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Examining Trends (2018-2022) in TCEQ Air Emission Event Data That Occurs Near Charlton-Pollard Elementary School

Dr. Margot Gage Witvliet , Louis D. Bryant IV MSc. , Stuart A. Wright , Ph.D.

Lamar University, the United States

Abstract

Background: Little information is available regarding the respiratory and systemic response of young children living near petrochemical refineries in Beaumont, Texas. Research shows an increase in poor health prevalence among people living near refineries, as well as an increase in children's asthma prevalence, as compared to those not living near industry. This study examines trends in TCEQ air emission data near the Charlton-Pollard Elementary School in Beaumont, Texas, located 0.9 miles from an ExxonMobil refinery, and the asthma prevalence of children living in the region. Methods: Data on air emission events published by the Texas Commission on Environmental Quality (TCEQ) were examined between the years 2018 and 2022. Parameters for data included, but were not limited to, where the incident was reported, compounds released and quantities, and the event duration. Academic calendars for the Beaumont Independent School District were also assessed to determine if any emission events occurred on school days. Results: During the five years examined for this study, seventy-four (74) air emissions events occurred near Charlton-Pollard Elementary School, producing a total of 4,466,120 pounds of hazardous air pollution. Air pollutants emitted during these events included hydrogen sulfide (H₂S), ozone, sulfur dioxide (SO₂), carbon monoxide (CO), nitric oxide (NO), oxides of nitrogen (NO_x), benzene, and unspeciated volatile organic compounds (VOCs), among other contaminants. On average, each event lasted 27.7 hours, with the quantity of air pollution produced per incident being 60,352.97 pounds. Forty-seven (47) out of the seventy-four (74) events, totaling 63.5% of reported incidents, occurred on school days. Conclusions: To better protect children from the harmful effects of air pollution on their health and development, this study suggests the proximity of schools near refineries or industrial facilities that store or use hazardous chemicals must be better regulated.

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Keywords: Louis D. Bryant IV MSc, Stuart A. Wright, Ph.D.