

Another strike against meat additives

The meat industry is allowed by the Government to add nitrites and nitrates to processed meats to make them look pink and to keep them fresh. Scientists have long suspected that consumption of these additives may be harmful, and a team at the Oregon Medical School has confirmed one particular suspicion.

Adam W. Lis, Robert K. McLaughlin and Diane I. McLaughlin presented a paper at the American Chemical Society's northwest regional meeting last week stating that a harmful biproduct is formed in live animals from the combination of the preservatives and a naturally occurring muscle chemical. They reported last year that under acidic conditions simulating those found in the stomach, sodium nitrites react with a natural component of meat fibers called creatinine, to form a substance called creatinine-5-oxime. When this chemical was injected in rats, it caused serious nervous disorders, including loss of alertness, muscular weakness, twitches, tremors and convulsions.

Lis and his co-workers previously had shown that creatinine is associated with the induction of drowsiness and sleep, being the lactic acid derivative that builds up in muscles and tells the muscle fibers when to rest.

The latest paper reveals that when rats were fed various amounts of sodium nitrites and radioactively marked creatinine, the harmful oximes did form inside of their stomachs. Chromatography of the rats' urine revealed that the level of oximes in the system varies in proportion to the amount of nitrites eaten.

This work is an important addition to the study of food additives and their effects on animals. The next step will be to test for oxime formation in humans.

Tree bark: A super-sorptor for metals

Although many insects find it essential, and of course trees like it, tree bark is largely a pollutant to those in the forest products industry. One group of scientists has discovered an interesting thing about tree bark that may remove it from the "pollutant" category and put it to work as a pollution fighter.

Five Idaho scientists, headed by Leanne B. Barnes of Lewis-Clark State College, reported their findings at the American Chemical Society's northwest regional meeting. They found that bark from eight species of conifer trees will remove heavy metal ions from dilute solutions. Western red cedar and Englemann spruce bark were the most efficient species for the sorption of positively charged atoms of mercury, zinc, cadmium and lead.

They suggest that bark may be useful in collecting heavy-metal pollution in rivers, and that the particles can then be removed from the bark with a short bath in acid.

City streets are polluting the rivers

A report issued by the White House Council on Environmental Quality adds another item to the long list of pollution sources. Rainwater runoff from streets carries more heavy metals, such as lead, mercury, copper and zinc, into the waterways than do the discharges from most of the major industries. Heavy metals in fallout from industrial stacks and automobile exhausts collect on street surfaces and are washed away during storms. Overloaded storm sewers spill untreated into waterways with their load of hazardous metals. Cities should solve this by installing devices to trap rainwater runoff and treat it, the report says.

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Lightning and the sun

The latest addition to the growing list of meteorological phenomena which have been linked with solar activity is lightning, according to a study of more than 40 years of observations.

Using data from 1930 to 1973, M. F. Stringfellow of the Electricity Council Research Centre in Capenhurst, England, reports in the May 24 *NATURE* that "in spite of the year-to-year variations in the incidence of lightning, there is an underlying cyclic variation with a period of about 11 years which is in phase with the solar cycle. . . ."

The data were gathered using reports from 40 observers for the British Meteorological Office to calculate mean numbers of thunderstorm days for each year in the period. The square of the mean was taken as a rough index of the annual incidence of lightning.

Stringfellow reports that from 1964 to 1972, even the numbers of lightning-related malfunctions in the British electricity distribution system seemed to follow the sunspot cycle, although the data on the malfunctions are too limited to be statistically significant.

Pollutants and the Pole

The first detailed, high-altitude measurements of airborne pollutants and atmospheric components near the North Pole are just being completed by an aircraft from NASA's Ames Research Center in California.

Operating from Eielson Air Force Base near Fairbanks, Alaska, the plane has made a series of flights at about 65,000 feet to within less than 400 miles of the pole. The targets of sensors aboard the aircraft are ozone and nitric oxide, as well as tiny particles of natural and man-made pollutants, as part of a national program to see how these substances may affect long-term variations in the global climate.

Since the California-based plane is in the far north for the period anyway, and because it is heavily instrumented for earth resources studies, it has also been enlisted for double duty in Alaskan resources research. Color and black-and-white infrared photos covering 250- and 350-square-mile sections will be sent to a wide spectrum of northern users, ranging from the Army Corps of Engineers to some of the Alaskan native regional corporations to the National Park Service. Their studies will include wildlife habitat surveys, land-use planning and documentation of the Trans-Alaska Pipeline route to record land conditions before the pipeline is built.

Lasers and the horizontal

Only a year remains in a vast, 15-year Federal program designed to improve the accuracy of the National Horizontal Network, a scattering of about one million bronze markers sunk into the ground with precise distances measured between them. The network aids in a variety of geodetic tasks such as crustal movement studies and state and local surveys.

The measurements are being refined by field teams using laser rangefinders atop portable, 20-foot-high steel towers, claimed by the National Geodetic Survey to reduce errors to less than an inch in 10 miles.

The latest leg of the program, which begins this month, is a six-month, \$200,000 trip through more than 85 marker sites, located in 42 counties in Minnesota, Wisconsin and Michigan.

403