Attachment B
2008 Lead Standard of 0.15 micrograms per cubic meter (µg/m³)
Collin County
Nonattainment Area Boundary Factor Analysis

Overview

Collin County is the only Texas county with an ambient air monitor showing a violation of the 2008 lead National Ambient Air Quality Standard (NAAQS) of 0.15 µg/m³. The United States Environmental Protection Agency (EPA) directs states to use the November 12, 2008 *Federal Register* (73 FR 67032) final rule for nonattainment area boundary guidance. The EPA rule "presumptively define[s] the boundary for designating a nonattainment area as the perimeter of the county associated with the air quality monitor which records a violation of the standard as proposed." However, "as part of the county boundary presumption for nonattainment areas, the state and/or EPA may conduct additional area-specific analyses that could lead EPA to depart from the presumptive county boundary." The EPA recommends that nonattainment areas with boundaries that deviate from the presumptive county boundary should be supported by an assessment of several factors, including:

- Emissions in areas potentially included versus excluded from the nonattainment area
- Air quality in potentially included versus excluded areas
- Population density and degree of urbanization in included versus excluded areas
- Expected growth
- Meteorology
- Geography/topography
- Jurisdictional boundaries
- Level of control of emission sources

"The state may, in addition to submitting recommendations for boundaries based on the factor analysis, also choose to recommend lead nonattainment boundaries using any one, or a combination of the following techniques…" (1) Qualitative analysis, (2) spatial interpolation of air quality monitoring data, or (3) air quality simulation by disperson modeling…" (73 FR 67034).

Based upon a combination of factor analysis and dispersion modeling, the executive director recommends that the portion of Collin County located in the City of Frisco that is bounded to the north by latitude 33.158, to the east by longitude -96.82, to the south by latitude 33.127, and to the west by longitude -96.84, be designated nonattainment of the 2008 lead standard. The remaining portions of Collin County, along with all other Texas counties, should be designated as attainment/unclassifiable.

The portion of Collin County proposed for nonattainment of the 2008 lead NAAQS encompasses the area immediately surrounding the Exide Technologies Frisco Battery Recycling Plant (Exide). The Exide property was designated nonattainment of the 1978 lead NAAQS in 1991. The area was re-designated to attainment of the 1978 lead NAAQS and has been operating under a maintenance plan since 1999. The ambient lead monitor located near the plant, at Air Quality System monitoring site number 480850007, recorded values exceeding the 2008 lead NAAQS during the 2006-2008 period, the highest of which was 0.23 µg/m³ (November 2005-January 2006 average).

Factor Analysis

Emissions and Air Quality.
The Texas Commission on Environmental Quality's 2007 Emissions Inventory (EI) shows only two stationary sources in Collin County reporting lead emissions: Exide and Encore Wire Limited, which is located approximately 20 kilometers (km) from Exide, in McKinney, Texas. Based on 2007 EI data, Exide accounts for approximately 98.6 percent of stationary source lead emissions in Collin County. Because of its significant distance from the Exide site and its small reported lead emission, Encore Wire Limited would not have a significant contribution on lead concentrations near Exide.

Population Density and Expected Growth
The Exide plant is located in Frisco, a fast-growing city within Collin County. Between 2000 and 2006, Frisco's population more than doubled, and the city has led the North Dallas region in population growth since 1980. City population estimates predict a population growth rate of 5 to 13.4 percent, continuing until Frisco reaches its projected population capacity of 280,132 between 2021 and 2031. As of 2008, the estimated population density of Frisco was 2,413.9 people per square mile versus 862 people per square mile for Collin County as a whole. Reducing the size of a proposed lead nonattainment area from the county boundary to one within the city would still be highly protective of public health in one of the county's most densely populated areas. Further, according to the city's 2006 Comprehensive Plan, the neighborhoods in and near the proposed nonattainment area are primarily residential, mixed use, and commercial, as well as some undeveloped agricultural and open space lands. The comprehensive plan depicts currently undeveloped areas in the Future Land Use Plan as residential, mixed use, commercial, and floodplain/open space. Because the areas in the immediate vicinity of the Exide plant consist primarily of already developed residential and commercial areas, and areas targeted for additional commercial and mixed use (and areas intended to remain as open space), the proposed nonattainment area is still protective of public health in such high-use areas, with little likelihood of additional large scale industrial development that may result in new lead sources moving into the area (see attached maps, "City of Frisco, Texas, Existing Land Use Map and Proposed Nonattainment Boundary," and "City of Frisco, Texas, Future Land Use Plan and Proposed Nonattainment Boundary").

Meteorology, Geography and Topography
The TCEQ conducted air dispersion modeling of all lead emissions sources at the Exide site, using the most current modeling parameters and associated permitted allowable emissions rates. Land use and terrain, building wake effects (the effect on local air concentrations and particle deposition resulting from air flows around buildings), and meteorological data were all taken into consideration in modeling parameters, resulting in a proposed nonattainment area that includes all sites modeling predicted NAAQS violations. Predicted concentrations exceeding the NAAQS extended approximately 1.3 km to the north, 0.8 km to the south, 0.8 km to the west, and 0.4 km to the east of the Exide property line. All predicted concentrations in exceedance of the NAAQS are located within Collin County.

Jurisdictional Boundaries
The proposed nonattainment area boundary includes a portion of Collin County's western boundary with Denton County. Modeling results show that all sites predicting an exceedance of the NAAQS fall within Collin County. Additionally, the 2007 EI shows no stationary sources reporting lead emissions in Denton County. All predicted NAAQS violations fall within Collin County, and based on dispersion modeling and source analysis, Denton County does not contribute to the NAAQS violations in Collin County.

Level of Control of Emissions Sources
The Exide plant is currently under the control of a 10-year maintenance plan resulting from its 1999 designation to attainment of the 1978 lead NAAQS. The maintenance plan, and the pending second 10-year maintenance plan, provide for the continued attainment of the 1978 lead NAAQS of 1.5 µg/m³, which shall remain in effect in Collin County until a lead SIP revision for the proposed nonattainment area is approved by the EPA.

Air Dispersion Modeling

Air dispersion modeling of lead emissions sources at Exide show that all predicted NAAQS exceedances fall within the proposed nonattainment boundary.

REFERENCES

City of Frisco Comprehensive Plan Advisory Committee. *2006 Comprehensive Plan.* City of Frisco: & Environmental Division of Planning & Development Services. 2006. http://www.ci.frisco.tx.us/DEPARTMENTS/PLANNINGDEVELOPMENT/COMPREHENSIVE/Pages/ComprehensivePlan.aspx.

U.S. Environmental Protection Agency, "National Ambient Air Quality Standard for Lead," *Federal Register* 73, no. 219 (12 November 2008): 66964.