

ONE HUNDRED FIFTEENTH CONGRESS
Congress of the United States
House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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April 11, 2017

Dr. Homer Boushey
Professor of Medicine
Division of Pulmonary/Critical Care Medicine
University of California, San Francisco
505 Parnassus Avenue; RM M1292
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San Francisco, CA 94143-0130

Dear Dr. Boushey,

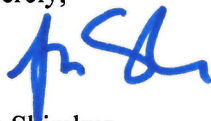
Thank you for appearing before the Subcommittee on Environment on Wednesday, March 22, 2017, to testify at the hearing entitled "H.R. 806, Ozone Standards Implementation Act of 2017."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Wednesday, April 26, 2017. Your responses should be mailed to Grace Appelbe, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Grace.Appelbe@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,



John Shimkus
Chairman
Subcommittee on Environment

cc: The Honorable Paul Tonko, Ranking Member, Subcommittee on Environment

Attachment

Attachment – Additional Questions for the Record

The Honorable John Shimkus

1. Is there a high degree of variability in individual performance on lung function tests from day-to-day and season-to-season?
 - a. What are the factors unrelated to asthma that can affect performance?
 - b. How common is it for clinicians to arrive at different diagnoses for people who present asthma symptoms?
 - c. What other illnesses or conditions could affect lung function performance?
2. In your testimony, you also cite studies by Schelegle et. al. and Kim et al. as affirming lung function decrements in healthy adults after exposure to 60 to 70 ppb of ozone. The studies reported average lung function FEV1 (forced expiratory volume in 1 second) deficits of 3.5 and 1.7 percent respectively. In 2005 the American Thoracic Society and the European Respiratory Society (ATS/ERS) issued a paper (Pellegrino et al.)¹ to provide guidance in interpreting pulmonary function tests. This paper notes: “When using per cent change from baseline as the criterion, most authorities require a 12–15% increase in FEV1 and/or FVC as necessary to define a meaningful response. Increments of 8% (or ,150 mL) are likely to be within measurement variability [107, 115].” It also notes: “Thus, in subjects with relatively “normal” lung function, year-to-year changes in FEV1 over 1 yr should exceed 15% before confidence can be given to the opinion that a clinically meaningful change has occurred [5].”
 - a. Please explain the significance of the mean responses found in the Schelegle et. al. and Kim et al studies in light of the ATS/ERS guidance.
3. You state in your testimony that a recent publication by Gauderman and colleagues² “demonstrated improvements in lung-function development in children as air quality improved.” However, the study authors state that “[C]hanges in ozone (Figure 2)) and PM10–PM2.5 (Fig. S4 in the Supplementary Appendix) were not associated with differences in mean FEV1 or FVC values at 11 or 15 years of age or with 4-year growth in these values.” The study also notes that the evidence regarding the long-term effect of ozone on children is mixed: “Only a few other studies have addressed the long-term effects of ozone on lung function in children, and the results have been inconsistent.”
 - a. Please explain the significance of the Gauderman study to legislation addressing ozone regulations.
4. You note in your testimony the results of one study by Rice et al. that reported lower FEV1 values in a cohort of generally healthy adults after days of ambient exposure to ozone under 59

¹ R. Pellegrino et al. “Interpretative strategies for lung function tests” Series “ATS/ERS Task Force: Standardization of Lung Function Testing” Edited by V. Brusasco R. Crapo and G. Viegi. Eur Respir J. 2005; 26: 948-968.

² Gauderman WJ, Urman R, Avol E, et al. Association of improved air quality with lung development in children. N Engl J Med 2015; 372: 905-13.

parts per billion (ppb), compared to exposures that ranged from 59 to 74 ppb³. The study by Rice et al., however, also states that: “The magnitude of the average difference in FEV1 between “good” and “moderate” exposures is small (20 ml for PM2.5, 31 ml for NO2, and 56 ml for O3) and unlikely to be clinically perceptible to the average individual.”

- a. Please explain whether you agree with that statement.

The Honorable Frank Pallone, Jr.

1. Dr. Boushey, although the title of this bill suggests that it deals only with ozone, in fact it amends the National Ambient Air Quality Standards program of the Clean Air Act for all criteria air pollutants – lead, sulfur dioxide, nitrogen oxides, carbon monoxide, and for both fine and course particulate matter. Of course, when we breathe the surrounding air we get any and all of these air pollutants that are in the immediate area. And, while each of them presents different specific health impacts, taken together I imagine they make a very unhealthy brew.

Is it possible we are underestimating the impacts of ozone or other individual pollutants because of the challenge of evaluating and quantifying the cumulative impacts of the mixture of pollutants that people actually are exposed to?

2. Unfortunately, California’s topography and climate create conditions that are truly challenging for improving air quality. But, as I understand it the current ozone standard of 70 parts per million, even when we achieve it, may still result in health impacts. Is that true? Did the Clean Air Scientific Advisory Committee and the public health community recommend a stronger standard?
3. Even the extreme non-attainment areas are going to have until 2036 or 37 to achieve compliance with the 70 parts per million ozone standard. So, a child born today in areas with high ozone levels will be 20 years old by the time we achieve compliance with this standard. Doesn’t a life-time exposure to air pollution carry a significant health cost for these individuals?

³ Rice MB, Ljungman PL, Wilker EH, Gold DR, Schwartz JD, Koutrakis P, Washko GR, O’Connor GT, Mittleman MA. Short-term exposure to air pollution and lung function in the Framingham Heart Study. Am J Respir Crit Care Med 2013; 188:1351–7.