Editorial

Particulate Matter and the Environmental Protection Agency

Setting the Right Standard

Air quality standards, such as the particulate matter (PM) air pollution standards currently under review by the Environmental Protection Agency (EPA), have a critical role in improving public health in the United States. Yet the setting of these standards has proven to be fertile ground for contentious and partisan debate that often ignores the scientific and health protective basis for the standard that is mandated by the Clean Air Act. PM air pollution is pervasive in the United States, and a more protective PM National Ambient Air Quality Standard (NAAQS) would provide significant public health and economic benefits. As a result, the PM NAAQS is of great interest to stakeholders including affected industries, environmental groups, state and local governments, and professional health organizations like the American Thoracic Society. Unfortunately, this critical PM air quality standard review is occurring at a time when the Clean Air Act and the EPA are under attack in Congress. There is now serious concern that the setting of the most health-appropriate PM air quality standard may again be jeopardized due to this political discord.

The Clean Air Act passed by Congress in the 1970s requires that the EPA promulgate a NAAQS that is evidence based and that protects the public health with "an adequate margin of safety," regardless of cost. PM has been causally linked by independent researchers to a broad range of adverse health effects, including both respiratory and cardiovascular illness and death (1–4). Indeed, scientists at the U.S. EPA have recently estimated that, each year, almost one in five ischemic heart deaths in the United States is linked to the public's exposure to $PM_{2.5}$ (PM with a mass median aerodynamic diameter < 2.5 μm) (5). Other investigators have documented that as PM pollution levels have been reduced in U.S. cities, risk of death has decreased (6, 7). As a result, the EPA has estimated that roughly 90% of the dollar valuation of the health benefits achieved by implementing the Clean Air Act through 2010 has been due to reductions in PM air pollution (8). In addition, PM air pollution has been shown to be a major contributor to respiratory illness, including asthma ER visits and reductions in children's lung function (4, 9), especially worrisome findings with potential long-term health implications to a wide number of Americans. Thus, the evidence indicates that PM is one of the most critical air pollutants to control if we are to achieve better public health through cleaner air.

But the past as prologue is not reassuring with regard to the setting of an appropriately protective air quality standard for PM. The last review was quite contentious, and not nearly enough progress was achieved. While the short-term (24-h peak) NAAQS was made more protective, the long-term NAAQS was left alone, in conflict with the advice of the EPA's independent Clean Air Scientific Advisory Committee (CASAC).

Based on past and new studies, the CASAC stated, in a September 10, 2010 letter to the EPA Administrator, that the committee "supports the EPA staff's conclusion… that currently available information clearly calls into question the adequacy of the current standards." The committee also concurred with EPA staff that consideration be given to both an alternative annual standard for $PM_{2.5}$ in the range of 13 to 11 $\mu g/m^3$, as well as an alternative short–term (24-h) $PM_{2.5}$ standard level of 30 $\mu g/m^3$ (particularly in conjunction with an annual standard level of 11 $\mu g/m^3$).

We agree with CASAC that the present PM standards are not sufficiently protective of public health. Since the last review in 2004, sound new studies indicate adverse effects at lower short- and long-term PM levels as documented in the EPA's own PM Integrated Science Assessment (4). Based on this available evidence, we support the most protective long-term (annual average) standard at 11 $\mu g/m^3$and the short-term (24-h average) $PM_{2.5}$ standard at 25 $\mu g/m^3$.

The EPA is under a court-ordered deadline to finalize revised PM standards by December 15, 2012. Every delay in implementation of these PM standards results in potentially long-lasting and severe health effects from what is undoubtedly the largest air quality threat to human health in the United States. We therefore strongly urge the EPA to set a health-protective National Ambient Air Quality Standard for $PM_{2.5}$ of 11 $\mu g/m^3$ on an annual basis, and 25 $\mu g/m^3$ on a 24-hour basis.

Author disclosures are available with the text of this article at www.atsjournals.org.

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