Safety Info sheet No.3

NICNAS
Assessing chemicals for your protection

Sodium Ethyl Xanthate (solid)

Sodium ethyl xanthate is used as a flotation agent in the mining industry. It is part of the family of xanthates that produce carbon disulphide as they decompose. Sodium ethyl xanthate is used in solid and liquid forms. Solid sodium ethyl xanthate behaves differently and poses different hazards from the same chemical as a liquid.

NICNAS assessed solid sodium ethyl xanthate in May 1995. The manufacture of liquid sodium ethyl xanthate in Australia prompted a second assessment in February 2000. Both assessments also briefly covered carbon disulphide, which is a by-product of sodium ethyl xanthate. These are the main findings of the May 1995 assessment of solid sodium ethyl xanthate. Liquid sodium ethyl xanthate is discussed in Safety Info No. 4.

A product containing more than 20% sodium ethyl xanthate is classed as a Hazardous Substance. Solid sodium ethyl xanthate is in Class 4.2, Packing Group II or III under the Australian Dangerous Goods (ADG) Code.

Under normal conditions (20˚C), there is enough moisture in the air to cause sodium ethyl xanthate to form carbon disulphide, a highly flammable, toxic gas that is readily absorbed through the skin. The ADG code must be strictly followed for the storage, packing and transport of solid sodium ethyl xanthate.

It is poisonous but there is a lack of information about its health effects. There is not much known about the effects of breathing in sodium ethyl xanthate dust and powder. Sodium ethyl xanthate is readily absorbed by the skin and is a skin and eye irritant.

Animal studies on other xanthates show that repeated exposure to sodium ethyl xanthate may cause damage to the central nervous system, liver and kidneys. In moist conditions sodium ethyl xanthate slowly decomposes to form carbon disulphide, a flammable gas which is toxic when breathed and is absorbed through the skin. Carbon disulphide is extremely poisonous.

Signs of high exposure are dizziness, tremors, difficulty breathing, blurred vision, headaches, vomiting and death. It causes severe skin, eye and respiratory irritation. Repeated exposure to carbon disulphide can cause reproductive and nervous system damage and death.

The main health risk from sodium ethyl xanthate is from inhaling the powdered form and from inhaling carbon disulphide. However, because the substance decomposes to form carbon disulphide, which can self-ignite under certain conditions, it also poses a substantial physical hazard.

RECOMMENDATIONS

Most incidents have occurred during transport and storage. Packaging should minimise exposure to heat and moisture.

Loose lids on drums and damaged or unsealed bulker bags can expose sodium ethyl xanthate to air and produce carbon disulphide. Packing sodium ethyl xanthate in large packages like bulker bags increases the risk that the carbon disulphide will spontaneously combust. Smaller packages are recommended. Workers using sodium ethyl xanthate should be trained in the safe use, packing and storage of the chemical. Emergency procedures should be prominently displayed and workers should be trained to implement them. There is no current national exposure standard for sodium ethyl xanthate. The assessment noted that 1 mg/m3 has been used as an industry guideline in the past. The current national exposure standard for carbon disulphide is 10 ppm TWA, but this is listed for review.

More information on sodium ethyl xanthate can be found in the Material Safety Data Sheet available from the supplier. The most comprehensive source of information is the detailed assessments of sodium ethyl xanthate published by the National Industrial Chemical Notification and Assessments Scheme (NICNAS). These are available free of charge by calling 1800 638 528. More information on the use of industrial chemicals can be found at the NICNAS website: www. nicnas.gov.au