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June 10, 2019

The Honorable Diana DeGette  
Chair, Oversight and Investigations Subcommittee  
House Energy and Commerce Committee  
U.S. House of Representatives

The Honorable Brett Guthrie  
Ranking Member, Oversight and Investigations Subcommittee  
House Energy and Commerce Committee  
U.S. House of Representatives

Chair DeGette and Ranking Member Guthrie:

We submit these comments on behalf of the 16,000 members of the American Thoracic Society (ATS) to express our opposition to EPA's efforts to set a threshold level below which health benefits of reducing pollution would no longer be considered in regulatory impact assessments of EPA rules. The ATS is a medical professional association of physicians, scientists and allied health professional dedicated to the prevention, detection, treatment, cure and research of respiratory disease, critical care illness and sleep disordered breathing. Our members are thought leaders in research on the health effects of air pollution. The patients we serve, including children and adults who suffer from chronic lung disease, are directly harmed by the ambient air pollution both above and below current National Ambient Air Quality Standard (NAAQS) levels. It is with our professional expertise and concern for our patient's health that we offer the following comments.

**Particulate Matter (PM)<sub>2.5</sub> Exposure Harms the Health of Children and Adults**

Ambient PM<sub>2.5</sub> pollution comes from numerous sources, including direct emissions from power plants, mobile sources, and wildfires. However, most particles in the ambient air are the result of secondary reactions of chemicals such as sulfur dioxide, nitrogen oxides, and volatile organic compounds (VOCs) which can come from many sources including power plants, industrial activities, on-road transport, area and agricultural sources. Once inhaled, these particles can harm the heart and lungs and cause serious health effects. Scientific studies have consistently found that



exposure to PM<sub>2.5</sub> air pollution is linked to serious adverse health effects, including:

- Prenatal exposure to PM is harmful to the developing fetus and has been linked to low birth weight, preterm birth, and infant mortality<sup>1-3</sup>
- PM exposure during childhood results in slower lung function growth, and higher risk of abnormally low lung function, early life respiratory infection, and asthma<sup>4-8</sup>
- Days with more air pollution increase risk of death among adults, including from heart and lung-related causes, and of hospitalization for heart and lung disease, including heart attacks, and stroke<sup>9-11</sup>
- In adults, greater long-term PM exposure is associated with an accelerated decline in lung function over time, which is an indicator of worse respiratory health<sup>12,13</sup>
- PM from outdoor air pollution and diesel engine exhaust are classified as lung carcinogens by the International Agency for Research on Cancer of the World Health Organization<sup>14,15</sup>

Available recent research indicates a benefit to health from reductions in annual PM<sub>2.5</sub> down to very low levels.<sup>10,16,17</sup> No threshold has been identified below which no damage to health is observed. While the entire U.S. population is at risk of air pollution health effects (and similarly most may benefit from further reductions in pollution exposure), those who are most harmed by PM<sub>2.5</sub> pollution include our nation's 74 million infants and children whose lungs are still developing, 35.7 million people with chronic lung disease, 121.5 million people with cardiovascular disease, and more than 46 million aging adults.

### **PM<sub>2.5</sub> Exposure is Associated with Mortality Below the Annual National Ambient Air Quality Standards (NAAQS) Level of 12 µg/m<sup>3</sup>**

There is clear evidence of premature death in association with long-term exposure to PM<sub>2.5</sub> below the current annual standard of 12 µg/m<sup>3</sup>. For example, in a study of 13.1 million older adults living in seven southeastern states there was an increase in mortality risk associated with an increase in long-term PM<sub>2.5</sub> concentrations; the median pollution exposure of this population was only 10.7 µg/m<sup>3</sup>.<sup>18</sup> Similar results were reported in a study in the northeastern U.S. where the median pollution exposure was 11.2 µg/m<sup>3</sup>.<sup>19</sup> In a prospective cohort study of over 500,000 individuals across the continental U.S., an increase in total mortality and cardiovascular mortality associated with long-term PM<sub>2.5</sub> exposure was observed with a study follow-up mean between 10.4 and 12.2 µg/m<sup>3</sup>.<sup>16</sup> A recent study of older Americans (32 million Medicare recipients) found that long-term exposure to PM<sub>2.5</sub> within the NAAQS standard was associated with mortality, and the slope of the dose-response relationship was *steepest* in the PM<sub>2.5</sub> exposure range of 8 to 12 µg/m<sup>3</sup>, below the current standard of 12 µg/m<sup>3</sup> (see Figure 1).<sup>10</sup> Studies on the impact of long-term PM<sub>2.5</sub> exposure on mortality in Canada have demonstrated similar results as studies in the US down to average concentrations of 6.3 µg/m<sup>3</sup>.<sup>20</sup>



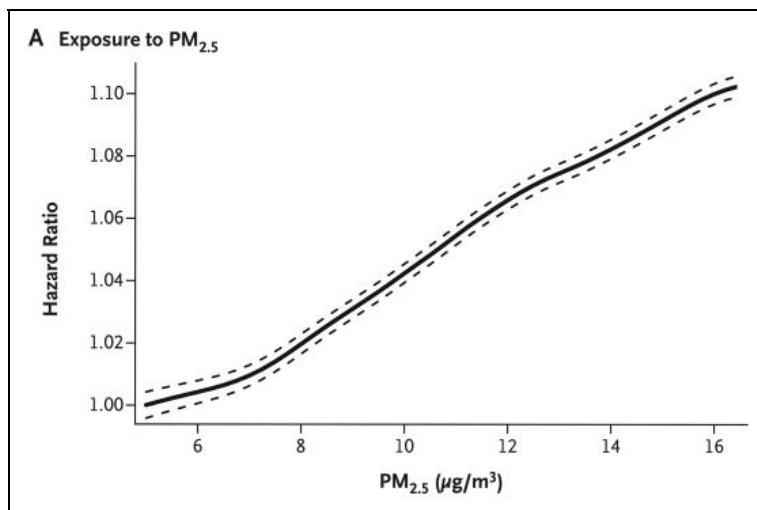
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Studies that have specifically assessed concentration-response relationships for long-term PM<sub>2.5</sub> exposure and mortality do not support the application of threshold near the current standard of 12 µg/m<sup>3</sup>, but rather instead support the long-held assumption of a linear, non-threshold relationship (see Figure 1 as an example). Another example is a study of 268,050 deaths that occurred in the Northeastern U.S., which excluded deaths occurring in areas with annual PM<sub>2.5</sub> above 10 µg/m<sup>3</sup>, and found a linear relationship between PM<sub>2.5</sub> and increased mortality risk between 6 and 10 µg/m<sup>3</sup>.<sup>21</sup>

If any changes were to be made to the long-held assumption in US policy for a linear, non-threshold relationship between PM<sub>2.5</sub> and mortality, there is good evidence from the US and Canada that the concentration-response curve may actually be steeper below the current standard.<sup>22,23</sup> In other words, **the health benefits of lowering PM<sub>2.5</sub>, on a per µg/m<sup>3</sup> basis, may actually be greater at lower levels compared to higher levels of PM<sub>2.5</sub>.**<sup>24</sup>



**Figure 1:** Long-term PM<sub>2.5</sub> exposure and mortality in the U.S. Medicare population.<sup>10</sup>

### Inappropriate Use of a Health Effect Threshold

The ATS has consistently provided comments expressing concern over EPA's inclusion of a threshold as part of sensitivity analyses in regulatory impact assessments over the last two years. We are now even more troubled that EPA is moving forward with a decision to use a threshold based on the NAAQS for estimating health effects, and economic costs, of air pollution as part of its primary analysis to fulfill its obligations under Executive Order 12866 to demonstrate the net economic benefits of all economically significant rules. These thresholds erroneously assume that exposure to fine particulate matter (PM<sub>2.5</sub>) below the current EPA standard has no adverse effects on human health. In no prior administration has the EPA applied an arbitrary threshold in this manner. Such a threshold is not consistent with research findings on the health effects of pollution, which have demonstrated dose-response relationships that continue well below NAAQS levels. Applying a threshold that is not based on medical evidence would have the result of dramatically underestimating the economic value of health benefits from lowering pollution.

The EPA has long emphasized that NAAQS need not correspond to the level at which there is zero health risk, but rather has been free to set standards that “protect public health with a reasonable margin of safety.” It is well-established, and long-acknowledged by EPA that NAAQS is not set at a level where the health risk of pollution exposure is zero. In fact, growing evidence indicates that lowering PM<sub>2.5</sub> levels well below the current NAAQS may provide even greater benefits to health, as we discuss below. The proposal to not count the value of respiratory, cardiovascular and mortality benefits of lowering pollution levels below a threshold of the NAAQS standard will harm public health by undervaluing any EPA regulatory action that lowers pollution.



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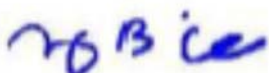
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Under the current administration, the EPA has recently created cost benefit estimates for the Affordable Clean Energy Proposed Rule that assumed a threshold effect. The use of a threshold had the result of drastically undervaluing the health benefits of lowering PM<sub>2.5</sub> pollution from power plants. This methodology was made without a science or health review. Indeed, the weight of the science to date supports exactly the opposite conclusion –no such threshold exists. While the magnitude of health impacts expected from policy actions may be debated, it is wrong to exclude any health benefits of lowering pollution below an artificial threshold when the evidence shows no such threshold exists. **We strongly urge the EPA to abandon the use of such a threshold, because it contradicts the science and ignores the documented health benefits of reduced emissions.**

## Conclusion

It is alarming that the EPA, an agency with a track record of conducting rigorous analyses to develop cost-effective regulation to protect human health and the environment, has developed this proposal to artificially limit the value of health benefits in regulatory impact analyses of the Affordable Clean Energy and other rules that affect air quality and human health. The consequences of such a policy on human health are extensive, because everyone breathes the outdoor air. The ATS strongly opposes this proposed action in the interest of Americans, including millions of children and elderly who struggle with respiratory impairments and look to the nation's leadership to ensure the air they breathe is clean. On behalf of the members of the ATS and the patients we serve, we urge the Administration to abandon this misguided approach to policy evaluation and instead adhere to sound scientific and economic principles when making regulatory actions that affect the health of Americans.

Sincerely,



Mary B. Rice, MD  
Chair, ATS Environmental Health Policy Committee



Kevin Cromar, PhD  
Vice Chair, ATS Environmental Health Policy Committee

cc: Rep. Frank Pallone  
Rep. Greg Walden



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