

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas that has an affinity for hemoglobin 210 times that of oxygen. By combining with the hemoglobin in the blood, CO inhibits the delivery of oxygen to the body's tissue, thereby causing asphyxia or shortness of breath. The health threat from carbon monoxide is most serious for those who suffer from cardiovascular disease. At much higher levels of exposure, healthy individuals are also affected.

Carbon monoxide is a byproduct of the incomplete burning of fuels. Industrial processes contribute to carbon monoxide pollution levels, but the principal source of carbon monoxide in most large urban areas is motor vehicle emissions. Peak carbon monoxide concentrations typically occur during the colder months of the year when automotive emissions are greater and nighttime inversion conditions are more frequent.

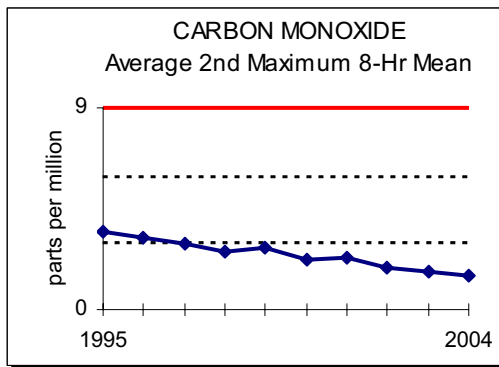


Figure 2-30. Trend in second maximum 8-hour average CO concentrations, 1995-2004.

Figure 2-30 shows the statewide average second maximum 8-hour carbon monoxide concentrations. In 1995, the statewide average concentration was 3.5 parts per million (ppm) and in 2004 the statewide average concentration was 1.5 parts per million (ppm), representing a statewide decrease of 57% for this period. The carbon monoxide improvement occurred across all spatial scales – downtown central business district (CBD), rural, and suburban. Figure 2-31 shows that, historically, CBD sites recorded higher carbon monoxide concentrations on average than other monitoring site locations. But this year, the average carbon monoxide concentrations are equal for both types of

sites. The solid line at 9 parts per million in Figures 2-30 and 2-31 indicates the 8-hour running mean air quality standard.

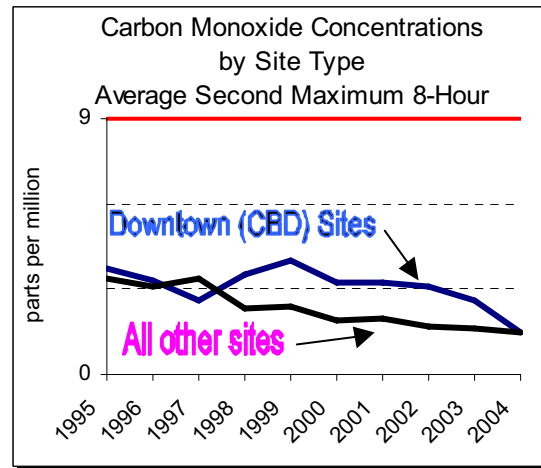


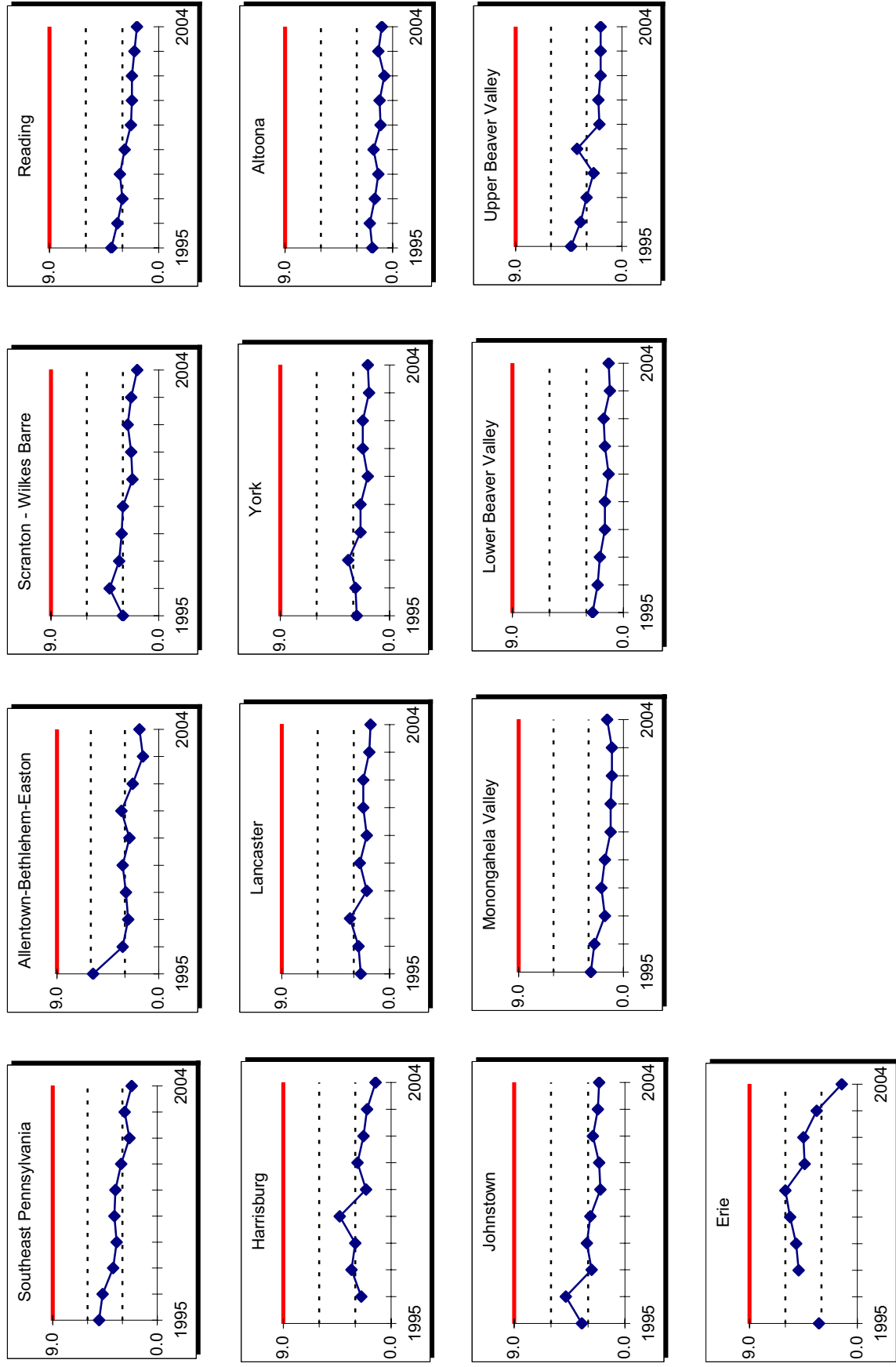
Figure 2-31. Trend in second maximum 8-hour average CO concentrations by location, 1995-2004.

The carbon monoxide 10-year historical trend for different areas of the state are shown in Figure 2-32 on the following page, using the highest second maximum 8-hour non-overlapping running average. The solid lines on the graphs represent the 8-hour ambient air quality standard.

Carbon monoxide data for 2004 has been summarized in Appendix A, Table A-21. There were no exceedances of the 1- or 8-hour air quality standards observed in 2004.

Historical trend data for 1995 to 2004 for carbon monoxide is shown in Appendix A, Table A-22 for all air monitoring sites that operated in 2004 with at least 50 percent valid data. The second maximum value is presented to indicate whether the site is attaining the air quality standard.

Figure 2-32. 10 – Year Carbon Monoxide Trend in Pennsylvania 1995 to 2004
 Second Maximum 8-Hour Running Mean (parts per million)



The Carbon Monoxide 8-Hour National Ambient Air Quality Standard is 9.0 ppm