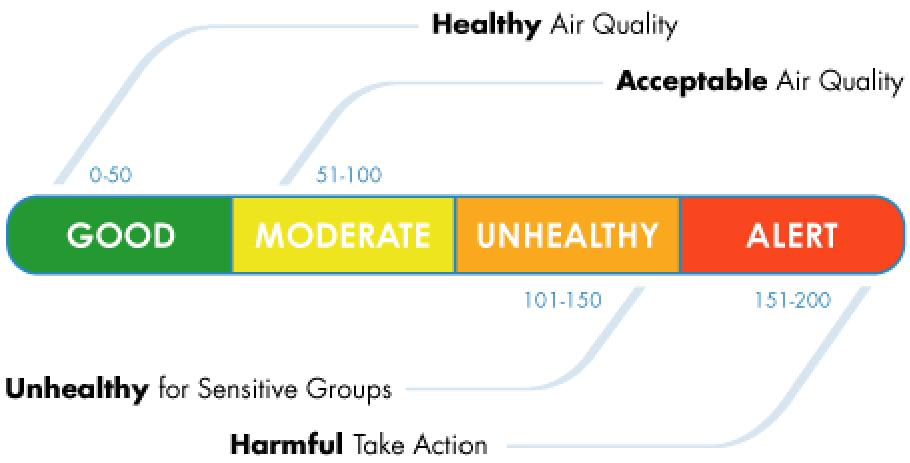
Kansas City Ozone Activities

The greater Kansas City area is very close to violating the national air quality standard for ozone. EPA has established a standard of 85 parts per billion (ppb) averaged over three years. Ground-level ozone causes sickness and premature death by aggravating a variety of lung disorders such as asthma and emphysema. Ozone is formed by a reaction between sunlight, nitrogen oxides and volatile organic compounds (VOCs). Nitrogen oxides come from burning fuels, while VOCs evaporate from solvents, paints, and gasoline. The recorded ozone values for the three-year period ending in 2003 were 1 ppb below the standard.

If ozone levels continue to rise, the greater Kansas City region could become a non-attainment area for ozone. Under the federal Clean Air Act, states with ozone non-attainment areas must implement measures that will bring these areas into compliance with the standard. Under federal law, non-attainment areas may face a host of restrictions on development and use of federal funds, both of which can significantly impact economic growth of the region.



The Mid-America Regional Council (MARC) coordinates air quality planning activities for the greater Kansas City area. In response to the concern over the elevated ozone readings, MARC has created a work group to develop a clean air action plan for Kansas City. The plan will include various pollutant reduction strategies to ensure Kansas City meets the standard.

One tool that is being used to better understand ozone formation in Kansas City is photochemical modeling. Photochemical modeling is a computer simulation of an ozone episode using meteorological and air pollutant emission inputs.

The first step in photochemical modeling is to select an episode representative of high ozone readings in Kansas City. The episode being modeled is one week in July of 1998. Extensive meteorological data for the episode has been collected and input into the

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model to recreate the weather conditions that existed during the high ozone readings of that week. Air pollutant emissions data has also been gathered from all sources of air pollutants. These emission sources include: permitted sources; automobiles and trucks; off-road vehicles such as tractors and construction equipment; natural sources; and various other activities such as pesticide application, painting and lawn care.

The computer model processes the various inputs and predicts ozone concentrations across the Kansas City area. If these compare favorably with the measured values from the 1998 episode selected, the model is performing satisfactorily and can be used to evaluate different air pollutant control strategies to reduce ozone levels in Kansas City.

The model allows us to determine the effectiveness of different control strategies by conducting what are referred to as “sensitivity runs.” This is done by reducing the emissions inputs for the model from a selected category of emissions, such as motor vehicles. The predicted ozone concentrations tell us the effectiveness of the proposed strategy. Many different emission control strategies will be evaluated using the model to ensure that any programs put in place to reduce ozone levels will be effective.

Additional information about ozone in Kansas City can be obtained from the MARC Web site at http://www.marc.org/airq.