

ELEMENTS OF INDUSTRIAL TOXICOLOGY

was observed that the absorption of this compound had a direct effect upon the excretion of glucuronic acid and of organic sulfates in the urine and that, if the same relation holds for man, the determination of these materials in the urine should be a useful measure of the extent of the exposure

Cyclopropane (trimethylene) has been rather extensively used in medicine as an anesthetic since about 1929. A concentration of approximately 6 per cent produces light anesthesia in humans, and the deepest surgical anesthesia is produced by about 25 per cent. If the oxygen concentration is kept at 20 per cent or above, there is arrest of respiration with about 40 per cent of cyclopropane, and irregular heart rhythm and fibrillation are likely to occur at about the same concentration. The changes after repeated administrations seem to be edema and fatty changes in the liver, brain damage, and some damage to the heart.

2,4-D (2, 4-dichlorophenoxyacetic acid) is a herbicide that is moderately toxic on ingestion, the main effect being irritation of the digestive system, with some liver and kidney damage and sometimes congestion of the lungs.

All the data on poisonings are from experiments upon laboratory animals, inasmuch as there are no cases known of poisonings of humans in the manufacture or application of the material. Also, there are no known cases of direct poisoning of domestic animals, although there have been some indirect cases where domestic animals have eaten the products of plants which had been killed and had become toxic as the result of changes within the plant material.

DDT (2, 2-bis [p-chlorophenyl]-1, 1, 1-trichloroethane) has been used extensively for several years as an insecticide, and relatively few cases of intoxication have resulted. It is known to be a poison to the central nervous system and to the liver. Ingestion of a toxic dose is followed by dizziness, nausea, muscle tremors, and convulsions. In experimental animals it has also caused ventricular fibrillation. Experiments have indicated that man is more susceptible than the dog to DDT poisoning.

DDT can be absorbed by ingestion, inhalation, or application of an oil solution directly to the skin. Rabbits have been acutely poisoned by a 5 per cent oil solu-

tion of DDT applied to the skin.

In the practical application of DDT as an insecticide, experience has been good. Reported cases of human poisoning have resulted from accidents rather than from proper application of the material. Contacts with the oil solution should be avoided, and with power sprayers it is advisable to use a toxic dust respirator if considerable spray backs back into the operator's breathing zone.

See Industrial Data Sheet 303 and *Hygienic Guide*

Decaborane—see Boron hydrides

Derris is a powdered plant root, which contains rotenone as its main active ingredient. See *Rotenone*

Diacetone alcohol is a flammable solvent. Exposure of laboratory animals to the saturated vapor, 2,100 ppm, resulted in irritation of the eyes, running of the nose, excitement, and then sleepiness in about 20 minutes. There are no cases of human poisoning on record.

This solvent is liable to be a fire hazard because the commercial material often contains acetone as an impurity in concentration great enough to substantially lower the flash point.

Diatomaceous earth is a form of silica in the amorphous state. Although it apparently is not as active in producing silicosis as its high content of free silica would lead one to expect, there have been a number of reports of silicosis from handling the material where the dust concentrations were high (see Chapter 39, "Industrial Hygiene").

If the temperature is raised to about 1,000 F (538 C) in a calcining operation, the material readily changes to cristobalite, which is a vigorous producer of silicosis. It should be handled with the same precautions against dust used with other forms of free silica.

See Industrial Data Sheet 531

Diborane—see Boron hydrides.

1,2-Dibromoethane (ethylene dibromide) is used mainly as a constituent of fumigation mixtures and of "leaded" gasoline. To a limited extent, it has also been used as a fire extinguishing agent and solvent. As an industrial hazard, it is toxic by ingestion, by skin contact, and by inhalation.