"Legal" air pollution may also kill

Even in cities whose air quality meets federal standards, air pollution may contribute to death rates from lung cancer and cardiopulmonary disease, researchers say.

The scientists monitored the quality of air — and the number of deaths among 8,111 residents — in six U.S. cities for 11 to 16 years. The city with the worst air pollution, Steubenville, Ohio, had a 26 percent higher mortality rate than Portage, Wis., which had the least air pollution, they report in the Dec. 9 NEW ENGLAND JOURNAL OF MEDICINE. In fact, pollution probably shortens Steubenville residents' life spans by one to two years, says epidemiologist and report coauthor Douglas W. Dockery of the Harvard School of Public Health.

The same finding held true of the other cities: The worse the air pollution, the higher the death rate, Dockery and his colleagues found. High concentrations of fine particulates in the air — notably the soot, sulfates, and nitrates from industry and automobile emissions — were most closely correlated with high mortality. These particulates are more toxic and can be breathed more deeply into the lungs, Dockery says.

The researchers also measured the acidity of the suspended particles, or droplets, and the concentrations in the air of sulfur dioxide, nitrogen dioxide, and total particulates. In addition to Steubenville and Portage, they studied Topeka, Kan.; Watertown, Mass.; Harriman, Tenn.; and St. Louis, Mo. Particulate pollution in these cities is representative of the range seen across the United States.

Other studies have also found a correlation between respiratory diseases and air pollution (SN: 11/20/93, p.326; 1/23/93, p.52). Previous reports have even linked increased death rates to air pollution; unlike the new study, however, they could not rule out other important health risks, such as cigarette smoking, as a cause of the higher rates, Dockery says.

Biodiversity okay for economy

Plant biodiversity flourishes in areas unsuitable for agriculture, so preserving biodiversity should be compatible with economic growth, an ecologist argues.

When growing conditions are favorable, "diversity among competing species can be reduced by competition," states Michael Huston of the Department of Energy's Oak Ridge (Tenn.) National Laboratory. In fact, a "pattern of highest plant diversity on poor soils and low plant diversity on the best soils is found throughout the world," he writes in the Dec. 10 SCIENCE. Individual plants don't thrive on poor soils, but a wider variety manages to eke out a living, he says.

For this reason, Huston argues, biodiversity and agriculture are compatible. "Preservation of areas of high plant biodiversity does not require the sacrifice of productive agricultural lands," he writes.

The number of different plants and animals in a given area tends to increase as one moves from either of the Earth's poles toward the equator, where the soil is often infertile, writes Huston. Human poverty tends to follow the same pattern, he notes.

Many Third World economies suffer, says Huston, because despite poor soil, they rely on agriculture. Developing their mineral resources instead, he asserts, might prove more profitable and potentially less harmful to the environment. Still, he adds, some fertile land needs to be set aside to preserve biodiversity, because some species require it to survive.