ACME CAPE
Association canadienne des médecins pour l'environnement
Canadian Association of Physicians for the Environment

May 9, 2024

Blaine Higgs
Office of the Premier of New Brunswick
706 Queen Street
Fredericton, N.B. E3B 1C5

RE: Warning regarding the potential health impacts of fracking on New Brunswickers

Dear Premier Higgs,

As medical and healthcare professionals working in New Brunswick, we feel it is our duty to bring to your attention the latest medical evidence concerning the known health effects of hydraulic fracturing (fracking) for shale gas. This is in response to your recent public comments expressing a desire to pursue shale gas production in the province.

The Canadian Association of Physicians for the Environment (CAPE) is a physician-directed non-profit organization working to secure human health by protecting the planet. Since its founding in 1993, CAPE's work has achieved substantial policy victories in collaboration with many partners in the environmental and health movements.

Here in New Brunswick, we have followed the discussion and debate surrounding fracking for well over a decade now. Moreover, we have closely followed the medical and scientific studies on hydraulic fracturing (often referred to as unconventional gas wells) that have been produced during this time. In March of 2019, members of our organization wrote to you about the mounting evidence of direct and indirect adverse impacts on human health associated with this industry. In light of this evidence, we called upon your government to maintain the moratorium on hydraulic fracturing activity introduced in 2015.

That warning should have come as no surprise. In 2012, New Brunswick's Chief Medical Health Officer, Dr. Eilish Cleary, presented her public health concerns regarding hydraulic fracturing to the provincial government in a comprehensive report; and in 2015–2016, the yearlong NB Commission on Hydraulic Fracturing collected testimony and evidence on the threats posed by the industry, including on human health.

In the past several years, there has been a tremendous growth in research and studies focused on the health impacts associated with hydraulic fracturing for shale gas. A list of recent key studies and their findings follows this letter. The studies indicate a strong correlation between fracking (or unconventional oil and gas development) and the following adverse health outcomes for those living in nearby communities or working in the industry:

- Spontaneous miscarriages and preterm births; small for gestational age births; babies born with congenital heart defects, neural tube defects, limb reduction defects, and spina bifida
- Higher mortality risk and a negative impact on life expectancy
- Higher incidences of cancer, cardiac, and respiratory diseases
- Increased hospitalizations for diseases of the genitourinary system

- Increase rates of childhood asthma, and deaths associated with asthma
- Increased risk of children developing acute lymphoblastic leukemia

These are only the most well documented impacts of fracking on human health that are currently available. Many of the more than 1,000 different chemicals used in fracking are lacking basic information about their toxic effects. More research and increased monitoring of
air pollution from shale gas operations will lead to a better understanding of the full extent of
the pollutants' impacts on the local environment and human health. In the coming years, the list of illnesses and diseases associated with fracking will likely grow.

The medical evidence points clearly to the need to legislate a ban on hydraulic fracturing in the province.

While our focus here is on hydraulic fracturing, we would be remiss if we didn't also remind you of the adverse effects shale gas has on human health when processed, transported, and used for energy. Like shale gas production, LNG plants and terminals release dangerous pollutants into the surrounding communities, such as volatile organic compounds, particulate matter, nitrogen oxides, sulfur dioxide, and carbon monoxide. These pollutants are associated with increased rates of heart disease, respiratory illnesses, and certain cancers.

Moreover, methane and carbon emissions from LNG infrastructure and combustion for energy is adding further fossil fuel to a rapidly overheating planet. The medical journal the *Lancet* has identified climate change as the leading global threat to human health. As physicians and health care providers, we see the impact that climate change is having on the communities we serve. Unless the government acts to phase out fossil fuels, New Brunswickers will continue to suffer the immediate and long-term consequences of climate change and its devastating impacts on health.

New Brunswick's health care system is already under considerable strain. As medical and health care professionals working in this province, we call upon your government to protect the health and wellbeing of New Brunswickers by legislating a ban on fracking. This letter and call for a ban on fracking is supported by the organizations listed below as signatories.

We are requesting a meeting with you to discuss these concerns.

Signed,

Renée Turcotte M.D.
on behalf of ACME/CAPE NB

Melissa Lem, MD
President, Canadian Association
of Physicians for the Environment

Dr. Maya R. Kalogirou PhD, RN
President, Canadian Association of
Nurses for the Environment (CANE)

De-Ann Sheppard, PhD(c) MScHQ NP-PHC
Atlantic Board Representative, CANE

Melanie Langille
President and CEO, NB Lung Association

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Key health findings and studies

"We found evidence of a statistically **significant higher mortality risk** associated with living in proximity to and downwind of unconventional oil and gas wells."

—Longxiang Li et al., *"Exposure to Unconventional Oil and Gas Development and All-Cause Mortality in Medicare Beneficiaries,"* Nature Energy, 2022, https://doi.org/10.1038/s41560-021-00970-y

"The main findings provide strong evidence that UNGD activities have negative effects on human health-related outcomes across all counties in Oklahoma. Specifically, **an increase in the number of (unconventional) wells has a positive impact on mortality rates, and incidences of cancer, cardiac, and respiratory diseases in communities in close spatial proximity, and a negative impact on life expectancy.**"

—Nicholas Apergis, Ghulam Mustafa, and Sayantan Ghosh Dastidar, *"An Analysis of the Impact of Unconventional Oil and Gas Activities on Public Health: New Evidence Across Oklahoma Counties,"* Energy Economics 97 (2021), https://doi.org/10.1016/j.eneco.2021.105223

"We find that air pollution in 2016 from the oil and gas sector in the US resulted in **410 000 asthma exacerbations, 2200 new cases of childhood asthma and 7500 excess deaths, with $77 billion in total health impacts**."

Jonathan J Buonocore et al., *"Air Pollution and Health Impacts of Oil & Gas Production in the United States",* Environmental Research: Health 1, no. 2 (June 1, 2023): 021006 https://doi.org/10.1088/2752-5309/acc886

"In this population-based case–control study of unconventional natural gas development (UGOD) in Pennsylvania, we found that children living in proximity to UOGD had up to **2–3 times the odds of developing acute lymphoblastic leukemia** ."

Cassandra J. Clark et al., *"Unconventional Oil and Gas Development Exposure and Risk of Childhood Acute Lymphoblastic Leukemia: A Case–Control Study in Pennsylvania, 2009–2017,"* Environmental Health Perspectives 130, no. 8 (August 2022): 087001, https://doi.org/10.1289/EHP11092

"Three of 4 phases of unconventional natural gas development (UNGD) activity were **associated with hospitalization for heart failure** (HF) in a large sample of patients with HF in an area of active UNGD. Older patients with HF seem particularly vulnerable to adverse health impacts from UNGD activity."

Tara P. McAlexander, *"Unconventional Natural Gas Development and Hospitalization for Heart Failure in Pennsylvania"*, Journal of the American College of Cardiology 2020 Dec, 76 (24) 2862–2874 https://www.jacc.org/doi/10.1016/j.jacc.2020.10.023

"In this population-based cohort study including all reproductive-aged individuals who had a pregnancy in rural Alberta, Canada, from 2013 to 2018, those individuals living within 10 km of 100 or more hydraulically fractured wells during 1 year preconception or pregnancy had a **significantly increased risk of spontaneous preterm birth and small for gestational age birth. Living in proximity to a high density of hydraulic fracturing sites was associated with adverse birth outcomes**."

Zoe F. Cairncross et al., *"Association Between Residential Proximity to Hydraulic Fracturing Sites and Adverse Birth Outcomes,"* JAMA Pediatrics, April 4, 2022, https://doi.org/10.1001/jamapediatrics.2022.0306

"The results clearly document that there is a unidirectional relationship between fracking activities and three alternative indexes of infants' health at birth, as well as a **significant impact of fracking on infants' health indicators**. In addition, the results illustrate the substantial role of fracking through the drinking water quality channel."

Nicholas Apergis, Tasawar Hayat, and Tareq Saeed, *"Fracking and Infant Mortality: Fresh Evidence from Oklahoma,"* Environmental Science and Pollution Research 26, no. 31 (November 2019): 32360–67, https://doi.org/10.1007/s11356-019-06478-z

"We find consistent and robust evidence that **drilling shale gas wells negatively impacts both drinking water quality and infant health**."

Elaine L. Hill and Lala Ma, "*Drinking Water, Fracking, and Infant Health*," Journal of Health Economics, 2022, 102595, https://doi.org/10.1016/j.jhealeco.2022.102595

"We found evidence that exposure to oil and gas well sites in the first and second trimesters is associated with **increased odds of spontaneous preterm birth at 20–31 weeks**."
David J. X. Gonzalez et al., "*Oil and Gas Production and Spontaneous Preterm Birth in the San Joaquin Valley, CA: A Case–Control Study,*" Environmental Epidemiology 4, no. 4 (August 2020): e099, https://doi.org/10.1097/EE9.0000000000000099

"Proximity to higher production OGD in California was associated with **adverse birth outcomes among mothers residing in rural areas**."

Kathy V. Tran et al., *"Residential Proximity to Oil and Gas Development and Birth Outcomes in California: A Retrospective Cohort Study of 2006–2015 Births*," Environmental Health Perspectives 128, no. 6 (June 2020): 067001, https://doi.org/10.1289/EHP5842

"**Congenital heart defect prevalence is highest in rural areas with oil and gas activity**. Higher pulmonary artery and valve defect, aortic artery and valve defect, conotruncal defect, and tricuspid valve defect in rural oil and gas activity area."

Lisa M. McKenzie, William Allshouse, and Stephen Daniels, *"Congenital Heart Defects and Intensity of Oil and Gas Well Site Activities in Early Pregnancy,"* Environment International 132 (November 2019): 104949, https://doi.org/10.1016/j.envint.2019.104949

"We observed an **increase in risk of congenital heart defects (CHDs) among infants** whose mothers lived in areas with higher UNGD well densities in Texas."

Ian W. Tang, Peter H. Langlois, and Ver.nica M. Vieira, "Birth Defects and Unconventional Natural Gas Developments in Texas, 1999–2011," Environmental Research 194 (2021): 110511, https://doi.org/10.1016/j.envres.2020.110511

"**Higher odds of neural tube defects, limb reduction defects and spina bifida in infants born near oil and gas development**."

Casey Gaughan et al., *"Residential Proximity to Unconventional Oil and Gas Development and Birth Defects in Ohio,"* Environmental Research, April 2023, 115937, https://doi.org/10.1016/j.envres.2023.115937

"Increased hospitalizations for **diseases of the genitourinary system**, such as urinary tract infections, kidney infections, and kidney stones, were "strongly and positively associated with cumulative [unconventional natural gas] well density in Pennsylvania".

A. Denham et al., *"Unconventional Natural Gas Development and Hospitalizations: Evidence from Pennsylvania, United States, 2003–2014,"* Public Health 168 (2019): 17–25, https://doi.org/10.1016/j.puhe.2018.11.020

Public health concerns about UOGD include demonstrated carcinogenic, mutagenic, and endocrine-disrupting chemicals in fracking fluid (Colborn et al., 2011; Elliott et al., 2017; Horwitt, 2021; Kassotis et al., 2016; Xu et al., 2019). Environmental chemical release has been well documented from spills, and disruption of well and wastewater pond integrity (Bonetti et al., 2021; Wisen et al., 2020). Air pollution from diesel trucks, compressor and separation sta- tion engines, and methane release are additional concerns (Garcia-Gonzales et al., 2019). These pollutants, including volatile organic compounds (VOCs), nitrogen oxides, particulate matter, non-methane hydrocarbons, and hydrogen sulfide (Gilman et al., 2013; Macey et al., 2014; Moore et al., 2014), have known adverse human health impacts (Manisalidis et al., 2020). A further concern is the flowback of fracking fluids containing heavy metals, carcinogens, other toxicants (Crosby et al., 2018), and naturally occurring radioactive materials (NORMS) (Lauer et al., 2016).

Aker, A., Friesen, M., Ronald, L. A., Doyle-Waters, M. M., Takaro, T. K., Thickson, W., Levin, K., Meyer, U., Caron-Beaudoin, É., & McGregor, M. J. (2024). The human health effects of unconventional oil and gas development (UOGD): A scoping review of epidemiologic studies. *Canadian Journal of Public Health*. https://doi.org/10.17269/s41997-024-00860-2