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May 1, 2020

The Honorable Alex M. Azar II
Secretary
Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

The Honorable Andrew Wheeler
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Secretary Azar and Administrator Wheeler:

I write to request you undertake an assessment of recent claims related to the relationship between fine particulate matter levels (PM_{2.5}) and patient mortality due to COVID-19.

On April 4, 2020, the Harvard T.H. Chan School of Public Health released a [pre-publication study](#), which has not been peer reviewed, claiming a causal association between long-term exposure to fine particulate matter and likelihood of dying from COVID-19. Specifically, the study claims that "an increase of only 1 [microgram per cubic meter] in PM_{2.5} is associated with a 15% increase in the COVID-19 death rate." A lead study author went on to implore the Federal government to consider reallocation of resources based on the study results: "In the short term, Dr. Dominici and other public health experts said the study's finding meant that places like the Central Valley of California, or Cuyahoga County, Ohio, may need to prepare for more severe cases of COVID-19."¹

The study received immediate and widespread attention in the media and from policymakers. Harvard's landing page for the study links to nearly [40 news stories](#) detailing the findings and their health implications in the U.S. and around the world, and countless more are readily available on the Internet.² Then, on April 15, 18 U.S. Senators [wrote](#) to EPA, asserting that Harvard's finding of a 15 percent increase in the COVID-19 death rate means that ongoing EPA regulatory reforms could "potentially increase the COVID-19 death toll and hospitalizations, further burdening our healthcare system and drawing resources away from COVID-19 patients."³ The study was cited by several Democratic members of the House of Representatives in a [similar letter](#) the following week, and was incorporated into the Biden 2020 presidential campaign's [revised climate change agenda](#).⁴ An April 16 [lawsuit](#) by 15 environmental groups attempting to block EPA from providing reporting-related compliance relief to companies relies upon the study, as does a petition by the [Sierra Club and](#)

¹ New York Times, April 7, 2020. <https://www.nytimes.com/2020/04/07/climate/air-pollution-coronavirus-covid.html>

² <https://projects.iq.harvard.edu/covid-pm/news?page=3>

³ <https://www.harris.senate.gov/news/press-releases/harris-colleagues-raise-concern-over-epas-refusal-to-strengthen-air-quality-standards-amid-covid-19>

⁴ <https://joebiden.com/9-key-elements-of-joe-bidens-plan-for-a-clean-energy-revolution/>

[Colorado Latino Forum](#) calling on Governor Jared Polis to order an immediate halt to construction of a major highway project. Clearly, the widespread media and political attention to the pre-publication findings has the potential to significantly influence public perception and policy outcomes associated with the nation's response to the COVID-19 pandemic.

Meanwhile, during this same period, a number of scientists began to speak out with major concerns with both the study's design and claims. Dr. Tony Cox, Chair of EPA's Clean Air Scientific Advisory Committee, editor of the journal *Risk Analysis*, and Clinical Professor of Biostatistics and Informatics at the University of Colorado Health Sciences Center, [stated](#) that "this whole thing is a bogus piece of analysis" and that he "would have zero confidence in the published results of this study because its interpretation, design, and analysis are fundamentally flawed." In a review article titled "[Air Pollution, COVID-19, and Death: The Perils of Bypassing Peer Review](#)," well-respected Canadian air pollution epidemiologists concluded that the Harvard findings "grossly overestimate the risks of Covid-19 mortality from air pollution."⁵ The scientists alleged that Harvard researchers failed to account for numerous factors that influence COVID transmission and patient outcomes, including varying social distancing policies, the impact of clusters such as those in nursing homes and meat-packing facilities, spatial variations in PM_{2.5} levels across counties, and the timing of the pandemic's spread through geographic regions (i.e. Seattle and New York impacted earlier than other areas of the country).

Finally, and perhaps of greatest concern, on April 24, 2020, the Harvard study authors appear to have modified their original results. Harvard's headline claim that a 1 microgram per cubic meter increase in PM_{2.5} caused a 15 percent higher COVID mortality rate was removed from the study manuscript and replaced with 8 percent--so the alleged causation was reduced approximately in half.⁶ While the top of the study page says "updated April 24th," there is no explanation of the changes that were made, and as of May 1, 2020, the [study press release](#) (as well as coverage by major newspapers around the world) alleging a 15 percent higher COVID death rate remains uncorrected.⁷ While modifying key conclusions of a research manuscript prior to peer review is not uncommon, failing to explicitly disclose the nature of and reasons for such changes, nor update public-facing press release for the study raises serious ethical concerns. These concerns are only exacerbated given that the study attracted pervasive media and political attention, and is being used to push the federal government to modify its policy response to COVID-19.

As agencies responsible for protecting public health and implementing key components of the federal government's response to COVID-19, it is incumbent upon you to accurately communicate the best available scientific understanding of the virus and the factors that may influence patient outcomes, not only to ensure American citizens are not misinformed, but also to enable proper allocation of resources as Congress funds the government's response to the pandemic. In an ideal world, scientific peer review would serve to inform and correct such confusion or misguided policy advice, but the urgent and rapidly evolving nature of the pandemic is ill-served by a months-long journal review process. Accordingly, I request that you and/or your agencies' appropriate advisory bodies undertake a review of the findings of the Harvard study and the current state of understanding regarding the relationship between air quality and COVID-19. We request that you report back to Congress with your conclusions as expeditiously as possible, given potential consideration of legislation to provide additional pandemic response support to states and localities in the coming weeks.

⁵ <https://www.inverse.com/science/air-pollution-covid-19-deaths>

⁶ Original version: <https://web.archive.org/web/20200408070154/https://projects.iq.harvard.edu/covid-pm>; April 30, 2020 version: <https://projects.iq.harvard.edu/covid-pm>

⁷ <https://www.hsph.harvard.edu/news/hsph-in-the-news/air-pollution-linked-with-higher-covid-19-death-rates/>

Finally, it is important to continue to acknowledge and educate the public on the incredible progress of air quality in the United States. According to EPA, concentrations of fine particulate matter have declined roughly 40 percent since the year 2000.⁸ This progress leads the world, and according to the World Health Organization, U.S. citizens have the lowest exposure to PM_{2.5} of nearly any country in the world—less than one-sixth the global average, and dramatically below other major virus-affected countries such as China, Iran, South Korea, Italy, and Germany.⁹ We should not rest on these laurels, but we should make sure the American public is better informed on the success and decades of progress made by EPA, state and local governments in cooperation with the business community to make our air clean and safe to breathe.

Thank you for your time and attention to this request.

Sincerely,

A handwritten signature in blue ink that reads "Andy Harris M.D." with a stylized flourish at the end.

Andy Harris, M.D.
Member of Congress

⁸ <https://www.epa.gov/air-trends/particulate-matter-pm25-trends>.

⁹ <https://www.stateofglobalair.org/data/#/air/plot>