

Commuting: A breath of traffic's air

Even if a car's windows are closed, volatile organic chemicals (VOCs) emitted by traffic enter the passenger cabin and build to concentrations that generally match those in roadway air, a new study finds. Moreover, if malfunctions in a car's carburetor allow unburned gasoline to infiltrate the interior, it may pay to open the windows.

Nicolas J. Lawryk and Clifford P. Weisel of the Environmental and Occupational Health Sciences Institute in Piscataway, N.J., sampled gaseous pollutants over a year in two cars during 113 commutes through suburban New Jersey and 33 trips from New Jersey to Manhattan (via the 12-lane New Jersey Turnpike and Lincoln Tunnel). As smaller studies had suggested, drivers confront the greatest exposure to VOCs when traveling in heavy traffic or through pollution-trapping tunnels.

Major differences between the cars occurred only when one, which had a carburetor, developed fuel system malfunctions, Lawryk and Weisel report in the March ENVIRONMENTAL SCIENCE & TECHNOLOGY. Until that car was repaired, some unburned volatile substances in gasoline leaked into the cabin. With the windows closed, concentrations of benzene (one of gasoline's carcinogenic constituents) climbed as high as 45.2 micrograms per cubic meter of air—25 times that in the fuel-injected car making the same commute.

Though cars with carburetors are on the wane, Weisel worries that when the millions still on the road develop choke problems or fuel leaks, they could jeopardize health—especially of taxi drivers and others who drive much of the day.

Concerned about just these issues and populations, the California Air Resources Board in Sacramento is planning its own analysis of air quality in cars. It plans to monitor not only VOCs but also a driver's exposure to potentially health-threatening fine dust (SN: 7/1/95, p. 5), notes Peggy Jenkins, who heads the agency's indoor air program.

While not wishing to downplay the health risks posed by auto pollution, Lance Wallace of the Environmental Protection Agency in Reston, Va., points out that even those exceptional concentrations of benzene seen occasionally in this study were no higher than what typically developed inside all motor vehicles 15 to 20 years ago. For him, the message is that certain automotive problems can erase recent air quality improvements won through better controls on tailpipe emissions and the reformulation of gasoline.

A genetic vulnerability to carcinogens

In the March 10 PARADE magazine, Cornell University astronomer Carl Sagan recalls the harrowing bone-marrow transplant he underwent to check the ravages of myelodysplastic syndrome (MDS). Without a transplant, MDS victims often die of leukemia within a year. A new study suggests that a common genetic defect renders many people unusually vulnerable to this rare disease and perhaps to other cancers.

Douglas A. Bell of the National Institute of Environmental Health Sciences in Research Triangle Park, N.C., and his coworkers tested 92 MDS patients and 201 cancerfree volunteers for a gene that codes for a carcinogen-detoxifying enzyme (one of the glutathione S-transferases). In the Feb. 3 LANCET they report that those who failed to inherit a functional copy of this gene from either parent face four times the MDS risk of those who inherited even one such gene. In the United States, one in six persons lacks a working copy of this gene.

"This is the first disease strongly associated [with] the absence of this protective gene, but it certainly will not be the last," says Bell. However, he adds, it's important to point out that unless one is exposed to certain chemical carcinogens, "these gene defects have no adverse health impact."

Congress takes aim at bison...

A proposal now before Congress would require sterilizing or killing thousands of bison in Yellowstone National Park to keep them from infecting local cattle with *Brucella* bacteria.

Infection with *Brucella* causes an animal to abort one or more of her fetuses and lowers milk production. Since the late 1950s, the number of infected cattle herds in the United States has dropped from 127,000 to 53. Cattle from states that have infected herds must be tested before crossing state lines.

Cattle in Wyoming, Montana, and Idaho are free of the bacterium, but some ranchers say that bison in neighboring Yellowstone threaten their animals' health. Animals pick up *Brucella* when they investigate a fetus aborted because of the disease and ingest bacteria in the tissue, placenta, or blood.

Scientists first detected *Brucella* in bison in the early 1900s. Today, roughly half of the bison in Yellowstone carry the bacterium, according to some estimates. However, the number of bison that are infectious or have lost their fetuses because of the bacterium remains unclear, says Jack Rhyan of USDA's National Veterinary Services Laboratories in Ames, Iowa. His lab is currently doing studies to provide more definitive data.

On March 7, a Senate subcommittee held hearings on legislation that calls for slaughtering or sterilizing all bison in Yellowstone that test positive for *Brucella* or that can't be tested. Some scientists fear that the proposed action would result in the death of noninfectious animals that have the antibodies and therefore test positive.

The bill, introduced by Conrad Burns (R-Mont.) in May 1995, would require National Park Service staff to test the blood of the park's roughly 4,200 bison for antibodies to *Brucella*. The staff would have to vaccinate and quarantine for 1 to 3 months each bison that tests negative. Those that test negative but can't be quarantined would have to be sterilized or slaughtered.

The animals killed under the program would go to "Indian tribes and other suitable recipients" for eating, the bill states. People can catch brucellosis from handling raw meat but not from cooked meat.

Scientists disagree on how much risk—if any—infected bison pose to cattle, says Elizabeth S. Williams, a veterinarian at the University of Wyoming in Laramie. However, she considers the risk small. Cattle rarely come into contact with an aborted bison fetus, she says.

"There has never been a single documented case of free-ranging bison transmitting [*Brucella*] to cattle," Robert M. Ferris asserts in written testimony submitted to the subcommittee. Ferris works for the Defenders of Wildlife, a conservation organization in Washington, D.C.

The legislation would prove very costly, Ferris argues, and ignores the ongoing efforts of private, state, and federal groups to control the disease in and near Yellowstone.

Alternatives to killing or sterilizing the animals include improving efforts to immunize cattle and to separate them from bison, notes Williams. A brucellosis vaccine for cattle exists, and researchers are developing one for bison.

... and locks out endangered species

On March 13, Congress voted to continue the 11-month-old ban that prevents the Fish and Wildlife Service from listing additional species as endangered or threatened (SN: 7/15/95, p. 43). If allowed, the service would have added 240 plants and animals to the list, a spokesperson says.



Wild bison may soon find themselves quarantined in pens, much like the zoo-kept American bison.