

hazard from single exposure to high concentrations and organic (liver) injury is likely only if severe anesthetic effects are apparent. Repeated exposure to moderately excessive concentrations is likely to result in slight liver injury. The material has a low oral toxicity and does not present a problem from skin absorption. Bromochloromethane is slightly irritating to the eyes and has a defatting effect on the skin.

Fire extinguishers containing bromochloromethane should only be used on outdoor or other fires in areas of good ventilation. If used in small, confined, or poorly ventilated locations, the area should be evacuated immediately. Since pyrolysis products of bromochloromethane, like other halogenated hydrocarbons, are more toxic than the compound itself, these areas should be ventilated thoroughly before they are reentered. Gross skin contact should be prevented, suitable eye protection should be provided.

1,3-Butadiene is a colorless liquid, which is mildly narcotic similar to gasoline, although it can produce very high concentrations in the air very rapidly because of its low boiling point. It is mainly hazardous because of its flammability and because, if exposed to the air or to oxygen in the absence of antioxidants, it forms peroxides rapidly. These peroxides are explosive and sensitive to both mechanical shock such as a hammer blow, and to heat.

1-Butanol (n-butyl alcohol) has a toxicity greater than that of ethanol, and the vapor is much more irritating, producing coughing, irritation of eyes, nose, and throat, dizziness, and nausea. Severe eye damage may result if overexposure is permitted.

Butanol is used as a solvent for various plastics, particularly in lacquers and rubber cements. It is more toxic than the lower alcohols, but the hazard is somewhat alleviated by its lower volatility, which limits the exposure at room temperature to about 8600 ppm.

2-Butanone (methyl ethyl ketone) is a flammable liquid with an odor objectionable to most people, and is highly irritating to the eyes, nose, and throat in concentrations which are not systemically dangerous. The odor is

probably a warning only on first exposure because the sense of smell is rapidly dulled by continuing exposure.

In the cementing of plastic raincoats, there have been a number of long-continued exposures at concentrations of 600 to 800 ppm with peak concentrations running well over 2000 ppm. Under these conditions the employees complained of headaches and nausea, and there were some cases of illness and unconsciousness with no apparent aftereffects.

n-Butyl acetate is widely used as a solvent in lacquers and in cements based on either natural or synthetic resins or gums. Like most of the aliphatic esters, it is a relatively innocuous material. In man, it produces symptoms of mild irritation of the nose and throat, irritation of the eyes, and finally narcosis. It is not stored long in the body and is not cumulative.

Butyl Cellosolve—see Ethylene glycol monobutyl ether.

n-Butylamine is a colorless, flammable liquid with a strong, ammonia-like odor. The liquid produces severe damage to the skin and eyes, and the vapor is highly irritating to the upper respiratory tract and eyes. Inhalation of approximately 10 ppm may produce mild headaches and flushing of the skin and face. Its chronic exposure hazard is moderate and cumulative effects have not been observed.

Butyllithium (in hydrocarbon solvents) has the characteristic odor of the particular solvent. Due to the extremely low vapor pressure of butyllithium itself, the solvent presents the major hazard as far as vapor inhalation is concerned. For skin contact, due to leaks, spills, or splashes, the first effect is the effect of the solvent in removing fats and oils from the skin. The second effect is the reaction of butyllithium with the moisture of the skin to form lithium hydroxide which can cause a severe caustic burn. When water and butyllithium solvents are mixed, local overheating can result and cause ignition of the solvent.

If a solution of butyllithium is poured on dry or damp organic materials, such as ex-