FACT SHEET

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Criteria Pollutants: Carbon Monoxide (CO)

Office of Air Quality – Air Programs Branch

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Description:

- Carbon monoxide (CO) is a colorless, odorless gas formed when carbon in fuels is not burned completely. It is a product of motor vehicle exhaust, which contributes the most CO emissions nationwide. High concentrations of CO generally occur in areas with heavy traffic congestion.
- Other sources of CO emissions include industrial processes such as carbon black manufacturing, non-transportation fuel combustion, and natural sources such as wildfires.
- Peak CO concentrations in the ambient air typically occur during the colder months of the year when CO concentrations in automotive emissions are greater and nighttime inversion conditions are more frequent.
- CO, in the presence of solar radiation, reacts with other chemical compounds to form ground-level ozone.

National Ambient Air Quality Standards (NAAQS) for Carbon Monoxide:

- The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (U.S. EPA) to set National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants that are considered harmful to public health and the environment. The six criteria pollutants are: particulate matter, carbon monoxide, ground-level ozone, nitrogen dioxide, sulfur dioxide, and lead.
- The NAAQS set limits for the criteria pollutants in the ambient air. Limits established to protect human health are referred to as “primary standards”; limits established to prevent environmental damage are referred to as “secondary standards”.
- The CAA requires periodic review of the science upon which the NAAQS are based, as well as the standards themselves. Primary and secondary NAAQS for CO were first established in April 1971. The most recent revision to the standards was in 1985 when U.S. EPA revoked the secondary standard because there was a lack of evidence of adverse environmental damage.
- The primary NAAQS for CO measured over an 8-hour period is set at 9 parts per million in the air. To attain this standard, the annual 2nd highest 8-hour concentration cannot exceed 9 parts per million.
- The primary NAAQS for CO measured over a 1-hour period is set at 35 parts per million. To attain this standard, the annual 2nd highest 1-hour concentration cannot exceed 35 parts per million.

Environmental Impacts:

- CO can cause harmful health effects by reducing oxygen delivery to the body's organs (including the heart and brain) and tissues. For people with heart disease, short-term exposure to CO can further affect their body’s ability to respond to the increased oxygen demands of exercise or exertion. CO can be deadly in indoor environments or other closed spaces.
- CO is one of several pollutants that can interact in the presence of sunlight to produce ground-level ozone, or "smog", particularly on hot summer days.

IDEM’s Role:

- The Indiana Department of Environmental Management (IDEM) is responsible for protecting human health and the environment while providing for safe industrial, agricultural, commercial, and governmental operations vital to a prosperous economy.
- IDEM is responsible for protecting air quality in Indiana through the implementation of federal, regional, and state control measures, regulations, and ambient air monitoring.
- IDEM works to protect and improve air quality by monitoring air quality, issuing advisories for the public when air quality may be unhealthy, and educating citizens and businesses about their roles in improving air quality.
- Indiana operates an extensive monitoring network to gather data on levels of criteria air pollutants in the ambient air. The data is used to determine if Indiana’s air meets the NAAQS. Areas within Indiana which meet air quality standards are classified as “attainment” or, if they exceed the air quality standards they are classified as “nonattainment”.

- For areas not achieving (attaining) air quality standards, IDEM will work to help communities implement programs to achieve the standards as quickly as possible.
- Data from Indiana's air monitoring network is also used to identify trends in Indiana's air quality and to provide information for U.S. EPA's AIRNow website and the National Air Quality Index (AQI), a daily air quality report.

Citizen's Role:

There are a number of actions citizens can take to reduce their contribution or exposure to CO:

- Carpool, walk, bike, or use public transportation when possible.
- Avoid excess idling and drive-thru windows.
- Consolidate trips and avoid fast-starts.
- Postpone mowing the lawn or using gasoline-powered garden equipment until late evening.
- Recycle to reduce emissions related to producing paper, plastic, glass bottles, aluminum cans, and cardboard.

Additional Information:

- For more information on CO, please visit these IDEM websites:
  www.idem.IN.gov/airquality/2343.htm for CO-specific information and information for other criteria pollutants for Indiana.
  - www.IN.gov/idem/airquality/2489.htm for air quality monitoring data for CO and other pollutants.
  - www.idem.IN.gov/airquality/pages/monitoring_data/co.html for a map of CO monitors and for the most recent CO emission readings.
  - www.IN.gov/idem/airquality/2424.htm for the nonattainment status for Indiana counties or townships.
- IDEM regulations do not address CO as it relates to indoor air quality. For further information about indoor air quality, visit U.S.EPA's website at www.epa.gov/iaq/co.html.
- For further information on the NAAQS, visit U.S. EPA's website at www.epa.gov/naaqs.
- For questions and concerns, feel free to call IDEM's Office of Air Quality at (317) 233-0178 or (800) 451-6027.