



PA HEALTH AND ENVIRONMENT STUDY: ASTHMA

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 asthma attacks and severity.

WHY WAS THIS STUDY DONE?

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

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 health 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 on asthma patients from a medical records data repository that provides clinical data to researchers. We specifically looked at data from patients with an asthma diagnosis in the eight-county area in Southwestern Pennsylvania. The records included information on dates of medical visits, dates of admissions to the emergency department and hospital, and prescriptions related to asthma. We looked at information on where the patient lived at the time of the visit or when they got their prescription.

HOW MANY PEOPLE WERE IN THE STUDY?

Our study included records on 46,676 patients, ages 5 through 90.

WHEN WAS THIS STUDY DONE?

We conducted our study from 2021 to 2023. Our study included information on medical visits and prescriptions for asthma from 2011 to 2020.

HOW WAS THIS STUDY CONDUCTED?

For each medical visit or prescription, we looked at how close the patient lived to unconventional natural gas development activities, taking into account the number of wells and production volume. People living within 10 miles of one or more wells were considered exposed. We also noted what phase well development was in. The phases we looked at were well preparation, drilling, hydraulic fracturing, and production. We broke medical visits into three categories: severe exacerbation,

emergency department visits and hospitalizations. Each case of an asthma exacerbation was matched to at least one control case from our study group. A control case means records from people with asthma in our study group who were not having an asthma exacerbation. We were looking for whether people with asthma exacerbations had a link to unconventional natural gas development that people without exacerbations did not have.

We also collected information on other factors that previous research has linked to asthma, such as cigarette smoking and season of the year. We used established methods to account for these exposures in our analysis.

WHAT WERE THE RESULTS OF THE STUDY?

We learned that there was a strong link between the production phase of unconventional natural gas development and severe exacerbations, emergency department visits and hospitalizations for asthma in people living within 10 miles of one or more wells producing natural gas. Specifically, people with asthma have a 4 to 5 times greater chance of having an asthma attack if they live near unconventional natural gas development wells during the production phase. We did not find such a link during the well preparation, drilling, or hydraulic fracturing phases.

WHO PAID FOR THIS STUDY?

This study was funded by the Pennsylvania Department of Health.