

ELEMENTS OF INDUSTRIAL TOXICOLOGY

parable to ether in intensity. If kept in any large quantity, it should be stored with the precautions appropriate for ether.

Acetaldehyde processes should be well enclosed and isolated because of its intense irritant properties. It affects primarily the skin and the upper respiratory passages because of its relatively high solubility in water. A high concentration may produce sudden death from spasm of the throat. Lower concentrations produce coughing and inflammation of the nose, throat, and eyes.

Paraldehyde, the solid form to which acetaldehyde polymerizes, has long been used in medicine as a narcotic and soporific. In this form, its irritant properties are greatly reduced and the narcotic effect can be observed. Paraldehyde can cause chronic poisoning involving fatty degeneration of the liver and cardiac muscles, psychic disturbances, and irritation and edema of the respiratory system.

See *Hygienic Guide*

Acetanilide is more apt to be seen as a medication, used as an analgesic and antipyretic, than as an industrial material. It is an aromatic amine and can affect the blood hemoglobin and so interfere with respiration if it is absorbed in large quantity, particularly if the exposure is chronic. Those suffering from chronic overdoses are apt to show severe anemia, reduced white blood cell counts, progressive weakness, and severe headaches.

Acetic acid can readily penetrate the skin, producing blisters, dermatitis, and ulcers. Even at room temperature, the vapor is highly irritating to the eyes, nose, and throat.

If acetic acid is swallowed, it produces a burning taste in the mouth and esophagus, followed by pain in the stomach which may extend rapidly over the entire abdomen. The pain and other distress may last for a few days or for several weeks, depending upon the concentration and quantity of the acid taken. The signs of serious cases are vomiting, labored, noisy breathing, coughing, then collapse. Death may follow the swallowing of two tablespoonfuls of the acid by an adult and of a few drops by children. However, the lethal dose is not definitely known.

Acetic acid is one of the few materials which expand on freezing, so that to pre-

vent breakage of containers the pure acid must be stored above its freezing point, 60 F (16 C).

See Industrial Data Sheet 410 and *Hygienic Guide*

Acetic anhydride is quite stable to hydrolysis at room temperature, so it is used in preference to acetic acid in many applications where the highest possible concentration is desired. Its vapor is even more irritating than that of acetic acid.

See *Hygienic Guide*

Acetone (dimethyl ketone) is a flammable liquid that should be handled and stored with precautions against fire and explosion.

In spite of the large quantities of acetone used in industry and its high volatility, there are no reports of serious industrial poisoning. Experimental work has shown that acetone is a narcotic. Overexposure will lead to moderate irritation of the eyes, nose, and throat and to headache, stupor, and a general feeling of oppression. The absorbed acetone is eliminated slowly, and the symptoms are persistent.

There have been some severe poisonings with acetone in medical practice when it has been used as a solvent in the application of synthetic resin casts. The conditions under which these incidents have occurred are such that it is not possible to tell with certainty whether the poisoning was the result of inhalation of the vapor or of contact of the wet cast with the skin, but they present the definite possibility that prolonged contact of acetone with a large area of skin may be dangerous systemically as well as directly irritating to the skin.

See Industrial Data Sheet 398 and *Hygienic Guide*

Acetone cyanohydrin can be easily hydrolyzed to free hydrogen cyanide. It has the very high acute toxicity which one expects from cyanides. A case of acute poisoning should be treated in the same manner as that outlined in detail for sodium cyanide poisoning.

Acetonitrile (methyl cyanide) is a colorless liquid with a distinctive odor detectable at about 40 ppm. It presents a moderate to severe toxicity hazard for acute or subacute exposures.