

Evidence that Comal County Residents May Be at Risk for Exposure to Air Pollution from the Aggregate Industry

Airborne Particulate Matter (PM) is a recognized pollutant that is produced by limestone aggregate processing, e.g., quarrying, rock crushing, cement, concrete, and asphalt manufacture.

Exposure to airborne PM is also recognized as a serious health hazard by biomedical researchers and health authorities such as the World Health Organization (WHO).

Over the past decade or more the aggregate processing industry has undergone significant expansion in Central Texas, most notably in counties that boundary Texas Highway 46 between New Braunfels and Boerne. This expansion depends upon Air Permits issued by the Texas Commission on Environmental Quality (TCEQ), which has issued 58 air permits for Comal County alone over the past decade, and no denials.

TCEQ grants air permits based upon mathematical modeling of anticipated emissions of PM (and other pollutants) based upon assumptions, some of which come from companies applying for permits, and ***without any measurement or monitoring of PM exposure of Texas residents that could be affected by PM emissions.***

This document summarizes what is known about quarry related PM emissions, and a relatively new satellite-based method that generates estimates of PM exposure, Aerosol Optical Density.

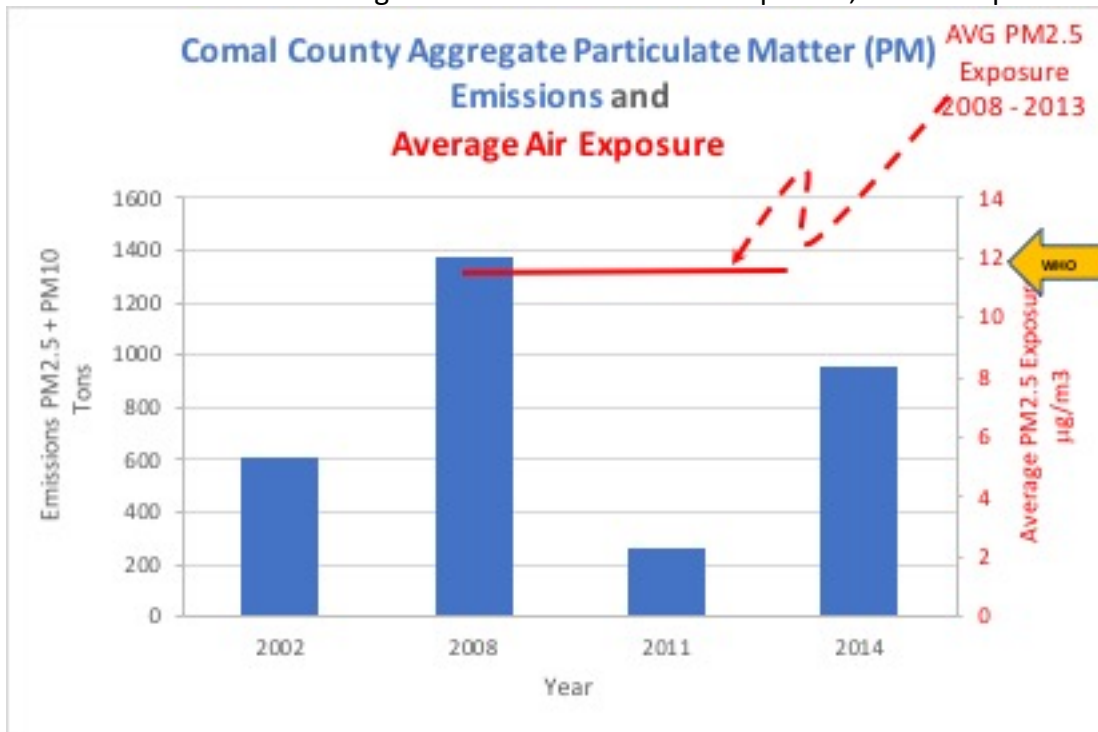


FIGURE EXPLANATION

The Left axis (blue bars) depicts aggregate industry sourced Particulate Matter (PM) emissions data obtained from the Environmental Protection Agency (EPA) National Emissions Inventory database for the years 2002 – 2014. These are the only data available.

<https://www.epa.gov/air-emissions-inventories>

The Right axis (red line) depicts the estimated atmospheric PM_{2.5} exposure in Comal & Bexar Counties 2008 – 2013 from satellite-based aerosol optical density measurements. Data obtained from: Zhang, X, Chu, Y, Wang, Y, Zhang K. Science of the Total Environment 631–632 (2018) 904–911 (UT Houston Health Science Center)

The GOLD arrow right axis: World Health Organization’s (WHO) health hazard exposure level threshold = 12 µg/m³ PM_{2.5}.

The map of Texas shown below is the visual rendering of the satellite-based aerosol optical density measurement of PM_{2.5}. Bexar and Comal Counties are indicated by the dashed circle and the label.

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Note that this area, as well as that around metropolitan Austin, Houston, and the Dallas-Fort Worth areas all exhibit average PM_{2.5} levels at or above 11.5 µg/m³.

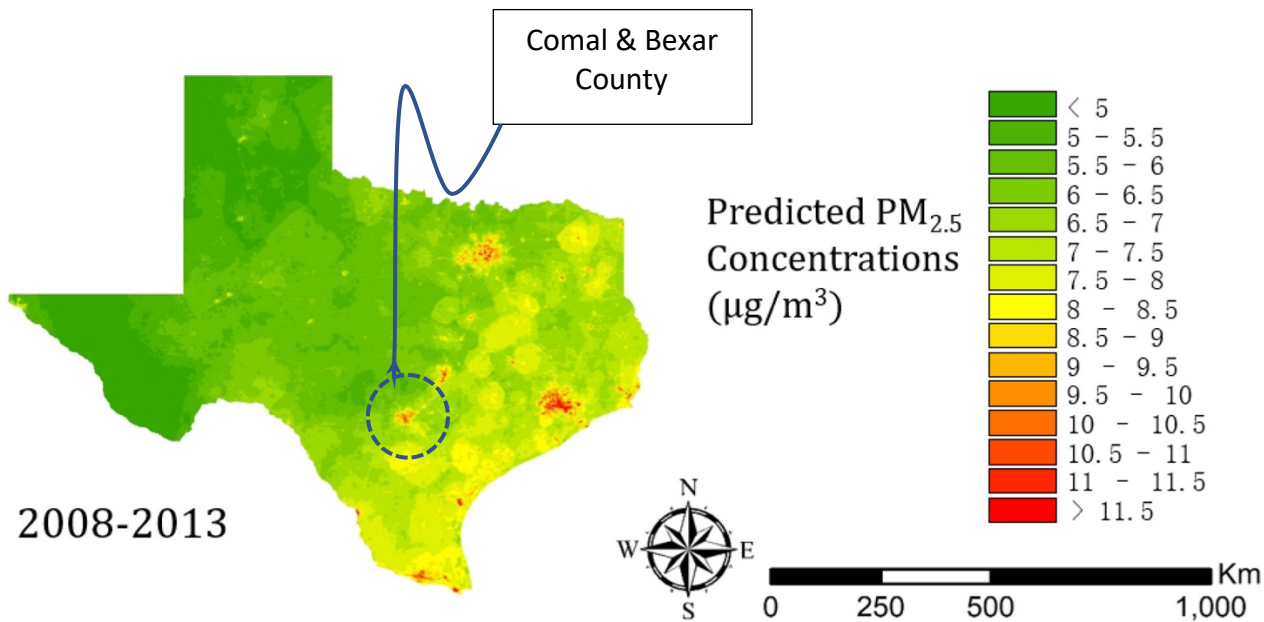


IMAGE: 2008 – 2013 Satellite-Based Aerosol Optical Density

Source: Zhang, X, Chu, Y, Wang, Y, Zhang K. Science of the Total Environment 631–632 (2018) 904–911 (UT Houston Health Science Center)

Summary

Particulate matter emissions from aggregate industry sources have increased between 2002 and 2014 in Comal County from 600 tons/year to 900 tons/year.

Average exposure of Comal County residents to PM_{2.5} have been very near the WHO hazardous level of 12 µg/m³ during the 2008 - 2013 timeframe.

Available emissions data since 2013 suggest that PM_{2.5} exposure may be higher than 2008 - 2013.

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