

Lead's reduced stature

A study of 1,454 Mexican-American children indicates that too much lead in the bloodstream can hinder growth, report researchers who have analyzed data from the Hispanic Health and Nutrition Examination Survey. The normal age-related increase in height "is decreased in children whose blood lead levels exceed the average," the investigators write in the September *AMERICAN JOURNAL OF CLINICAL NUTRITION*. Although height reductions averaged about 0.4 inch, some children apparently lost up to an inch from lead — "a really significant growth reduction," says A. Roberto Frisancho, a biological anthropologist at the University of Michigan's Center for Human Growth and Development in Ann Arbor.

Frisancho and Alan S. Ryan, of Ross Laboratories in Columbus, Ohio, classified each youngster's blood lead level as either above or below the average for U.S. children of the same age and gender. Although the federal Centers for Disease Control considers up to 30 micrograms per deciliter ($\mu\text{g}/\text{dl}$) an "acceptable" lead level in children, the high-lead group in this study averaged only 50 to 58 percent of that concentration. Indeed, Frisancho told *SCIENCE NEWS*, stature-stunting effects appeared in children with blood lead levels as low as $10 \mu\text{g}/\text{dl}$ — one-third the level previously reported to affect stature.

Wine: Getting the lead out

Earlier this year, two researchers advised wine lovers to sip from ordinary glasses, since leaded crystal may leach lead into the fermented beverage (SN: 1/26/91, p.54). Food and Drug Administration researchers now offer additional lead warnings.

New surveys conducted by the FDA's Bureau of Alcohol, Tobacco and Firearms indicate that up to 4 percent of currently marketed wines harbor more than 300 parts per billion (ppb) lead — a level that FDA says "could be harmful to consumers." On Sept. 10, FDA officials announced plans to limit the lead levels allowable in table wines — probably to about 300 ppb.

The agency also plans to eventually ban the lead-foil wrappers traditionally used to seal a wine bottle's cork stopper. Recent tests revealed that when the foil leaves lead salts on the rim of a bottle, this dissolvable residue can boost the wine's lead content during pouring. For now, FDA recommends wiping the rim with a cloth dampened with vinegar or lemon juice — *before* extracting the cork.

Busing away particulates

"We have received more complaints about the huge, black billows of smoke from buses than any other issue relating to vehicles," said EPA Administrator William K. Reilly at a press conference last week. To address the problem, his agency has proposed a package of new rules. Beginning with the 1993 model year, bus manufacturers would have to reduce the vehicles' particulate emissions by 60 percent — to 0.1 gram per brake-horsepower-hour. In 1994 this standard would drop by another 50 percent, to roughly 90 percent of uncontrolled levels. And for the first time, EPA would require installation of particulate controls on existing buses in large cities, which provide roughly 80 percent of the nation's bus service.

Other new controls on heavy-duty, diesel-fueled vehicles are due to kick in with the 1994 model year. Those controls, combined with the rules proposed this month, should reduce particulate emissions from diesel vehicles by roughly 86 percent, according to EPA data. Such vehicles currently contribute 16 percent of all airborne particulates in the United States.

EPA considers diesel particulates — microscopic particles that can lodge deep within the lung — "a probable human carcinogen."

New clues on what an incinerator spews

Researchers at Argonne (Ill.) National Laboratory report developing the first instrument to continuously sample emissions from municipal and hazardous-waste incinerators.

A number of factors can affect how completely wastes burn, including temperature, oxygen levels, the composition of the wastes and the rate at which they are fed into the incinerator. And the less complete the combustion, the more pollution an incinerator emits. Argonne's new stack-gas monitoring system still needs a year or so of further development to withstand rugged field conditions, such as vibrations and dirt. But with those refinements, the system should offer incinerator operators their first opportunity for real-time stack-gas monitoring — and, perhaps more important, a chance to develop complementary, pollution-minimizing feedback systems that can fine-tune combustion, the Argonne researchers say.

Their sampler relies on a spectroscopic process in which mirrors bounce a beam of infrared light back and forth through the incinerator's emissions. Because each compound in the flue gas absorbs a different pattern of infrared radiation, computer analysis of the exiting light identifies not only the chemical fingerprints of air pollutants going up the stack, but also the pollutants' concentrations.

Incinerator operators currently have no way to conduct real-time assays of pollutant emissions; a single test can take up to one month and cost \$50,000, notes chemical engineer Michael J. McIntosh, principal investigator on the Argonne project. The new system should "provide continuous monitoring for an installed cost of about \$50,000," he says.

In tests with a small incinerator burning chlorobenzene, the Argonne device "works beautifully," McIntosh reports. Every few seconds it provides analyses of more than 10 selected pollutants. It should be able to identify any molecules that occur in at least parts-per-billion concentrations, he says.

The system will not detect pure elements, such as metals. Moreover, since incinerator releases of toxic dioxins and furans typically remain below the system's detection limit, it will miss the more dilute levels of polychlorodibenzothiophenes (PCDTs) recently detected in emissions from two municipal incinerators. European researchers describe these newly recognized compounds — the sulfur analog of furans (PCDFs), and chemical cousins of dioxins (PCDDs) — in the September *ENVIRONMENTAL SCIENCE & TECHNOLOGY*.

Scientists have not determined the toxicity of PCDTs or how these compounds form. They might be generated "where large amounts of sulfur and [chlorinated] compounds are incinerated or accidentally burned. Such a case could be the burning of used automobile tires," suggests the European team, led by Hans-Rudolf Buser of the Swiss Federal Research Station in Wädenswil.

Dogging a pesticide-cancer link

Several studies have linked farm workers' use of phenoxy herbicides with an increased risk of non-Hodgkin's lymphoma. Now, researchers led by Howard M. Hayes of the National Cancer Institute report finding an overall 30 percent increase in malignant lymphoma — the canine equivalent of non-Hodgkin's — in dogs whose owners used 2,4-D on their lawns. Some owners applied this phenoxy herbicide themselves, while others hired a lawn-care company for the task. Dogs whose owners applied it themselves faced a 90 percent increased risk of the cancer — which constitutes roughly one in seven canine malignancies seen by university veterinary clinics.

The dog study "suggests that the human health implications of 2,4-D exposures in the home environment warrant further investigation," the researchers conclude in the Sept. 4 *JOURNAL OF THE NATIONAL CANCER INSTITUTE*.