



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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September 29, 2020

The Honorable Andrew Wheeler
Administrator
U.S. Environmental Protection Agency
EPA Docket Center, Office of Air and Radiation Docket
Mail Code 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460

RE: Review of the Ozone National Ambient Air Quality Standards [Docket ID No. [EPA–HQ–OAR–2018–0279]

Dear Administrator Wheeler:

Thank you for the opportunity to comment on this consequential rulemaking. The Washington State Department of Ecology (Ecology) strongly disagrees with the U.S. Environmental Protection Agency's (EPA) proposal to maintain the current National Ambient Air Quality Standards (NAAQS) for ground-level ozone. Current science clearly tells us that the existing ozone NAAQS are insufficient to protect public health and the environment.

The proposed rule contains significant analytical, process, and legal flaws. Our review shows that EPA failed to apply sound science, did not consider the likely impacts of climate change on ozone pollution concentration and exposure, willfully ignored the harm ozone causes to sensitive and vulnerable populations, and has proposed standards that do not protect public health with an adequate margin of safety as required by the Federal Clean Air Act.

EPA is required to use best science when updating NAAQS

The Clean Air Act (CAA), 42 U.S.C. § 7401, *et. seq.*, requires EPA to consider the latest science when updating NAAQS. The science establishing negative impacts to human health, the environment, and our economy from exposure to ground-level ozone is clear and unambiguous – ozone is harmful even at low levels and a reduction in this pollutant provides triple-bottom line benefits. In EPA's 2014 ozone standard review, the Clean Air Scientific Advisory Committee

(CASAC) Ozone Review Panel found ample scientific evidence to set the primary ozone standard below the current level of 70 ppb.¹

Since the publication of the CASAC's Ozone Integrated Science Assessment (ISA) in 2014, the depth of scientific knowledge supporting more restrictive limits on ozone pollution has only grown. Scientists in both this administration and previous administrations have acknowledged that the current standard is not adequate to protect public health. In fact, in February of this year, the current CASAC concurred with this finding.^{2,3} That the EPA has chosen to ignore its own experts and scientific advisory committees when conducting this rulemaking is deeply disturbing. EPA has both a legal and a moral mandate to set pollution standards based on robust science – and this proposal fails on both grounds.

Current ozone NAAQS do not adequately protect human health

Lives are at stake with these standards; EPA must set NAAQS at levels that protect human health. The extensive body of established science shows that both short and long-term exposure to ground-level ozone at concentrations well below the current limit of 70 ppb harm human health. Ozone exposure can cause difficulty breathing and shortness of breath, inflame and damage airways, aggravate preexisting pulmonary conditions, increase the frequency of asthma attacks and the susceptibility of lung infections, and cause chronic obstructive pulmonary disease (COPD)⁴ in exposed individuals.

Exposure to ozone has been shown to be unhealthy, especially for those with preexisting respiratory conditions.⁵ The science unequivocally tells us that reduced ozone exposure, even in areas where the ambient concentrations are already low, would be beneficial to human health.⁶ The research indicates significant quantitative relationships between ozone exposure and negative health outcomes, with multiple studies showing measurable negative impacts at even low levels of ozone exposure and concentrations.^{7,8} For example a recent study on ozone concentrations and mortality among the Medicare population found a short-term increase of 10 ppb in warm-season ozone associated with an increase of 0.51 percent in daily mortality rate.⁹

¹ CASAC Review of the EPA's Second Draft Policy Assessment for the Review of the *Ozone National Ambient Air Quality Standards*, p. ii (2014).

² CASAC Review of the EPA's Second Draft Policy Assessment for the Review of the *Ozone National Ambient Air Quality Standards*, p. ii (2014).

³ CASAC Review of the EPA's *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft – October 2019)* – February 2020.

⁴ EPA's Health Effects of Ozone Pollution webpage - <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>.

⁵ Nuvolone, Daniel, D. Petri, F. Voller. (2018). "The effects of ozone on human health." *Environmental Science and Pollution Research*, 25, 8074-8088.

⁶ Mullins, Jamie, T.. (2018). "Ambient air pollution and human performance: Contemporaneous and acclimatization effects of ozone exposure on athletic performance." *Health Economics*, 27, 1189-1200.

⁷ Nuvolone, Daniel, D. Petri, F. Voller. (2018). "The effects of ozone on human health." *Environmental Science and Pollution Research*, 25, 8074-8088.

⁸ Mullins, Jamie, T.. (2018). "Ambient air pollution and human performance: Contemporaneous and acclimatization effects of ozone exposure on athletic performance." *Health Economics*, 27, 1189-1200.

⁹ Di, Qian, L. Dai, Y. Wang, A. Zanobetti, C. Choirat, J.D. Schwartz, F. Dominici. (2017). "Association of Short-term Exposure to Air Pollution With Mortality in Older Adults." *JAMA*, 318 (24), 2446-2456.

Ample evidence exists to show that exposure to ozone, even at low levels, is harmful and that reductions of ozone at levels below the current standard would be widely and significantly beneficial. In the ISA for the 2015 Ozone NAAQS review, the CASAC clearly stated, “At 70 ppb, there is substantial scientific evidence of adverse effects...including decrease in lung function, increase in respiratory symptoms, and increase in airway inflammation.”¹⁰

The CAA requires EPA to “accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare.”¹¹ The Administrator must then use the scientific evidence to establish the NAAQS for the criteria pollutants.¹² The CAA defines primary NAAQS as “ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on [the relevant air quality] criteria and allowing an adequate margin of safety, are requisite to protect the public health.”¹³ In addition, the Administrator must also set secondary NAAQS “specify[ing] a level of air quality the attainment and maintenance based on [the air quality] criteria, [that] is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air.”¹⁴ Applying these standards to the current scientific knowledge of the impacts from levels of ozone below the current NAAQS results in an unavoidable conclusion that the current ozone NAAQS are inadequate and must be strengthened to protect public health and public welfare, and provide the required “adequate margin of safety.”

Ozone pollution compounded by climate change puts Washington at risk

Washington has made strides over the years to reduce ground-level ozone pollution. However, significant portions of our state remain at risk from elevated ozone levels, including urban, suburban, and rural areas. Climate change is increasing those risks. The science on the relationship between climate change and ozone pollution is growing, and it is now widely accepted that climate change will increase exposure to and concentrations of ground-level ozone worldwide, especially in urban areas.^{15, 16} In the west, background ozone levels are expected to increase by up to 7 ppb during warm months.¹⁷

EPA *must* consider the most-likely near-term impacts from climate change when setting pollution limits. To do otherwise would be a clear abdication of EPA’s mandate to protect human health and the environment. A head-in-the-sand approach to climate change is not legally tenable

¹⁰ CASAC Review of the EPA’s Second Draft Policy Assessment for the Review of the *Ozone National Ambient Air Quality Standards*, p. ii (2014).

¹¹ 42 U.S.C. § 7408(a)(2)

¹² 42 U.S.C. § 7409(b)

¹³ 42 U.S.C. § 7409(b)(1)

¹⁴ 42 U.S.C. § 7409(b)(2)

¹⁵ Monks, P.S., A.T. Archibald, A. Colette, O. Cooper, M. Coyle, R. Derwent, D. Fowler, C. Granier, K.S. Law, G.E. Mills, D. S. Stevenson, O. Tarasova, C. Thouret, E. von Schneidemesser, R. Sommariva, O. Wild, and M.L. Williams. (2015). “Tropospheric ozone and its precursors from the urban to the global scale from air quality to short-lived climate forcer.” *Atmospheric Chemistry and Physics*, 15, 8889-8973.

¹⁶ Nuvolone, Daniel, D. Petri, F. Voller. (2018). “The effects of ozone on human health.” *Environmental Science and Pollution Research*, 25, 8074-8088.

¹⁷ Wu, Siliang, L.J. Mickley, D.J. Jacob, D. Rind, and D.G. Streets. (2007). “Effects of 2000-2050 changes in climate and emissions on global tropospheric ozone and the policy-relevant background surface ozone in the United States.” *Journal of Geophysical Research*, 113, D18312.

under the CAA or under basic administrative law principles – EPA cannot willfully ignore reality.

Prolonged ozone exposure is detrimental to Washington’s economy

Ground-level ozone not only harms human health, but has a demonstrated potential to damage economic productivity. Ozone is the most detrimental air pollutant for agricultural crops, resulting in significant yield and economic losses worldwide. As our climate warms, these impacts will be exacerbated.^{18, 19}

Some of the areas in Washington State with the highest concentrations of ozone are also our most productive agricultural areas. Agriculture and related industries provide over 160,000 jobs in our state, generating over \$20 billion in revenue each year.²⁰ The most up-to-date research suggests a global crop yield loss due directly to ozone of between two- and sixteen-percent for staple crops like wheat, soy, corn, and rice. As a state that produces nearly \$700 million of wheat annually, Washington will suffer severe economic hardship from these effects.^{21, 22} These estimates do not take into account additional negative impacts to crops from climate change, soil degradation, and drought, all of which are likely to increase in the future, making our agricultural industry even more susceptible to the negative effects of ozone.

Ozone exposure has significant impacts on workers. Even small changes in ozone concentrations have been shown to affect worker productivity. Current science tells us that each 10 ppb decrease in ozone levels results in a 5.5 percent increase in worker productivity.²³ This same research concluded that a 10 ppb reduction in the ozone NAAQS would result in a net economic benefit of \$700 million nationwide from increased worker productivity.

Ozone pollution impacts Washington’s economy in all areas – rural, urban and suburban alike. While agriculture occurs largely in rural parts of our state, Washington’s shipping, transportation, and other industries vital to the success of our agricultural sector are largely based in urban and suburban areas. Impacts to agriculture from elevated ozone levels are likely to affect each of these economies. EPA should consider these detrimental economic impacts when setting pollution standards.

¹⁸ Ainsworth, Elizabeth A., C.R. Yendrek, S. Sitch, W.J. Collins, and L.D. Emberson. (2012). “The Effects of Tropospheric Ozone on Net Primary Productivity and Implications for Climate Change.” *Annual Review of Plant Biology*, 63, 637-661.

¹⁹ Emberson, Lisa D., H. Pleijel, E. A. Ainsworth, M. van den Berg, W. Ren, S. Osborne, G. Mills, D. Pandey, F. Dentener, P. Buker, F. Ewert, R. Koeble, R. Van Dingenen. (2018). “Ozone effects on crops and consideration in crop models.” *European Journal of Agronomy*, 100, 19-34.

²⁰ WA Dept of AG - <https://cms.agr.wa.gov/WSDAKentico/Documents/Pubs/641-WSDAAGInfographic-WEB.pdf?/641-WSDAAGInfographic-WEB>.

²¹ Emberson, Lisa D., H. Pleijel, E. A. Ainsworth, M. van den Berg, W. Ren, S. Osborne, G. Mills, D. Pandey, F. Dentener, P. Buker, F. Ewert, R. Koeble, R. Van Dingenen. (2018). “Ozone effects on crops and consideration in crop models.” *European Journal of Agronomy*, 100, 19-34.

²² United States Department of Agriculture, National Agricultural Statistics Service. (2018). “Press Release: Value of Washington’s 2017 Agricultural Production Totaled \$10.6 Billion.”

https://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Current_News_Release/2018/WA_vop.pdf

²³ Zivin, Joshua Graff and Matthew Neidell. (2012). “The Impact of Pollution on Worker Productivity.” *American Economic Review*, 102(7), 3652-3673.

The proposed rule conflicts with EPA’s environmental justice requirements and allows harm to vulnerable communities to go on unaddressed and likely worsen

Vulnerable communities, including communities of color, native and indigenous, and low-income populations, already bear the brunt of air pollution and climate change impacts and experience disproportionately poor health as a result. Federal agencies are required to analyze and remedy impacts to environmental justice communities when establishing regulations. This proposal, however, not only ignores this requirement, it would actively exacerbate environmental injustice and widen disparities in access to clean air in our society.

Executive Order 12898 (59 FR 7629) directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low income populations. As with previous rules promulgated by this administration, the proposed rule ignores these requirements, as it does not address the likely impacts to communities with environmental justice concerns. Furthermore, it ensures that the benefits from all future air quality protections are not fully recognized or given their due weight for our most vulnerable neighbors, friends, and family.

In the proposed rule, EPA concludes, without support, “that the existing primary standard protects public health, including the health of sensitive groups, with an adequate margin of safety.” This statement stands in clear contrast with the findings of the CASAC in both this and the previous ozone NAAQS review.^{24, 25} This also directly conflicts with the Executive Order, which requires agencies to make achieving environmental justice part of its mission, “[t]o the greatest extent practicable and permitted by law.”²⁶ EPA cannot reasonably justify its disregard for the very real impacts ground-level ozone pollution has on environmental justice communities and sensitive populations. EPA must revise the proposed rule to affect a standard that protects public health, especially for the most vulnerable among us, and uphold its commitments to environmental justice.

These concerns are paramount when considering exposure to ozone and the harm this pollutant poses to at-risk groups such as agricultural workers. Here in Washington State, one of our major areas of concern for ozone is the Central Washington region. This area is one of our state’s agricultural centers, and it is also prone to high ozone levels on hot summer days. As climate change increases summer temperatures, we are concerned that more residents and workers in communities such as the Tri-Cities will be exposed to ozone and that our efforts to combat the production of ozone precursors will be less effective. Residents and workers who are primarily outdoors, such as farm laborers, are at highest risk and disproportionately exposed to and impacted by degraded air quality, ozone, and high temperatures.

Further, this proposal to maintain ineffective ozone protections, coupled with the dismissal of environmental justice obligations, is especially unconscionable during the current global public health crisis. Because ozone exposure is directly linked to negative respiratory impacts, people who

²⁴ CASAC Review of the EPA’s Second Draft Policy Assessment for the Review of the *Ozone National Ambient Air Quality Standards*, p. ii (2014).

²⁵ CASAC Review of the EPA’s *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft – October 2019)* – February 2020.

²⁶ EO 12898 § 1-101 (59 FR 7629, February 16, 1994).

contract COVID-19 are more susceptible to the worst health outcomes of ozone pollution.²⁷ There is also a growing body of research demonstrating that people of color, especially black Americans, are disproportionately affected by COVID-19.^{28, 29, 30, 31, 32} Particularly during this crisis, EPA must rise up to meet its stated mission to protect human health and the environment, and reduce environmental risks based on the best available scientific information. This proposed rule runs counter to EPA's mission and fails to uphold EPA's essential public duty to ensure that we all have clean air, land, and water.

Conclusion

As environmental regulators, both Ecology and EPA have a special responsibility to respond to our changing environment, to carefully consider the latest scientific knowledge, and to act aggressively to protect the health of those we represent and our environment. EPA must reconsider its direction in this rulemaking and increase the protectiveness of both the primary and secondary ozone NAAQS.

If you have any questions, please contact Kathy Taylor, Air Quality Program Manager at Ecology at Kathy.Taylor@ecy.wa.gov, or Casey Katims, the Director of Governor Inslee's Washington, DC office at Casey.Katims@gov.wa.gov.

Sincerely,



Laura Watson
Director

cc: Chris Hladick, EPA Region 10 Administrator
Casey Katims, Office of Governor Jay Inslee, Washington D.C.
Kathy Taylor, Ecology

²⁷ Xiao Wu, R.C. Nethery, B.M. Sabath, D. Braun, F. Dominici. (2020) "Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study." *medRxiv*.

²⁸ Stokes Erin K., L.D. Zambrano, K.N. Anderson, E.P. Marder, K.M. Raz, S. El Burai Felix, R. Tie, K.E. Fullerton. (2020). "Coronavirus Disease 2019 Case Surveillance — United States, January 22–May 30, 2020." *MMWR Morb Mortal Wkly Rep* 2020, 69, 759–765.

²⁹ Killerby Marie E., R. Link-Gelles, S.C. Haight, et al. (2020). "Characteristics Associated with Hospitalization Among Patients with COVID-19 — Metropolitan Atlanta, Georgia, March–April 2020." *MMWR Morb Mortal Wkly Rep. ePub*, 17.

³⁰ Gold, Jeremy A., K.K. Wong, C.M. Szablewski, et al. (2020). "Characteristics and Clinical Outcomes of Adult Patients Hospitalized with COVID-19 — Georgia, March 2020." *MMWR Morb Mortal Wkly Rep* 2020, 69, 545–550.

³¹ Price-Haygood, Eboni G., J. Burton, D. Fort, L. Seoane. (2020). "Hospitalization and Mortality among Black Patients and White Patients with Covid-19." *New England Journal of Medicine*, 382, 2534-2543.

³² Millet, Gregorio A., A.T. Jones, D. Benkeser, S. Baral, L. Mercer, C. Beyrer, B. Honermann, E. Lankiewicz, L. Mena, J.S. Crowley, J. Sherwood, P.S. Sullivan. (2020). "Assessing differential impacts of COVID-19 on black communities." *Annals of Epidemiology*, 47, 37-44.

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