MERCURY POISONING & POLLUTION

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Mercury is a heavy metal poison. Pure metallic mercury is not practically poisonous. In fact, small amount is used as medicine in abortion, healing the wound, etc. Hence a very small amount of mercury produces no noticeable ill -effects. Excess of Hg instantly kills human attacking brain, mucus membrane and nerves. Contact with Hg produces heaviness, headache, fatigue, sleepiness, diarrhea, etc. It may also bring genetic change. Mercury vapour on the other hand is very dangerous. It causes destruction of long tissues. The risk also increases with the period of exposure to mercury vapour. Mercury vapour is released in the atmosphere by various activities. One of the chief cause of release of mercury in the atmosphere is during eruption of volcanoes. Mercury vapour is also released while burning of coal.

SELECTIVE POISONING

The toxicity of inorganic mercury compounds depends on their solubilities. For example, the insoluble mercurous chloride is not considered very toxic and , in fact, it has been used in medicine as purgative and a drug to kill intestinal worms. Such treatment may be termed as selective poisoning. Because the mercuric salts are generally more soluble, they are considerably more toxic. They affect the liver and kidneys. It also leads to sore gums and loose teeth.

BIOLOGICAL CYCLE IN MAN

Mercuric salts such as HgCl₂ have been used for a number of years as disinfectant of seeds and to control diseases of tubers and bulbs. The most toxic of all mercury compounds are methylated mercury compounds (e.g. (CH₃)₂Hg), which are used as fungicides and pesticides. They cause nervous disorder in animals (esp. marine). Another organo-mercuric compound, phenyl mercury acetate

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 $C_6H_5HgOOCH_3$ is used in paper industy. Mercury is found collected in the bottom of rivers and seas from various sources like refining of various metals, manufacture of NaOH, industries, etc. It has been found that various bacteria convert metallic mercury into Hg_2^{2+} ions and eventually into dimethyl mercury $(CH_3)_2Hg$. Fishes take in bacteria and methyl mercury compounds concentrate into fatty tissues of their bodies. Small fish is eaten by large fish, finally at the end of the food chain, we find humans. The amount of mercury poison builds up the food chain and it is sometimes called bio-amplification. The mercury poisoning phenomenon is observed to pass from the membranes in the placenta of a pregnant mother to the developing foetus.

SOLUTION & CONTROL

The best treatment for mercury poisoning is a dose of calcium salts of EDTA (ethylene daimie tetra acetic acid). Many mercury-containing compounds have been banned in industry and agriculture. If mercury compounds have to be used, they should be used with special care and vigilance so that it doesn't hamper the environment and living beings.

$$HOOCH_2C$$
 $N-CH_2-CH_2-N$
 CH_2COOH
 CH_2COOH

Structure of EDTA