products are acutely toxic to aquatic organisms, but are readily biodegradable and have a limited potential for bioaccumulation. Due to the potential of these chemicals to cause significant harm to aquatic environments, care must be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release.

Exposure Potential

The most likely routes of exposure to the methyl mercaptan and sodium methyl mercaptide are by inhalation and skin or eye contact. The best way to prevent exposure is to work in well-ventilated areas, wear appropriate personal protective equipment (PPE), and follow good personal hygiene practices.

Workplace Use:

Potentially exposed populations include: (1) workers who manufacture and/or blend these products; (2) quality assurance workers who sample and analyze the products to ensure that they meet specifications; (3) workers involved in distribution and storage of these products; and (4) commercial consumers in occupational settings that use these products in intended applications. The probability of exposure to workers is expected to be low because these products are manufactured in enclosed, controlled environments, and are transported in tightly sealed containers. Due to their low odor thresholds, leaks can be detected quickly and prolonged exposures can be avoided. These products are sold to industrial customers that are familiar with their intended applications, safe handling, storage, and disposal requirements. Manufacturing, quality assurance, and transportation workers should always adhere to safe handling practices and wear appropriate personal protective equipment (PPE). Additionally, they have access to exposure prevention measures (e.g., engineering controls). Customers should also use appropriate PPE during handling and have risk mitigation measures in place to address potential physical hazards or accidental releases.

Consumer Use:

Potential exposure or impact to the general public is not anticipated for these products, as they are sold by Chevron Phillips Chemical Company to sophisticated industry users and not to the general population.

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Potential Environmental Release:
There may be some potential for exposure to the environment from accidental releases during transportation via railcars (methyl mercaptan) and bulk containers (sodium methyl mercaptide); however, the frequency of distribution incidents involving accidental releases of these products has been low, and reported product volumes spilled have been minimal. Chevron Phillips Chemical Company is committed to operating in an environmentally responsible manner and has adopted the American Chemistry Council's Responsible Care® initiative.

Risk Management

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Regulatory Information

Regulations exist that govern the manufacture, sale, transportation, use and disposal of methyl mercaptan and sodium methyl mercaptide. These regulations may vary by city, state, country or geographic region. Additional relevant information may be found by consulting the applicable SDS.

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Sources of Additional Information

Safety Data Sheets (SDS) at http://www.cpchem.com.

- Methyl Mercaptan
- Sodium Methyl Mercaptide

European Chemical Agency (ECHA) Dissemination portal with information on chemical substances registered under REACH

- http://echa.europa.eu/information-on-chemicals.

Organization for Economic Cooperation and Development (OECD): eChemPortal web-based search tool

- https://www.echemportal.org/echemportal/

Conclusion

Methyl mercaptan and sodium methyl mercaptide are classified as hazardous chemicals. Efforts should be taken to minimize exposure to these products by adhering to safe-handling procedures, designated applications and uses, appropriate personal-protective equipment practices, and appropriate labeling, storage, and transportation procedures and requirements. The relevant SDS and applicable regulatory guidelines and requirements, including but not limited to Occupational Health and Safety Administration (OSHA) guidelines, should be consulted prior to the use or handling of these products.

Contact Information:
http://www.cpchem.com/

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