

International Energy Outlook 2004

Table 19. Possible Health and Environmental Effects of Major Air Pollutants

Air Pollutant	Nature of Pollutant	Possible Health and Environmental Effects
Nitrogen Oxides (NO _x)	Includes nitric oxide, nitrogen dioxide, and other oxides. Precursor of ozone and particulate matter.	Respiratory illnesses, haze, acid rain, and deterioration of water and soil quality.
Sulfur Dioxide (SO ₂)	Family of sulfur oxides gases. Precursor of particulate matter.	Asthma, heart disease, respiratory problems, and acid rain.
Volatile Organic Compounds (VOC)	Precursor of ozone and particulate matter.	Respiratory and heart problems, acid rain, and haze.
Particulate Matter (PM)	Mixture of solid particles and liquid droplets formed by sulfur dioxide, nitrogen oxides, ammonia, volatile organic compounds, and direct particle emissions. Smaller particles (less than 2.5 microns) are more harmful to the lungs.	Respiratory and heart problems, acid rain, and haze.
Mercury (Hg)	Metallic element that, when it enters a body of water, is transformed by biological processes into a toxic form of mercury (methylmercury).	Mercury in ambient air is deposited on land surfaces or into rivers, lakes, and oceans, where it can concentrate in fish and other organisms. Exposure to methylmercury from eating contaminated fish and seafood may cause neurological and developmental damage.
Lead (Pb)	Metallic element that can be introduced to people through air, water, or ingestion. Within the body, lead is stored in bones.	Lead interferes with the development of the nervous system and is most harmful to young children and pregnant women. High levels of lead in the bloodstream can cause irreversible learning disabilities, behavioral problems, and mental retardation. Lead interferes with the metabolism of calcium and vitamin D, can damage the reproductive system and the kidneys, and can cause high blood pressure and anemia.

Sources: U.S. Environmental Protection Agency, *Latest Findings on National Air Quality: 2001 Status and Trends*, EPA 454/K-02-001 (Washington, DC, September 2003); National Research Council, *Toxicological Effects of Methylmercury* (Washington, DC, 2000); C.L. French, W.H. Maxwell, W.D. Peters, G.E. Rice, O.R. Bullock, A.B. Vasu, R. Hetes, A. Colli, C. Nelson, and B.F. Lyons, *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units: Final Report to Congress, Volumes 1-2*, EPA-453/R-98-004a and b (Research Triangle Park, NC, February 1998).