

SB 687: Zero-Emission Truck Act of 2022

Date: February 24, 2022

Committee: Senate Education, Health and Environmental Affairs

Position: FAVORABLE

Christine D. Berg, M.D.

Oncologist

As a concerned oncologist, internationally recognized in cancer screening, I respectfully submit the following public comments in **FAVOR** of HB 829 the Zero-Emission Truck Act of 2022. This is a robust bill that will significantly lower emissions from medium- and heavy-duty trucks in Maryland. I would like to particularly acknowledge D3 Senator Young who is the Senate Sponsor.

Importantly, zero-emission trucks will not have CO₂ emissions which are the leading greenhouse gas contributing to the devastating health effects being experienced from climate change. Of concern to all of us, our friends and loved ones is the effect of worsening climate change on the risks of developing cancer, adverse effects on survival from cancer, and increases in the risk of cancer patients suffering from other diseases such as infections. As an oncologist it is my goal to raise awareness of these issues and help to mitigate them. Two peer-reviewed manuscripts I have co-authored document these worsening impacts^{1,2}. All of the climate bills before the House in this session will help to lower this devastating toll.

Additionally, the fine particulate matter, primarily PM 2.5, which is included in diesel exhaust, is responsible for nearly 1 in 6 lung cancer cases worldwide³. While lung cancer survival is improving with improved treatment and early detection, for which my research was instrumental for implementation, it still remains poor⁴. These types of pollutants are also linked to numerous other respiratory and cardiovascular diseases such as asthma, emphysema, and heart attacks. When inhaled, PM_{2.5} impacts the entire length of the respiratory tract, from tracheobronchial tree to the air sacs (alveoli) in the lungs. Polyaromatic hydrocarbons bind to PM_{2.5} and cause oxidative damage and low-grade, chronic inflammation, resulting in DNA adducts and gene mutations, among other molecular changes⁵. This also worsens viral respiratory infections by various mechanisms⁶, including impairment of the immune response, damage of the cilia in the respiratory tract, and intracellular oxidative stress. Another recent study published in *Nature Aging* showed that short-term exposure to polluted air, even at levels generally considered "acceptable," can impair mental ability in the elderly⁷.

Nitrous oxide is another harmful pollutant from our transportation system that has dramatic health consequences. When combined with volatile organic compounds (VOCs), the reaction creates ozone in the presence of sunlight and heat. Exposure of healthy individuals to relatively low ozone concentrations can cause harmful respiratory conditions and cardiopulmonary impacts, including lung irritation, breathing difficulties, reduced lung capacity, aggravated asthma, COPD, and increased mortality from cardiopulmonary and lung disease⁸. Millions of Americans suffer from the harmful effects of ground-level ozone pollution —be they children too

sick to go to school, high school football players not allowed to practice outdoors in the summer, 65-year-olds with lung disease unable to take a walk in the park, or farmers at risk when they harvest their fields⁹. Ozone pollution will also worsen as climate change worsens.

In one year, in the Northeast and mid-Atlantic alone, tailpipe-related pollution caused an estimated 7,100 premature deaths¹⁰. According to a new study that analyzed 2016 data, many of these deaths were from the pollution that crosses state lines. The authors said that this new, detailed modeling of the damages from specific pollutants and classes of vehicles could help policymakers target regional efforts and replicable efforts (such as the ACT rule) to curb interstate transportation pollution¹¹. An additional study by the Clean Air Task Force focusing on Maryland, see Figure attached, documents adverse health effects localized to Maryland from diesel exhaust here in the state¹².

Based on my discussions with transportation and climate change experts, including at the Union of Concerned Scientists, I am confident this Act is a reasonable policy solution to meet our mutual goal of improving the health of Maryland residents while also curbing climate change which has additional negative health consequences. By joining with other states in our region, Massachusetts, New Jersey, and New York, this will serve as a model for all states to reduce a significant source of particulate and greenhouse gas emissions.

In summary, I urge a **FAVORABLE** vote on **SB687** Zero-Emission Truck Act of 2022,

Sincerely,

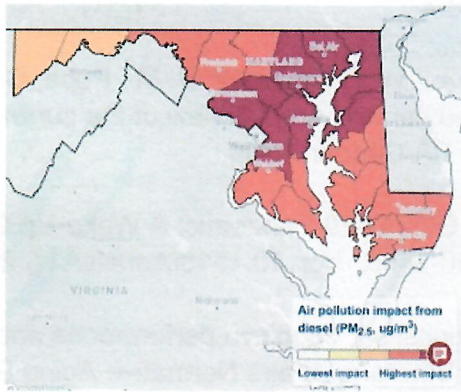


Christine D. Berg, MD
8003 Greentree Road, Bethesda, MD 20817
drchrisberg@outlook.com
301-908-0398 (cell)

Note: The ideas expressed in these written comments are solely my own and do not express the views or opinions of my employers.

FIGURE

Health Effects of Diesel | Maryland



Annual Projected Impacts in 2023: Health

Deaths	186	# of deaths
Heart Attacks	73	# of heart attacks
Acute Bronchitis	115	# of cases
Upper Respiratory Symptoms	2,088	# of cases
Lower Respiratory Symptoms	1,462	# of cases
Emergency Room Visits, Asthma	48	# of visits
Asthma Exacerbation	2,149	# of cases
Lifetime Cancer Risk Per Million	246	# of cases per million people

Clean Air Task Force <https://www.catf.us/work>

REFERENCES

1. Dickman E, Backler C, **Berg CD**, Komandt M, Schiller Climate Change and Oncology Nursing: A Call to Action. *J.Clin J Oncol Nurs*. 2022 Feb 1;26(1):109-113. doi: 10.1188/22.CJON.109-113.PMID: 35073306
2. Schiller JH, Averbuch SD, **Berg CD**. Why Oncologists Should Care About Climate Change. *JCO Oncol Pract*. 2020 Dec;16(12):775-778. doi: 10.1200/OP.20.00609. Epub 2020 Sep 11.PMID: 32915709
3. Hiatt, R. A., & Beyeler, N. (2020). Cancer and climate change. *Lancet Oncol*, 21(11), e519-e527. doi:10.1016/S1470-2045(20)30448-4
4. <https://www.lung.org/media/press-releases/solc-2021>
5. Turner M.C. Andersen, Z. J., Baccarelli, A., Diver, W. R., Gapstur, S. M., Pope, C. A., 3rd, Cohen, A. (2020). Outdoor air pollution and cancer: An overview of the current evidence and public health recommendations. *CA Cancer J Clin*. doi:10.3322/caac.21632
6. Mein SA, Annesi-Maesano I, Rice MB.(2021) COVID-19 Pandemic: A Wake-Up Call for Clean Air. *Ann Am Thorac Soc*. Sep;18(9):1450-1455. doi: 10.1513/AnnalsATS.202012-1542VP.
7. Gao, X., Coull, B., Lin, X. et al. Short-term air pollution, cognitive performance and nonsteroidal anti-inflammatory drug use in the Veterans Affairs Normative Aging Study. *Nat Aging* 1, 430–437 (2021). <https://doi.org/10.1038/s43587-021-00060-4>
8. Schwartz J. (2016) The Year of Ozone. *Am J Respir Crit Care Med*. 2016 May 15; 193(10): 1077–1079;doi: 10.1164/rccm.201512-2533ED; PMID: PMC4872672; PMID:
9. <https://www.epa.gov/environmental-topics/air-topics>
10. <https://www.edf.org/sites/default/files/documents/TransportationWhitePaper.pdf>
11. <https://www.hsph.harvard.edu/c-change/news/trechsources/>
12. *Clean Air Task Force* <https://www.catf.us/work>