



Focus

Major Air Pollutants

Sulfur Dioxide

Background

Sulfur dioxide is a colorless liquid or gas with a very strong odor. It is produced by the combustion of fossil fuels at electrical power plants; industrial processes such as copper smelting and pulp mills; and combustion in motor vehicle engines. Sulfur dioxide is most toxic when combined with small particles and moisture. Sulfur dioxide that mixes with water drops in the atmosphere can result in acid rain. The conversion of sulfur dioxide to sulfate particles is also considered a significant problem.

Sulfur dioxide in Washington State

Sulfur dioxide levels in Washington have declined over the past 10 years, probably due to the closure of the ASARCO smelter in Tacoma. However, relatively high levels of sulfur dioxide are occasionally recorded near large industrial facilities in the state. The coal-fired power plant near Centralia is a major contributor of sulfur dioxide, but has recently agreed to a plan that will reduce its sulfur dioxide emissions 90 percent by the year 2007.

Health effects of sulfur dioxide

The major health concerns associated with high exposures to sulfur dioxide include effects on breathing and lung illnesses, changes in the lung's ability to defend itself, aggravation of existing respiratory and cardiovascular disease, and death. People most sensitive to sulfur dioxide include those with asthma and chronic lung disease (such as bronchitis and emphysema) or cardiovascular disease, and people with allergies. Children and the elderly may also be sensitive. In persons with asthma, the clinical symptoms of brief exposure to low concentrations of sulfur dioxide are shortness of breath, wheezing, and coughing.

People chronically exposed to sulfur dioxide have a higher incidence of persistent cough, shortness of breath, bronchitis, fatigue, and colds of long duration. Research suggests that the current federal standard for sulfur dioxide may not be protective enough of human health.

Other effects of sulfur dioxide

Sulfur dioxide is one of the ingredients of acid rain. Acid rain changes the chemistry of lakes and streams, which destroys aquatic life. It makes soil more acid, damages building materials, cloth, and metals, and can potentially contaminate drinking water. Sulfur dioxide can also cause a whitish haze resulting in decreased visibility, and can damage trees and agricultural crops. Some of these effects apparently occur at levels below the federal standard.

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Controlling sulfur dioxide

The Washington Clean Air Act adopted in 1991 includes measures for reducing the amount of sulfur dioxide in the air. These include a permit program for industrial facilities and reductions in traffic and the use of single-occupant vehicles.

More information

Focus sheets on other major pollutants, as well as on air quality programs, are available from the Washington State Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600; or by calling:

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If you have special accommodation needs or require this document in alternative format, please call Tami Dahlgren at (360) 407-6830 (voice); or (360) 407-6006 (TDD only).