THMs: A sobering drinking problem

Scientists long have eyed with suspicion the common use of chlorine to kill bacteria in public drinking water. Since 1974, researchers have believed that chlorine reacts with natural substances in drinking water to form compounds called trihalomethanes (THM's)—one of which, chloroform, causes cancer in laboratory animals. Now, evidence from studies under review by members of the U.S. Council on Environmental Quality seems to establish a firm link between heavily chlorinated water and human cancer.

The studies are case-control analyses of thousands of cancer deaths in North Carolina, Illinois, Wisconsin and Louisiana, says CEQ member Robert Harris. Persons who had died of lower gastrointestinal cancer were matched in age, sex and other variables with individuals who had died of other causes. When researchers traced the sources of drinking water for persons in both the cancer and control groups, they discovered that a significantly higher proportion of cancer victims had drunk from chlorinated water supplies. Harris says these studies strongly support EPA's attempt to regulate the level of THM's in public drinking water.

The EPA regulation, promulgated in November of 1979, establishes a maximum contaminant level (MCL) of 0.10 milligrams per liter of water, or 100 parts per billion, for total THM's. The first stage of this regulation, to begin this month, calls for monitoring community water systems serving 75,000 or more persons for THM's content. Monitoring of community water systems serving 10,000 to 75,000 persons must begin within two years, and, if all goes as planned by the EPA, the MCL will go into effect within three years in all communities with more than 10,000 persons.

But the American Water Works Association—a nonprofit group with membership open to "anyone with an interest in water supply"—is challenging EPA's plan. AWWA representatives have asked the D.C. Circuit Court of Appeals to review what it terms "serious scientific, technical and procedural issues arising from EPA's development and promulgation of the regulation." Harris says AWWA is "far behind in its understanding of water supply and public health effects." Both sides have filed briefs in the lawsuit.

Meanwhile, researchers are investigating ways to lower the level of THM's in drinking water. One method is to use activated carbon filters before adding chlorine to remove the organic materials that react with the disinfectant. Another method is to use disinfectants that will not cause the formation of THM's — chlorine dioxide, ozone, chloramines and bromine chloride, for example.

Chlorine dioxide, which has been commonly used as a water disinfectant in Europe for about 25 years, now is being tested for use in U.S. drinking water supplies. Researchers, however, are concerned with the health effects of chronic chlorine dioxide ingestion: The oral intake of this disinfectant by laboratory animals has been associated with certain blood abnormalities. But preliminary results of studies conducted on humans appear to be more encouraging. Joseph R. Bianchine of Ohio State University in Columbus reported at the recent meeting of the American Society for Pharmacology and Experimental Therapeutics in Rochester, Minn., that chlorine dioxide in amounts commonly used for water disinfection appeared to be safe in both short- and long-term (12 week period) studies involving human volunteers. Still, says Bianchine, the effects on the general population of drinking water containing chlorine dioxide for more than 12 weeks have yet to be considered. □

More mammoth meat

Despite the chilly relationship between the United States and Soviet Union on many fronts, cooperation continues in the mammoth arena. Morris Goodman of Wayne State University, who has analyzed tiny samples of the baby mammoth called Dima (SN: 5/10/80, p. 301), will receive from Soviet scientists 25 grams more of frozen tissue from that mammoth and 2 kilograms of air-dried material from less well-preserved mammoths discovered more recently in Siberia. Goodman says this is the first time his laboratory will have enough material to make "a decent search" for mammoth DNA. Goodman believes that increased activity in northern Siberia and increased interest in mammoth investigation make it likely that more and better-preserved mammoths will become available in the future. □

Geneticist leaves post

The researcher who jumped forward in genetic engineering by performing the first known gene-splicing experiments on humans has stepped down as chief of the division of hematology and oncology at the University of California at Los Angeles. At the request of the chairman of the department of medicine at UCLA, Martin J. Cline gave up his position as division chief until the controversy surrounding his experiments is resolved (SN: 10/18/80, p. 245). He maintains his faculty position. In July, Cline tried in Israel and in Italy to introduce healthy genes into the defective blood-forming cells of two women with beta-thalessemia. Later that same month, a UCLA committee denied him permission to perform similar experiments on campus until further animal tests had been conducted. □

Brain cancer deaths possibly job-linked

Calling them the "largest single series of presumably occupationally related brain cancers" in medical history, federal health investigators reported last week that 18 brain cancer deaths among workers at a Union Carbide petrochemical plant in Texas City, Tex., apparently were job-related.

The report, presented at a New York Academy of Sciences meeting on brain tumors and the chemical industry, is part of a continuing two-year study initiated by Union Carbide and carried out by scientists at the Occupational Health and Safety Administration and the National Institute of Occupational Safety and Health. The researchers did not elaborate on actual causes of the cancers, but noted that the deaths, which occurred between 1956 and 1980, were four to five times as many as those expected for the Texas county. A spokeswoman for Union Carbide said, however, "We have no reason to believe there is any correlation between these tumors and occupational exposures. ... Nor does the report make any specific connection" between jobs and the disease, pointing out that the workers had different jobs in separate parts of the plant. □

Enkephalins: Link to brain disease?

During the past decade a group of brain proteins, loosely dubbed the endorphins, have been found to produce an astonishing variety of both positive and negative psychological-behavioral effects in humans and animals. The effects range from pleasure, improved concentration and symptomatic relief from mental retardation, depression, schizophrenia, senility and pain to violence, irritability and migraine headaches (SN: 9/2/78, p. 164; 11/25/78, p. 364). And now two of the endorphins (the enkephalins) may produce still another psychological-behavioral effect—human brain disease—according to a report in the Oct. 16 NEW ENGLAND JOURNAL OF MEDICINE by Niels Jacob Brandt of the University of Copenhagen and his colleagues. "Such a profound role for the enkephalins in regulating brain function has never before been proposed," says Solomon H. Snyder of Johns Hopkins School of Medicine in Baltimore and a leading brain protein-opiate researcher in an accompanying editorial.

The report of Brandt and his colleagues is based on only one case history, but it is an unusual one—a child who apparently was normal until eight months of age when he started having attacks characterized by drowsiness, lethargy, perspiration, loss of muscle coordination, drooping eyelids,