

medical sciences

Carbon monoxide pollution and health

Within the past year researchers at Marquette University have found that humans exposed to low levels of carbon monoxide for 14 days did not show behavioral changes such as altered ability to read or calculate. In the December ARCHIVES OF ENVIRONMENTAL HEALTH, Robert Eckardt of Esso Research and Engineering Co., Linden, N.J., Harold MacFarland of York University, Toronto, Yves Alarie of the University of Pittsburgh and William Busey of Experimental Pathology Laboratories, Herndon, Va., report the effects of long-term CO exposure in primates.

Nine monkeys were exposed to up to 67.5 parts per million of CO 22 hours a day, seven days a week, for two years. Nine control monkeys were used. The only observed differences between the exposed and unexposed monkeys were in somewhat elevated carboxy-hemoglobin levels. These higher levels, however, did not change hemoglobin or red blood cells, or lead to cardiac fibrosis or brain pathology.

The highest air levels of CO recorded, in New York City, were 50 parts per million. So if primate effects can be extrapolated to humans, this study, along with the Marquette study, suggest that existing air levels of CO are not impairing health.

Blacks hear better

Many observers wonder why individuals of the same age and sex, working for the same length of time in similar occupations, do not have equal hearing ability. On the hunch that ethnic origin might be a determinant, Lilly Klein Karsai and her colleagues at the City University of New York studied 835 active and retired New York City longshoremen. They included only those persons who had not had diseases that might impair hearing, and who were not from a family with a history of hearing loss. Age differences and length of employment were taken into account.

As they report in the December ARCHIVES OF OTOLARYNGOLOGY, blacks had "dramatically" better hearing than did persons of white American, Italian, Irish or Yugoslav background. Differences among the other groups were not consistent enough to be conclusive.

Carbon monoxide poisoning in cars

Sixty-eight people died in Maryland during the past six years because of accidental carbon monoxide poisoning in automobiles. Susan Baker of the Johns Hopkins School of Hygiene and Public Health and her colleagues looked into the causes of these deaths. They report in the November AMERICAN JOURNAL OF PUBLIC HEALTH that 51 deaths were due to faulty vehicles. Most deaths involved stationary vehicles with the engine running to provide warmth. Three-fourths involved men sleeping in the car or couples parked in the car, often in remote places for romantic purposes. Many of the male victims had the habit of sleeping in their cars after drinking. Alcohol is known to enhance carbon monoxide poisoning.

Exhaust emission control devices, the authors conclude, are a good preventive against automobile carbon monoxide poisoning. The car of one of the victims studied was so equipped, but the device had been disconnected to provide additional horsepower.

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physical sciences

Protons and protons at 300 GeV

One of the important criteria in proton-proton collisions at ultrahigh energy is the multiplicity or number of charged particles produced. It begins to appear that the distribution of multiplicity (individual events compared to the average) loses its dependence on energy and assumes a pattern that looks the same no matter what the energy. This is called scaling. In the Dec. 11 PHYSICAL REVIEW LETTERS Paul Slattery of the University of Rochester presents evidence that scaling sets in at the unexpectedly low energy of 50 GeV and holds at least to 300 GeV.

Along with indicating that high-energy physics is getting relatively simpler, the multiplicities may be used to distinguish between two models of what happens in the proton-proton collision: the diffractive, in which the target scatters the incoming protons rather like a hard sphere, and the fragmentation model, in which the target appears like a collection of loosely bound fragments that are driven apart by the impact.

In the same issue of PHYSICAL REVIEW LETTERS a group working at NAL (F. T. Dao et al) present evidence from 303 GeV collisions which appears to tell in favor of the fragmentation model though the evidence is by no means yet conclusive.

Jupiter's atmosphere and beta Scorpii

On May 13, 1971, the planet Jupiter occulted the multiple star beta Scorpii. The data gathered by many observers as the planet and its atmosphere passed before the components of the beta Scorpii system have aroused discussion that still continues. One of the questions regards bright flashes that were seen as the planet's atmosphere passed in front of the star's.

These flashes show up as sharp spikes on a graph of light intensity over time, and the question is whether they are symmetric in time, that is whether the same sort of spike occurs on going in and coming out as the same level of atmosphere was in front of the relevant star. Since the spikes are believed to be caused by density changes in the planet's atmosphere, seeing the same spike at the same level on opposite sides of the planet would indicate that the atmosphere of Jupiter is layered or stratified on a global scale.

Some time ago A. P. Fairall published a conclusion favorable to time-symmetry of the spikes and layering of the Jovian atmosphere. In the Dec. 8 NATURE Joseph Veverka, J. Elliot, Carl Sagan and L. Wasserman of Cornell University and William Liller of Harvard conclude, on the basis of what they say are more extensive and better resolved data, that the spikes are not time-symmetric. This makes it improper, they say, to speak of layering in the Jovian atmosphere.

Identification of SMC X-1

Efforts to identify the X-ray sources discovered by the X-ray satellite Uhuru continue. The latest is the source SMC X-1. In International Astronomical Union Circular 2468 (Dec. 12) William Liller of Harvard College Observatory identifies it with a star called Sanduleak 160. The star is close to the X-ray position, and Liller finds a variation in its light over a 3.8927-day period, probably due to eclipse by a companion. The X-ray source has the same periodicity.

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