Science

High cancer rates among workers exposed to PCB's have been reported to the National Institute for Occupational Safety & Health by Mobil Oil. According to NIOSH, the Mobil data are the first from either animals or humans to suggest a correlation between exposure to polychlorinated biphenyls and increased skin and pancreatic cancers. Mobil reports that eight cancers developed between 1957 and 1975 among 92 R&D and refinery workers exposed for five or six years in the late 1940's and early 1950's to varying levels of Aroclor 1254, a mixture of PCB's. Of the eight cancers, three were malignant melanomas, or skin cancers, and two were cancers of the pancreas. NIOSH says that this is a significantly higher rate than would be expected in a population of that size.

The exact amount of DDT in meat doesn't seem to matter to rats. There were no differences in DDT retention for rats fed for 120 days with cooked beef containing amounts of the pesticide moderately above and below the FDA tolerance level of 5 ppm in rendered fat, according to Dr. Robert W. Rogers and coworkers at Mississippi State University. Other rats were fed meat with DDT added to double the original concentrations of 4.25 ppm and 7.55 ppm. Adding DDT increased its retention in rats, but toxicity effects measured by mixed function oxidases and formation of smooth endoplasmic reticulum in the liver did not always increase with increasing DDT. One reason may be cooking, which removes about half the DDT from beef, Rogers says.

There's ozone in Mars' atmosphere, say earth-bound scientists who have been studying the planet through telescopes. The group, which includes researchers from the National Oceanic & Atmospheric Administration, the Smithsonian Astrophysical Observatory, and France's National Center for Scientific Research, used powerful telescopes at Mt. Hopkins, Ariz., to detect the infrared radiance of excited oxygen molecules produced by the photochemical breakup of triatomic oxygen. Peak ozone concentrations occur at about 30 km altitude on Mars, the group believes.

Jupiter's hydrogen atmosphere may behave something like earth's atmosphere and something like the oceans. This is the conclusion of Dr. Gareth P. Williams of the National Oceanic & Atmospheric Administration, who applied a computer model of the earth's atmosphere to Jupiter. He found that it not only reproduced the patterns known to exist but provided new explanations of such visible features as the great red spot (a special type of large stationary eddy) and the horizontal stripes (jet streams traveling in opposite directions). It also revealed a four-year cycle in the transfer of heat (compared to earth's cycle of about a month).

An unmanned Soviet spacecraft, Luna 24, made a one-day landing on the moon last week to gather rock samples for earth-based analysis. The mission, apparently successful, landed in the southeast region of the Sea of Crises on Aug. 18. On command from earth, the lander drilled samples to a depth of 2 m in the moon's crust, placed the samples in airtight containers, and lifted off on Aug. 19 for return to earth. Landing on earth was scheduled for Aug. 22 within the U.S.S.R.

An electron spin resonance (ESR) spectroscopy "resource" has been set up by NIH with a $700,000 grant to the Medical College of Wisconsin, Milwaukee. The purpose of the grant is to allow scientists from across the U.S. to use ESR to study the role of paramagnetic molecules in cellular chemistry and in the development of various diseases. Wisconsin researchers already have used it to identify the presence of melanin in amelanotic tumor, a type of malignant melanoma in which melanin production is low.

Education

A new B.S. degree with a major in engineering chemistry is being offered this fall by the State University of New York, Stony Brook. The new major is sponsored jointly by the chemistry and materials science departments and is aimed at students interested in solid-state chemistry and materials technology. The program focuses on modern industrial processes and is designed to provide background in polymeric materials, semiconductor processing, modern technology and environmental problems in industry, mineral resources, and biomedical materials application.

Technology

Generation of electric power using liquid fuels derived from coal will be evaluated for economic and technical viability by five utility companies and Stone & Webster Engineering Corp., which have joined to form the North East Coal Utilization Program (NECUP). The $250,000 first phase of NECUP is due for completion by the end of the year. Use of mixtures of oil with finely ground coal and processes that add hydrogen to coal under pressure are among the operations to be reviewed. The five utility companies are Boston Edison, Long Island Lighting, New England Power, New England Gas & Electric, and Northeast Utilities.

Common clays can help catalyze complex chemical reactions, say researchers at Michigan State University. By binding catalytic materials to clay particles, MSU researchers say they can dramatically increase control of chemical reactions and limit the formation of undesirable side products. Clay particles consist of closely packed stacks of negatively charged silicate plates, each less than 2 microns in diameter. Positively charged ions such as sodium and calcium generally are sandwiched between the plates. Standard ion exchange methods are used by the MSU scientists to replace the naturally occurring ions with catalytic ions.

The impact of existing and proposed energy facilities in the lower Ohio River basin will be studied by researchers at six state universities in Illinois, Indiana, Kentucky, and Ohio under grants from EPA. The studies are the first phase in a proposed three-year assessment of the environmental, economic, and sociological impacts of such energy developments.

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