



<http://www.epa.gov/acidrain/effects/health.html>  
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## Acid Rain

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### Effects of Acid Rain - Human Health

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Acid rain looks, feels, and tastes just like clean rain. The harm to people from acid rain is not direct. Walking in acid rain, or even swimming in an acid lake, is no more dangerous than walking or swimming in clean water. However, the pollutants that cause acid rain—sulfur dioxide ( $\text{SO}_2$ ) and nitrogen oxides ( $\text{NO}_x$ )—do damage human health. These gases interact in the atmosphere to form fine sulfate and nitrate particles that can be transported long distances by winds and inhaled deep into people's lungs. Fine particles can also penetrate indoors. Many scientific studies have identified a relationship between elevated levels of fine particles and increased illness and premature death from heart and lung disorders, such as asthma and bronchitis.

Based on health concerns,  $\text{SO}_2$  and  $\text{NO}_x$  have historically been regulated under the Clean Air Act, including the [Acid Rain Program](#). In the eastern U.S., sulfate aerosols make up about 25 percent of fine particles. By lowering  $\text{SO}_2$  and  $\text{NO}_x$  emissions from power generation, the Acid Rain Program will reduce the levels of fine sulfate and nitrate particles and so reduce the incidence and the severity of these health problems. When fully implemented by the year 2010, the public health benefits of the Acid Rain Program are estimated to be valued at \$50 billion annually, due to decreased mortality, hospital admissions, and emergency room visits.

Decreases in  $\text{NO}_x$  emissions are also expected to have a beneficial impact on human health by reducing the nitrogen oxides available to react with volatile organic compounds and form ozone. Ozone impacts on human health include a number of morbidity and mortality risks associated with lung inflammation, including asthma and emphysema.