SOUTHWEST PENNSYLVANIA ENVIRONMENTAL HEALTH PROJECT

Health Outcomes Associated with Exposure to Shale Gas Development from Peer-Reviewed Epidemiological Literature

Epidemiological studies are conducted by observing human populations to evaluate whether there is a relationship between an exposure and a health impact. The table below presents epidemiological studies that have found statistically significant associations between exposure to shale gas development and adverse health outcomes. Studies that did not show a significant increase in the measured health outcome(s) are not listed. Furthermore, many of the listed studies assessed additional outcomes which did not show associations, and those are not listed. Exposure to shale gas development in these studies was evaluated using a variety of metrics. All health outcomes were confirmed by a medical provider unless otherwise noted (Rabinowitz et al., 2015 and Tustin et al., 2017). This table was adapted from two literature reviews (Deziel et al., 2020 and Gorski & Schwartz, 2018).

BIRTH IMPACTS

McKenzie et al., 2014	Congenital heart defects, neural tube defects
Stacy et al., 2015	Small for gestational age, lower mean birth weight
Casey et al., 2015	Preterm delivery, high-risk pregnancy
Whitworth et al., 2017	Preterm delivery
Currie et al., 2017	Low birth weight, lower mean birth weight
Busby & Mangano, 2017	Infant mortalities
Hill, 2018	Low birth weight, small for gestational age, lower mean birth weight, lower 5-minute APGAR score
McKenzie et al., 2019a	Congenital heart defects
Casey et al., 2019	Preterm delivery

HOSPITALIZATIONS

Jemielita et al., 2015	Cardiology hospitalizations
Werner et al., 2016	Neoplasm and blood/immune system hospitalizations
Werner et al., 2017	All-cause hospitalizations and blood/immune hospitalizations in females
Willis et al., 2018	Pediatric asthma-related hospitalizations
Denham et al., 2019	Skin and genitourinary hospitalizations

CARDIOVASCULAR, RESPIRATORY, NEUROLOGIC, DERMAL, AND CONSTITUTIONAL OUTCOMES

Rabinowitz et al., 2015	Self-reported dermal and respiratory symptoms
Rasmussen et al., 2016	Asthma exacerbations (mild, moderate, and severe)
Tustin et al., 2017	Self-reported chronic rhinosinusitis, fatigue, and migraine
McKenzie et al., 2019b	Augmentation index, systolic blood pressure

CANCER

Finkel, 2016	Urinary bladder cancer
McKenzie et al., 2017	Acute lymphocytic leukemia (ages 5-24)

SEXUALLY TRANSMITTED INFECTIONS*

Komarek & Cseh, 2017	Gonorrhea
Deziel et al., 2018	Chlamydia
Beleche & Cintina, 2018	Gonorrhea and chlamydia

MOTOR VEHICLE ACCIDENTS*

Blair et al., 2018	Multivehicle truck accidents with injury

*These outcomes have been attributed to an influx of temporary workers and associated truck traffic that occur during shale gas development.

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www.facebook.com/EnvironmentalHealthProject @EHPinfo

2001 Waterdam Plaza Drive, Suite 201 ▪ McMurray, PA 15317 ▪ 724.260.5504

www.environmentalhealthproject.org ▪ info@environmentalhealthproject.org