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**Testimony
of Thomas W. Ferkol, MD
On Behalf of the American Thoracic Society**

**Before the Senate Environment and Public Works Committee
Subcommittee on Clean Air and Nuclear Safety**

**Hearing on
“Oversight Hearing: EPA’s Proposed National Ambient Air Quality Standards
for Ozone”**

December 17, 2014

Mr. Chairman, Ranking Member, and members of the Subcommittee, my name is Dr. Tom Ferkol. I am a pediatric pulmonologist at the Washington University in St. Louis School of Medicine, and also the current President of the American Thoracic Society. On behalf of the American Thoracic Society, I want to thank the Committee for the opportunity to testify regarding the Ozone National Ambient Air Quality Standard proposed by the Environmental Protection Agency (EPA). The American Thoracic Society is a medical professional organization with over 15,000 professionals and patients who are dedicated to the prevention, detection, treatment and cure of respiratory disease, critical care illnesses and sleep-disordered breathing. We pursue our mission through research, clinical care, education and advocacy.

Ozone (O₃) is a potent oxidant that damages the airways and lungs. The American Thoracic Society strongly supports EPA’s proposal to strengthen the National Ambient Air Quality Standards for ozone. If anything, we are disappointed EPA did not go further by recommending a stronger standard of 60 parts per billion (ppb).

For several years, the American Thoracic Society has encouraged the EPA to issue a health protective ozone standard. When the standard was reviewed in 2007 under the Bush Administration, we recommended a standard of 60 ppb based on the available evidence at that time. When the Obama Administration first reconsidered this standard in 2010, we again urged 60 ppb. While the recommended standard endorsed by the physician community has not changed during this time, the scientific evidence supporting this recommendation has significantly strengthened. Over the last seven years, we have gained an even greater scientific understanding of the health effects of ozone exposure, including greater links between respiratory disease in infants and children, reduced lung function, and increased mortality in adults. Indeed, the scientific record provides clear, consistent, and conclusive evidence that we believe should compel EPA to establish an ozone standard no higher than 60 ppb [1,2].

This is the second time that the Obama Administration has considered updating the current ozone standard of 75 ppb. In 2007, the Bush administration established the current standard outside of the range recommended by the independent Clean Air Scientific Advisory Committee (CASAC) of 60 ppb to 70 ppb [3]. In 2010, CASAC reaffirmed its initial recommendation as part of the Obama Administration's first reassessment of the ozone standard, an effort that was ultimately abandoned in 2011 [4]. The 2010 review did not include a new assessment of the science, but EPA's current review of the ozone standard does include a comprehensive review of significant new scientific evidence on ozone's adverse effects that has been developed since 2006.

Numerous scientific studies show that ozone exposures in the range of 60 ppb to 70 ppb have adverse physiologic effects across the entire age spectrum—from newborn infants to the elderly. While there is also some evidence of health effects of ozone exposure below 60 ppb, the strongest evidence supports the conclusion that serious adverse health effects occur across all ages at ozone levels above 60 ppb.

Several new lines of evidence have demonstrated the connection between ozone exposure in the 60 ppb to 80 ppb range and childhood asthma hospital admissions and emergency room visits [6-9]. A new study of emergency department visits by preschool age children in Atlanta further found that each 30 ppb increase in the three-day average of ozone was associated with an 8% higher risk of pneumonia [5].

Suffice it to say, ozone pollution – at levels permissible under the current standard – makes children sick. EPA has the authority and obligation to set a standard that protects children from the adverse health effects of ozone exposure. But it's not just children – adults are also harmed by ozone exposure.

Research shows that for each incremental rise in ozone exposure, severe exacerbations, emergency room visits, and hospitalizations for asthma increase for adults [9-11]. Similar associations have been found between increased ozone levels and adult admissions for chronic obstructive pulmonary disease [12,13] and pneumonia [13]. A population-based cohort study of generally healthy adults found that FEV₁ was lower after days when ambient ozone ranged from 59 ppb to 75 ppb compared to days with levels under 59 ppb [14]. Healthy individuals have normal lung function. Not surprising, poorer lung function is associated with greater morbidity in patients who have chronic respiratory diseases and lowers the threshold for exacerbations. Controlled human exposure studies have re-affirmed lung function decrements in healthy adults after exposure to 60 ppb to 70 ppb of ozone [15,16]. Perhaps of greatest concern, there is now stronger evidence of increased mortality in association with higher ozone levels [17-19], particularly among the elderly and those with chronic disease [20,21]. Large, multi-city studies have found strong and consistent associations between increased risk of premature death and increased ozone levels, particularly in warmer months when ozone levels are higher.

In sum, there is accumulating evidence that ozone pollution – at levels permitted by the current standard of 75 ppb – is damaging to the human lungs and contributes to disease. Based on this evidence, the American Thoracic Society strongly encourages EPA and the Administration to move forward with a strong, scientifically-supported standard of 60 ppb to protect the nation's children, elderly, other vulnerable populations, and the American public at large, from the known hazards of ozone pollution on human health.

While the evidence that ozone harms the lungs is particularly comprehensive and compelling, recent studies have also shown significant adverse health effects from ozone beyond the lungs. EPA's Integrated Science Assessment has concluded that, "...the evidence is stronger for most every health endpoint, with causal findings strengthened from 'suggestive' to 'likely causal' for cardiovascular effects and total mortality from short-term exposures." In addition, the

Assessment found that ozone affects the central nervous system and brain, and that a number of recent toxicological studies reveal adverse effects on neurologic function, cells, and tissue from long-term exposure to ozone, including changes similar to those observed in neurodegenerative disorders, such as Parkinson's disease and Alzheimer's disease. EPA's Assessment concluded that, "...the toxicological evidence for the impact of O₃ on the brain and behavior is strong, and suggestive of a causal relationship between O₃ exposure and effects on the central nervous system." [22]

In summary, the latest scientific research reaffirms and deepens our understanding of the adverse health effects of ozone exposure. Without question, the current EPA ozone standard fails to protect America's public health, and in particular fails to protect the most vulnerable among us. The Environmental Protection Agency and the Administration both have the authority and the obligation to establish a more protective ozone standard. On behalf of the American Thoracic Society, I strongly urge EPA and the Administration to finalize a more protective ozone standard of 60 ppb.

I would be happy to answer any questions.

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