



PA HEALTH AND ENVIRONMENT STUDY: BIRTH OUTCOMES

WHO CONDUCTED THIS STUDY?

This observational epidemiological study was conducted by researchers from the University of Pittsburgh School of Public Health, contracted by the Pennsylvania Department of Health.

WHAT DID WE STUDY?

We studied the association between environmental risk factors, such as unconventional natural gas development activities, and adverse birth outcomes.

WHY WAS THIS STUDY DONE?

This study was done to add to Pennsylvanians' knowledge about the association of environmental risk factors and birth outcomes.

WHO WAS IN THE STUDY AND WHERE WAS IT DONE?

We did not have to contact anyone to participate in this study because we used existing birth records. We specifically looked at records from eight counties in Southwestern Pennsylvania: Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Washington and Westmoreland.

Records for people living within the City of Pittsburgh were excluded because the city does not allow unconventional natural gas development and, being a heavy urban environment, may have other risks factors dissimilar from the rest of Southwestern Pennsylvania.

WHAT INFORMATION DID WE USE FOR THIS STUDY?

We pulled information from Pennsylvania birth records available through the Pennsylvania Department of Health.

We specifically looked at data on births in the eight-county area in Southwestern Pennsylvania. The records included information on birth weight among babies born full term, preterm births (babies born before 37 weeks of pregnancy) and babies born small for gestational age, which refers to infants who weigh less than 90% of their peers. We looked at information on where the mother lived at the time of the birth and characteristics of the mother and her pregnancy.

HOW MANY PEOPLE WERE IN THE STUDY?

Our study included records on 185,849 births.

WHEN WAS THIS STUDY DONE?

We conducted our study from 2021 to 2023. Our study included information on births from 2010 to 2020.

HOW WAS THIS STUDY CONDUCTED?

For each birth, we looked at how close the mother lived to unconventional natural gas development activities, taking into account the number of wells and production volume. We only considered pregnant mothers to be exposed if they lived within 10 miles of one or more wells or other exposure studied at the time of the birth. We also considered what phase that development was in. The phases we looked at were well preparation, drilling, hydraulic fracturing, and production. We also considered the mothers' exposure to impoundment ponds, compressor stations, toxic release inventory sites, facilities accepting oil and gas waste, and fine particulate

air pollution. We looked at whether the mothers' proximity to these exposures was linked to a lower birth weight, a preterm birth or a baby who was small for gestational age.

We also collected information on other factors that previous research has linked to birth outcomes, such as maternal smoking and gestational diabetes. We used established methods to account for these exposures in our analysis.

WHAT WERE THE RESULTS OF THE STUDY?

We learned that babies were about 1 ounce smaller at birth – something that, in most cases, poses little health risk – when born to mothers who lived near active wells during the production phase, or compressor stations, or facilities accepting oil and gas waste. We also found that mothers who lived near active wells were more likely to have babies who were small for gestational age. Finally, the chance of being born prematurely was not specifically associated with unconventional natural gas development, but high levels of particulate air pollution from any source were associated with being born prematurely, consistent with previous studies from other researchers.

WHO PAID FOR THIS STUDY?

This study was funded by the Pennsylvania Department of Health.