and nonmalignant lung disease mortality. The association with cardiovascular disease may hold at levels of exposure in drinking water that are below the World Health Organization (WHO) provisional guideline value of 10 μg/L. Evidence has also continued to build indicating that low-level arsenic is a likely cause of neurodevelopmental delays in children and likely contributes to the development of diabetes.

Serious *cadmium* poisoning from the contamination of food and water by mining effluents in Japan contributed to the 1946 outbreak of “itai-itai” (“ouch-ouch”) disease, so named because of cadmium-induced bone toxicity that led to painful bone fractures. Modest exposures from environmental contamination have been associated in some studies with a lower bone density, a higher incidence of fractures, and a faster decline in height in both men and women, effects that may be related to cadmium’s calciuric and other toxic effects on the kidney. Cadmium burdens have also been associated with an increased risk of long-term kidney graft failure, and there is evidence for synergy between the adverse impacts of cadmium and lead on kidney function. Environmental exposures have also been linked to lower lung function (even after adjusting for smoking cigarettes, which contain cadmium) as well as increased risk of cardiovascular disease and mortality, stroke, and heart failure. Cadmium triggers pulmonary inflammation, and a recent population-based study of U.S. adults found that higher cadmium burdens are associated with higher mortality from influenza or pneumonia. The International Agency for Research on Cancer has classified cadmium as a known carcinogen, with evidence indicating it contributes to elevated risks of prostate, lung, breast, and endometrial cancer. Overall, this growing body of research indicates that cadmium exposure is contributing significantly to morbidity and mortality rates in the general population.

Advances in our understanding of *lead* toxicity have recently benefited by the development of K x-ray fluorescence (KXRF) instruments for making safe in vivo measurements of lead levels in bone, which, in turn, reflect cumulative exposure over many years, as opposed to blood lead levels, which mostly reflect recent exposure. Higher levels of cumulative lead exposure are now known