

Continuous Gaseous Sampling

Sulfur Dioxide

Sulfur dioxide is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning coal containing sulfur or oil containing sulfur. The major health effects associated with high exposures to sulfur dioxide include effects on breathing and respiratory illness symptoms. The population most sensitive to sulfur dioxide includes asthmatics and individuals with chronic lung disease or cardiovascular disease. Sulfur dioxide damages trees, plants, and agricultural crops and acts as a precursor to acid rain. Finally, sulfur dioxide can accelerate the corrosion of natural and man-made materials that are used in buildings and monuments, as well as paper, iron-containing metals, zinc, and other protective coatings.

The statewide composite average of sulfur dioxide annual mean concentration for 1995 to 2004 is shown in Figure 2-18. Sulfur dioxide levels have shown only a slight improvement over the last ten years and remain below 50 percent of the air quality standard.

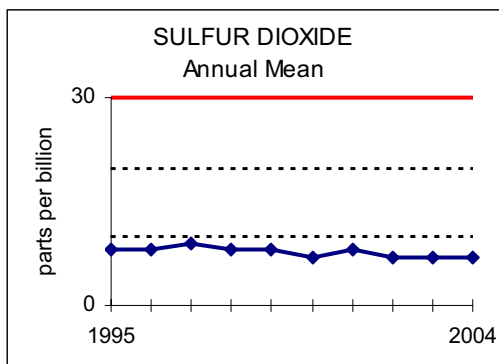


Figure 2-18. Trend in annual mean SO₂ concentrations, 1995-2004

The map in Figure 2-19 displays the average sulfur dioxide annual mean by county in 2004. When there are multiple sites in the county, the annual mean is the highest reading of these sites. All counties in which monitoring was conducted met the air quality standard of 30 parts per billion (ppb).

The map in Figure 2-20 displays the highest second maximum 24-hour (daily) average concentration by county in 2004. All areas of the Commonwealth met the 24-hour air quality standard of 140 ppb.

Figure 2-21 displays the last 10-year trend (1995 to 2004) of the annual arithmetic mean in the 12 air basins and the Altoona, Montoursville, and Farrell sites. The solid line represents the annual air quality standard of 0.030 parts per million (ppm).

Sulfur dioxide levels correlate significantly with ambient temperatures. As outside temperatures go down, indoor space heating requirements increase, resulting in additional burning of coal and oil.

Sulfur dioxide data for all sites that operated in 2004 is summarized in Appendix A, Table A-11. All sites in the Commonwealth met the annual mean, 3-hour, and 24-hour ambient air quality standards.

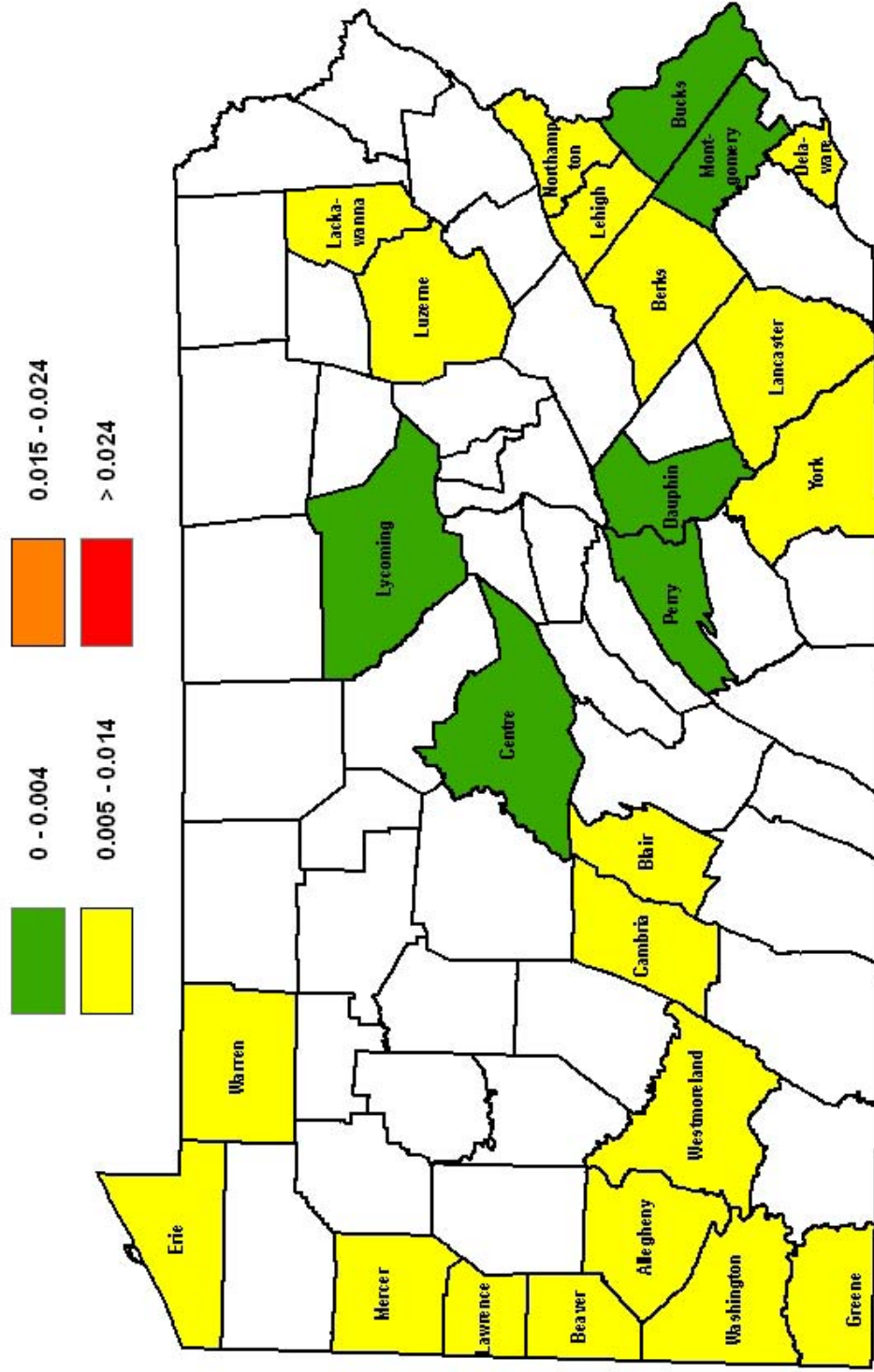
Sulfur dioxide historical data over the last 10 years is presented in Appendix A, Table A-12 for all stations that operated in 2004 with at least 50 percent valid data. This data was used to produce the trend chart shown in Figure 2-21.

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Figure 2-19. Sulfur Dioxide Concentrations

Annual Means (Average by County, for 2004)

(Parts per Million)



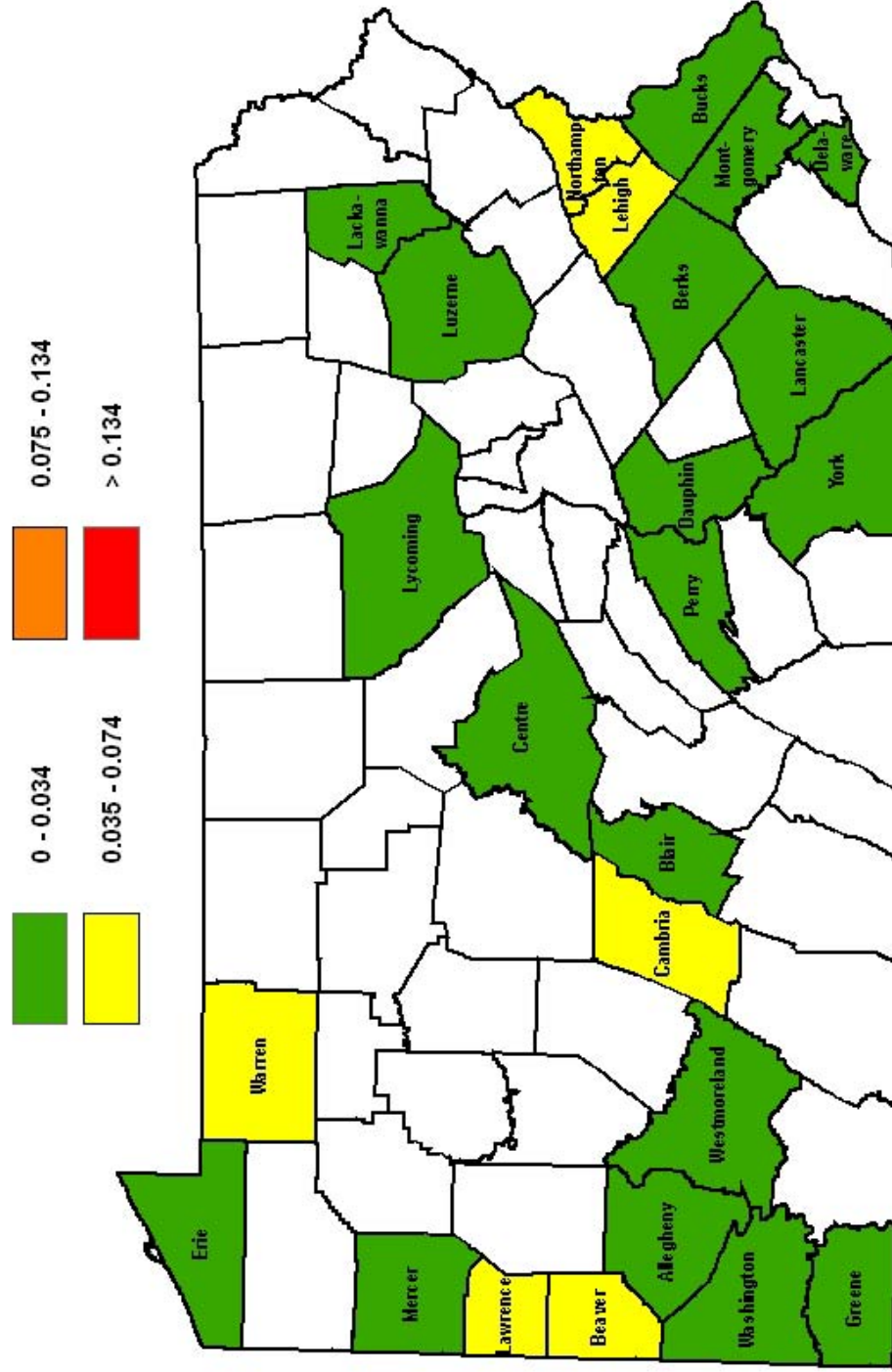
Primary National Ambient Air Quality Standard for Sulfur Dioxide
Annual Mean = 0.030 parts per million

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Figure 2-20. Sulfur Dioxide Concentrations

Highest Second Maximum 24-Hour Daily Mean (by County, for 2004)

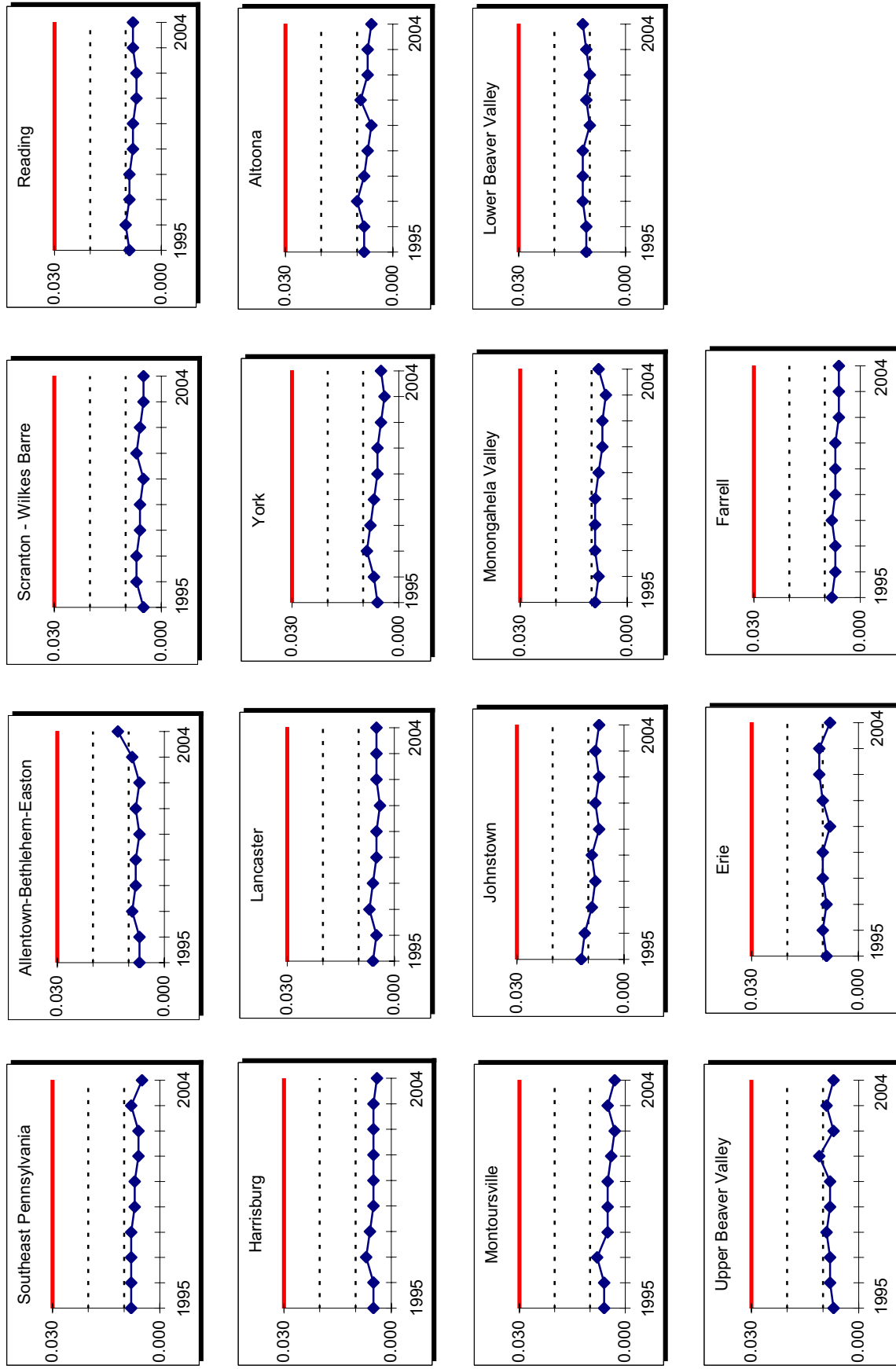
(Parts per Million)



Primary National Ambient Air Quality Standard for Sulfur Dioxide
24-Hour Mean (Daily Block Average) = 0.14 parts per million (not to be exceeded more than once per year)

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Figure 2-21. Sulfur Dioxide Trends in Pennsylvania 1995 to 2004
Annual Arithmetic Means (parts per million)



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