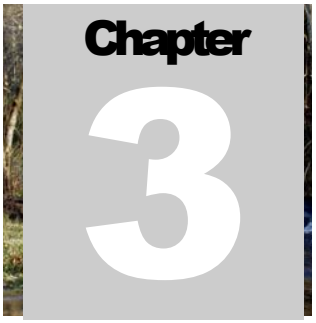

Air Resources

Woodford has yet to experience any air quality problems. What is the current state of air quality in the Bluegrass Region and how does it affect Woodford County?

Woodford's rural heritage and urban service area policies have protected it from most of the adverse impacts of increased urbanization in the Bluegrass Region. However, as was discussed in the Regional Coordination, People/Jobs/Housing and Mobility Background Reports, Woodford's future is becoming more closely tied to that of the Region. Its' workers commute to jobs outside Woodford, and traffic is increasing on major thoroughfares traversing Woodford – beyond what would be expected from local population and employment increases.

These conditions suggest that the air quality deficiencies (in terms of ozone and nitrogen dioxide) of Fayette County (and Scott and Jessamine levels are close to Fayette levels although exceedances of standards have not be recorded for these counties) may spread outward based on regional traffic flows and economic development, and that Woodford residents and workers will experience the problems even though these problems do not exist at home. This Chapter identifies air quality conditions in the Bluegrass Region based on the Kentucky Ambient Air Quality Annual Report of 2001[4]. This Report provides a broad overview of conditions for many types of pollutants, and is update annually.

[4] This Report was prepared by the Division of Air Quality, Department for Environmental Resoruces, Natural Resources & Environmental Protection Cabinet.

Ambient Air Quality Standards

The Kentucky Air Monitoring System managed by the Division of Air Quality and the Environmental Protection Agency maintains 122 monitoring sites throughout the Commonwealth. These sites collect air samples that are analyzed for one or more of seven types of pollutants. This includes carbon monoxide, sulfur oxides, nitrogen dioxide, lead, ozone, and two levels of particulate matter.

Although there are no monitoring sites in Woodford County, there are several in adjoining counties. Franklin County has one site that is monitored for one of the levels of particulate matter and Fayette County has 9 sites that monitor for all types of pollutants. Scott County also has a monitoring site for ozone. Table 3.1 summarizes federal standards for each type of pollutant as reported by the Division of Air Quality.

Table 3.1
Ambient Air Quality Standards

Pollutant	Maximum Concentration	
	PrimaryStandard	Secondary Standard
Carbon Monoxide		
8 hour average	9 ppm (1)	9 ppm (1)
1 hour average	35 ppm (1)	35 ppm (1)
Sulfur Oxides		
24 hour average	0.14 ppm (1)	NA
Annual average	0.03 ppm	NA
3 hour average	NA	0.50 ppm (1)
Nitrogen Dioxide		
Annual average	0.05 ppm	0.5 ppm
Ozone		
1 hour average	0.12 ppm	0.12 ppm
8 hour average	0.08 ppm	0.08 ppm
Particulate Matter Measured as PM/10th		
24 hour average	150 g/m3rd	150 g/m3rd
Annual average	50 g/m3rd	50 g/m3rd
Particulate Matter Measured as PM/2.5th		
24 hour average	65 g/m3rd	65 g/m3rd
Annual average	15 g/m3rd	15 g/m3rd
Lead		
Calendar Qtr. Ave.	1.5 g/m3rd	1.5 g/m3rd

(1) This average is not to be exceeded more than once per year.
(2) Units of measurement in chart are micrograms of pollutants per cubic meter of air and parts of pollutants per million (ppm) parts of air.

Following is a summary of monitoring results as reported for calendar year 2001 and a brief overview of characteristics, sources and impacts for each type of pollutant. The data and analysis was taken from the Annual Report for 2001.

Carbon monoxide (CO) is an odorless, colorless, poisonous gas that is produced by the incomplete combustion of carbon containing fuels. The primary source of carbon monoxide is the exhaust from motor vehicles that includes highway and non-road vehicles such as construction equipment. Other sources include industrial processes and coal, kerosene and wood burning stoves in homes.

Neither the one-hour or 8 hour standards were exceeded at any of the monitoring sites in 2001. Carbon monoxide levels in Kentucky and the Bluegrass Region have substantially declined since 1976, with the 2001 level for the Bluegrass Region approximately one-third the level reported in 1976. This reduction is most likely due to cleaner burning fuels and more fuel- efficient combustion processes.

Sulfur dioxide is also a colorless gas that has a pungent odor at concentrations exceeding 0.5 ppm. Sulfur dioxide is produced by the combustion of sulfur containing fuels, ore smelting, petroleum processing and the manufacture of sulfuric acid. Nationwide, coal-fired power plants are the largest sources of this gas. Other industrial sources include petroleum refineries and paper mills.

There were no exceedances of any of the sulfur dioxide standards in 2001. The levels of this gas in the Bluegrass Region have also been on the decline since 1976, and the current level in the Region is second lowest of all regions in the Commonwealth.

Nitrogen dioxide is a reddish brown gas that is produced during the high temperature combustion of fossil fuels. During combustion, nitrogen and oxygen are combined, or oxidized, to form a family of highly reactive gases called nitrogen oxides that includes nitrogen dioxide.

Major combustion or oxidation sources that produce this gas include motor vehicles, power plants, incinerators, industrial boilers and some chemical processes. There were no exceedances of the nitrogen dioxide standards in 2001, with no recorded exceedances since monitoring began in 1970.

Ozone is another of the colorless gases and is not emitted directly into the atmosphere from sources but forms in the atmosphere from a photochemical reaction between volatile organic compounds and nitrogen oxides in the presence of sunlight. Sources of volatile organic compounds include motor vehicle exhaust, dry cleaning and paint solvents and evaporation of gasoline from storage and transfer facilities.

There has been a general decline in ozone levels over the past twenty-five years based on one-hour data. However, in 1997 the federal EPA adopted a new eight-hour standard based on scientific and medical research that indicated that extended exposure to lower levels of ozone may be as harmful as short term exposure to elevated levels. In 2001 there were 51 exceedances of the 8-hour standard and Fayette County experienced one of those recorded exceedances.

Particulate matter is a broad classification of non-gaseous pollutants that consists of very fine solid particles and liquid droplets or aerosols. Particulates are produced from many sources, including utility plants, wood burning stoves, leaf burning, vehicle exhaust, incinerators, rock quarries, coal processing, smelting, construction, farming and roadways. Particulate matter is categorized according to particle diameter due to the health impacts caused by particles of differing sizes. There have been no exceedances of the 24 hour standards for either particle size, but there have been several exceedances of the annual standard. However, none of these exceedances were recorded in the Bluegrass Region.

Summary

The data presented in the 2001 Report indicates that air quality in the Bluegrass Region, and Woodford County in particular, continues to be within national standards. However, a close review of the data indicates that monitoring sites in the Bluegrass Region are recording increasing levels of nitrogen dioxide and ozone. These increasing levels are most likely due to increasing traffic on regional roadways and the combustion of greater amounts of carbon based fuels, although other sources also contribute to monitoring results.