mental derangement or in impairment of the motor nerve function and in neuritis Recovery is likely to be good if exposure is terminated before the nervous system is seriously injured

See Industrial Data Sheet 341 and *Hygienic Guide*

Carbon monoxide is a colorless, odorless gas generated by combustion of the common fuels with an insufficient air supply or where combustion is incomplete because of a condition such as impingement of burning gases on a cold surface

In most industrial plants, carbon monoxide is released by accident or by improper maintenance or adjustment of burners or flues, by use of open salamanders in enclosed places, and by internal combustion engines

Poisoning is entirely by inhalation of the gas and may come on practically without symptoms in an individual who is comparatively quiet The most common symptoms of complete asphyxia are pounding of the heart, dull headache, flashes before the eyes, dizziness, ringing in the ears, nausea, and sometimes (but not often) convulsions

The injury is due to the combination of carbon monoxide with the available hemoglobin This action tends to exclude oxygen and so suffocate the victim by lowering the ability of the blood to carry oxygen The first aid required is to reduce the loss of heat from the body and to supply oxygen as rapidly as possible, by removal to fresh air and administering of artificial respiration if breathing has stopped The administration of oxygen or of oxygen mixed with 5 to 7 per cent carbon dioxide is the most useful measure

See Industrial Data Sheet 415 and *Hygienic Guide*

Carbon tetrachloride is a halogenated hydrocarbon used as a degreaser, solvent, and chemical intermediate

Acute poisoning follows a heavy exposure, such as one would get from the use of carbon tetrachloride as an anesthetic or from spreading out a large area of a cement dissolved in carbon tetrachloride without the precaution of local exhaust

Acute poisoning usually is characterized by very sudden unconsciousness, probably due to the effect of carbon tetrachloride on the heart, which speeds up enormously and then goes into disorganized twitching (fibrillation) with no effective beat at all If the victim regains consciousness, he is likely to suffer from headache, nausea, vomiting, and rapid heart beat for a short time

The subacute form of poisoning has been of more importance in industry than the acute form In these cases there is ingestion of the liquid or exposure to a moderately large concentration of the vapor for a considerable time The major injury was thought for a long time to be to the liver More recently, it has been realized that the damage is at least as much to the kidneys as it is to the liver, and that in the fatal cases the deaths are as often due to uremic poisoning from kidney failure as to liver failure

In subacute cases, the complaints and signs are likely to be nausea, vomiting, pain in the abdomen, swelling of the feet and hands, headache, dizziness, loss of appetite, diarrhea, fever, and nosebleeds or hemorrhage into the eyes It has also been demonstrated repeatedly that the chronic alcoholic or the person who has recently consumed a large amount of alcohol will be severely or fatally poisoned by carbon tetrachloride under conditions harmless for those who have not so indulged

Chronic poisoning comes from long-continued absorption of fairly small amounts of carbon tetrachloride over a long period It is not so clear-cut as the other forms, but is characterized by digestive distress, mental dullness, and cirrhosis of the liver

A number of cases of poisoning have resulted from the use of carbon tetrachloride as a fire-extinguishing fluid in confined spaces These cases are, of course, complicated by the products of combustion of the fire and also by the products of decomposition of the carbon tetrachloride Usually they show the signs of lung injury which indicate that they are the result of one or the other of these factors rather than of the carbon tetrachloride, as such

Carbon tetrachloride can be absorbed to some extent through the skin and can also cause a dermatitis by skin contact The major problem in prevention of injuries from carbon tetrachloride is that of prevention of inhalation of the solvent

See *Hygienic Guide*

Cellosolve – see Ethylene glycol monoethyl ether.