Creation Care is a Matter of Life, Human Life

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"Climate change is the greatest global health threat facing the world in the 21st century, but it is also the greatest opportunity to redefine the social and environmental determinants of health."
– The Lancet Countdown on Climate Change[i]

One of the greatest obstacles to our evangelical community accepting the reality of climate change is the impacts of such change seeming distant and far away. While growing numbers of people experience and recognize climate change through increasingly extreme and erratic weather, *our* community best relates to climate through understanding the great harm fossil fuel pollution causes to the health of our children, both born and unborn. We begin to accept reality when very real threats are brought into our living rooms and into our lives.

As evangelical Christians, we believe that all human life is sacred, that each person conceived is of equal and innate value and dignity, and that all human life is worthy of protection. We are pro-life from conception to natural death. Each child has the right ***to fulfill their God-given potential*** – what Jesus called the **"abundant life"** (John 10:10). Here, Jesus was not just referring to a spiritual connection but also a holistic understanding of wellbeing, of body and soul together. He was especially concerned about vulnerable populations being denied this abundant life. ***"Jesus said, 'Let the little children come to me, and do not hinder them, for the kingdom of heaven belongs to such as these.'"*** **(Matthew 19:14)** Our commitment to Jesus Christ compels us to do all we can to defend children from life-altering and life-threating pollution whose primary source is fossil fuel combustion, development, and transportation. It is a pro-life concern, plain and simple.

Our experience shows that communicating the threats climate change and pollution pose to our children's health and future opens hearts and minds to the reality of the climate crisis. Below is a true story of this, which has been repeated literally hundreds of times throughout our ministry.

Perera FP. 2017. Multiple threats to child health from fossil fuel combustion: impacts of air pollution and climate change. Environ Health Perspect 125:141–148; http://dx.doi. org/10.1289/EHP299

Shortly before the COVID-19 pandemic changed our lives, we were invited to present at a conference on Gulf Coast restoration near Mobile, AL. The night before the conference, the leadership invited the presenters to share a meal with key attendees. During the dinner, a Southern Baptist attendee scrimmaged

with us over climate change. He was adamant that climate change was a liberal deception, and that the science was far from settled. Needless to say, the dinner discussion was at best tenuous, if not outright hostile.

To our surprise, the gentleman still attended our seminar the next day and carefully listened as we shared both medical research and stories of how pollution from fossil fuels harms our children's lungs, hearts, minds, and even lives.

According to the 2020 State of Global Air Report, air pollution accounts for 20% of newborn deaths worldwide (almost 500,000 infant deaths in 2019), most related to complications of low birthweight and pre-term birth.[ii] Pre-term birth is the leading cause of neonatal mortality worldwide, affecting more than 15 million infants every year. Children born premature or with low birthweight are at greater risk for death in the first month of life and have higher rates of major illness throughout their lives. The World Health Organization (WHO) estimates 6 million of 20 million pre-term births in 2019 could have been averted by reducing exposure to soot (also known as $PM_{2.5}$) during pregnancy.[iii]

Here in the United States, 1 in 9 pregnancies results in pre-term birth. This number almost doubles in African American communities to 1 in 5 children impacted.[iv] The leading cause of pre-term birth is intrauterine inflammation, and a leading cause of intrauterine inflammation is $PM_{2.5}$. All this results in approximately 15,808 pre-term births in the U.S.—statically, 35% of which will result in death—costing $4.33 billion each year.[v]

If the above isn't enough of a concern, toxic poisons like cancer-causing benzene; volatile organic compounds (VOCs); and methane emitted during the production, transportation, and distribution of oil/natural gas cause severe health threats. According to peer-reviewed medical research, those who live within 0.5 miles of an oil/natural gas facility are at risk for a 25% increase in low birthweight infants; increased brain, heart, spine, or spinal birth defects; a 25% increase in children's asthma; and a 86-times-greater exposure to cancer-causing chemicals such as benzene and toluene.[vi] Over 3.2 million children attend school within this oil and gas "danger zone."[vii] Even more disturbing: newer medical findings suggest that those living up to 5 miles away from these facilities may also be a risk.

Fossil fuel pollution is not just a threat to our children but also to our own health. Soot produced by burning fossil fuels and diesel causes the early death of 1 in 5 people around the world and 200,000 - 350,000 Americans each year.[viii,ix] To put this tragedy in context:[x]

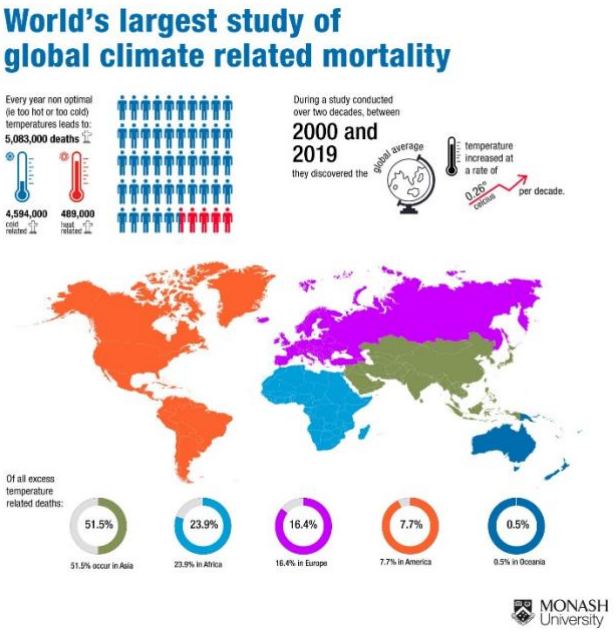
- Pollution kills 3 times more people than AIDS, tuberculosis, and malaria combined.
- Pollution also causes 10 times more deaths than war, terrorism, and all forms of violence.

Indeed, according to the American Lung Association's "State of the Air" 2022 report, more than 40% of Americans—over 137 million people—live in places with unhealthy levels of ozone (smog) or particle pollution ($PM_{2.5}$).

Air pollution's burden is unfair. Frontline communities and people of color are over three times more likely to be exposed to highly polluted air than white people. Many of the most significant threats fall on our children, both born and unborn. According to the National Survey of Children's Health, more than 37% of American children suffer from asthma, autism spectrum disorders (ASD), ADHD, or severe allergies.[xi] For example, ASD prevalence has increased from 1 in 150 from 2000 - 2002 to 1 in 54 in

2016.[xii] Multiple medical studies demonstrate a clear link between to these life-altering conditions and pollution from burning fossil fuels and production and the use of petrochemicals.[xiii]

Simply put, air pollution changes lives. $PM_{2.5}$, ozone, and other pollutants like volatile organic compounds (VOCs) are linked to asthma, allergies, autism (ASD), dementia, cardio-pulmonary diseases, cerebrovascular disease, chronic kidney disease, chronic obstructive pulmonary disease, type 2 diabetes, hypertension, lung cancer, pneumonia, and shorter life spans.[xiv,xv]



Over 5 million deaths from extreme temperatures. ***Zhao, Qi et al., Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study, The Lancet Planetary Health, Volume 5, Issue 7, e415 - e425***

Beyond air pollution's human toll, climate change itself multiplies threats to human life through increased heat mortality, the spread of vector-borne disease, food and water insecurity, and forced migration.

Worldwide, 80% of displaced people live in areas affected by malnutrition and acute food insecurity.[xvi] Over the past decade, weather-related events triggered an average of 21.5 million new displacements each year – more than twice as many displacements than those caused by conflict and violence. Oxfam, a secular relief and development agency, states: "One person is forced from home every two seconds by climate-fueled disasters."[xvii] Climate change threatens life through world food production declines;[xviii] increased spread of Lyme Disease, malaria, dengue fever, and cholera;[xix] and heat-related deaths, among other factors.[xx]

Compounding these tragedies is the fact that the people least responsible for pollution and climate emissions are often the ones who are most impacted by them. Unfortunately, Americans—as well as those living in the entire western world (and now in places like China)—who are most liable are also unlikely to accept reality unless the consequences of climate change are brought home. We have found through thousands of discussions in evangelical churches, conferences, and colleges that sharing the truth of the substantial threats to our children, grandkids, and their future is the best method to demonstrate our need for action. Which brings us back to our story.

Immediately after our presentation and discussion, the irate gentlemen walked up to me and asked, "Are you telling me that climate change causes all these harms to our children?"

"No," we replied, "but the same things that fill our air with the pollution that is threatening our kids cause climate change."

"For the sake of our kids, we better start taking action," he replied.

"The good news is," we said, "by turning away from fossil fuels to clean energy, we can defend our children's health, reduce greenhouse gasses and the threats of climate change, and build a clean economy with well-paying, family-sustaining jobs." By ending our dependence on fossil fuels, we could experience these numerous benefits while building a better world for God's creation and all God's children.

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[i] https://www.thelancet.com/countdown-health-climate/

[ii]https://www.stateofglobalair.org/

[iii] Rakesh Ghosh , Kate Causey, Katrin Burkart, Sara Wozniak, Aaron Cohen, Michael Brauer. Ambient and household PM2.5 pollution and adverse perinatal outcomes: A meta-regression and analysis of attributable global burden for 204 countries and territories. *PLoS Medicine*, 2021 DOI: 10.1371/journal.pmed.1003718

[iv] Nachman RM, Mao G, Zhang X, Hong X, Chen Z, Soria CS, He H, Wang G, Caruso D, Pearson C, Biswal S, Zuckerman B, Wills-Karp M, Wang X. Intrauterine Inflammation and Maternal Exposure to Ambient PM2.5 during Preconception and Specific Periods of Pregnancy: The Boston Birth Cohort. Environ Health Perspect. 2016 Oct;124(10):1608-1615. doi: 10.1289/EHP243. Epub 2016 Apr 27. PMID: 27120296; PMCID: PMC5047781.

[v] Leonardo Trasande, Patrick Malecha, and Teresa M. Attina, Particulate Matter Exposure and Preterm Birth: Estimates of U.S. Attributable Burden and Economic Costs, ENVIRONMENTAL HEALTH PERSPECTIVES, http://dx.doi.org/10.1289/ehp.1510810, March 2016

[vi] Currie, J., et al., "Hydraulic fracturing and infant health: New evidence from Pennsylvania," Science Advances, December 13, 2017: Vol. 3, no. 12, https://advances.sciencemag.org/content/3/12/e1603021

Stacy S.L., et al., "Perinatal Outcomes and Unconventional Natural Gas Operations in Southwest Pennsylvania," PLoS ONE 10(6), 2015. https://doi.org/10.1371/journal.pone.0126425 Hill, E., "Shale gas development and infant health: Evidence from Pennsylvania," Journal of Health Economics, 61, 134–150, 2018, https://www.sciencedirect.com/science/article/abs/pii/S0167629617304174?via=ihub

Casey J.A., et al.,, "The association between natural gas well activity and specific congenital anomalies in Oklahoma, 1997-2009," Environment International, Volume 122, January 2019, 381-388, https://www.sciencedirect.com/science/article/pii/S0160412018317999?via=ihub

McKenzie, L.M., et al., "Birth outcomes and maternal residential proximity to natural gas development in rural Colorado," Environmental Health Perspectives, April 2014,122(4):412-7, https://ehp.niehs.nih.gov/doi/10.1289/ehp.1306722

Rasmussen S.G., et al., "Association Between Unconventional Natural Gas Development in the Marcellus Shale and Asthma Exacerbations," JAMA Internal Medicine, 2016, 176(9), 1334–1343, https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2534153 Willis, M. D., et al., "Unconventional natural gas development and pediatric asthma hospitalizations in Pennsylvania, Environmental Research, 166, 402-408, October 2018, https://www.ncbi.nlm.nih.gov/pubmed/29936288

McKenzie, L.M., et al., "Ambient Nonmethane Hydrocarbon Levels Along Colorado's Northern Front Range: Acute and Chronic Health Risks," Environmental Science Technology, April 17, 2018, 52(8):4514-4525, https://pubs.acs.org/doi/10.1021/acs.est.7b05983

[vii] https://oilandgasthreatmap.com/

[viii] J. Lelieveld, K. Klingmüllera, A. Pozzera, R. T. Burnettc , A. Hainesd , and V. Ramanathan, Effects of fossil fuel and total anthropogenic emission removal on public health and climate, Proceedings of the National Academy of Sciences Apr 2019, 116 (15) 7192-7197; DOI: 10.1073/pnas.1819989116

[ix] Karn Vohra, Alina Vodonos, Joel Schwartz, Eloise A. Marais, Melissa P. Sulprizio, Loretta J. Mickley, Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, Environmental Research, Volume 195, 2021, 110754, ISSN 0013-9351, https://doi.org/10.1016/j.envres.2021.110754. (https://www.sciencedirect.com/science/article/pii/S0013935121000487)

[x]Prof Philip J Landrigan, MD, Richard Fuller, BE, Nereus J R Acosta, PhD, Olusoji Adeyi, DrPH, Robert Arnold, PhD, Prof Niladri (Nil) Basu, PhD, et al., The *Lancet* Commission on pollution and health, Published: October 19, 2017DOI:https://doi.org/10.1016/S0140-6736(17)32345-0

[xi] https://mchb.hrsa.gov/sites/default/files/mchb/about-us/nsch-data-brief.pdf

[xii] Maenner MJ, Shaw KA, Bakian AV, et al. Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years — Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2018. MMWR Surveill Summ 2021;70(No. SS-11):1–16. DOI: http://dx.doi.org/10.15585/mmwr.ss7011a1external icon

[xiii] Cheng-Kuan Lin *et al* 2021 *Environ. Res. Lett.* **16** 063003

Perera FP. 2017. Multiple threats to child health from fossil fuel combustion: impacts of air pollution and climate change. Environ Health Perspect 125:141–148; http://dx.doi. org/10.1289/EHP299
Maenner MJ, Shaw KA, Bakian AV, et al. Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years — Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2018. MMWR Surveill Summ 2021;70(No. SS-11):1–16. DOI: http://dx.doi.org/10.15585/mmwr.ss7011a1external icon.
McGuinn LA, Windham GC, Kalkbrenner AE, Bradley C, Di Q, Croen LA, Fallin MD, Hoffman K, Ladd-Acosta C, Schwartz J, Rappold AG, Richardson DB, Neas LM, Gammon MD, Schieve LA, Daniels JL. Early Life Exposure to Air Pollution and Autism Spectrum Disorder: Findings from a Multisite Case-Control Study. Epidemiology. 2020 Jan;31(1):103-114. doi: 10.1097/EDE.0000000000001109. PMID: 31592868; PMCID: PMC6888962.
Chua Regena Xin Yi, Tay Michelle Jia Yu, Ooi Delicia Shu Qin, Siah Kewin Tien Ho, Tham Elizabeth Huiwen, Shek Lynette Pei-Chi, Meaney Michael J., Broekman Birit F. P., Loo Evelyn Xiu Ling, Understanding the Link Between Allergy and Neurodevelopmental Disorders: A Current Review of Factors and Mechanisms, Frontiers in Neurology.
[xiv] Tessum CW, Apte JS, Goodkind AL, Muller NZ, Mullins KA, Paolella DA, Polasky S, Springer NP, Thakrar SK, Marshall JD, Hill JD. Inequity in consumption of goods and services adds to racial-ethnic disparities in air pollution exposure. Proc Natl Acad Sci U S A. 2019 Mar 26;116(13):6001-6006. doi: 10.1073/pnas.1818859116. Epub 2019 Mar 11. PMID: 30858319; PMCID: PMC6442600.
[xv] Benjamin Bowe, MPH[1,2]; Yan Xie, MPH[1,2,3]; Yan Yan, MD, PhD[1,4]; et al., Burden of Cause-Specific Mortality Associated With $PM_{2.5}$ Air Pollution in the United States, *JAMA Netw Open.* 2019;2(11):e1915834. doi:10.1001/jamanetworkopen.2019.15834
[xvi] https://storymaps.arcgis.com/stories/065d18218b654c798ae9f360a626d903
[xvii] Forced from Home, Oxfam Briefing, Climate-fuelled displacement, Dec 2019. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620914/mb-climate-displacement-cop25-021219-en.pdf
[xviii] Marina Romanello, PhD, Alice McGushin, MSc, Claudia Di Napoli, PhD, Paul Drummond, MSc, Nick Hughes, PhD, Louis Jamart, MSc, et al, The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future, Published: October 20, 2021DOI:https://doi.org/10.1016/S0140-6736(21)01787-6
[xix] Ibid
[xx] Zhao, Qi et al., Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study, The Lancet Planetary Health, Volume 5, Issue 7, e415 - e425