

The Health Effects of Particles 2010: New Science, Old Issues

“The most perfidious way of harming a cause consists of defending it deliberately with faulty arguments.” Friedrich Nietzsche. *Die fröhliche Wissenschaft*, 1887.

If we may presume to add a corollary to Herr Nietzsche’s caution in the context of establishing air quality policy, it is equally damaging not to challenge, refine, and expand the basis of our “arguments,” in this case, the underlying scientific information.

The original ambient standards for particulate matter were based on crude, but fairly convincing evidence from episodes and daily changes in London and New York, but also on long-term data from U.S. studies that later proved to be flawed. Fortunately, the study of the health effects of air pollution didn’t stop with the 1971 standards. As detailed in the 2007 A&WMA Critical Review,¹ the standards drove successive changes in monitoring and new studies that sharpened our understanding, but also led to new standards and even more questions. Next year, the U.S. Environmental Protection Agency (EPA) will propose and promulgate a decision on whether to again revise particulate matter standards to reflect the most current assessment of the scientific information.

In advance of the debate and commentary on the appropriate policy choices, this issue of *EM* examines the current state of the science on the health effects of ambient particles.

Arden Pope provides an abbreviated, but comprehensive, update of his 2006 A&WMA Critical Review on particles,² complete with 105 references that dedicated readers can access via the Web. His summary illustrates both the explosion of new information, but also the expansion of the approaches scientists are taking to study air pollution effects (starts on page 6).

Then Lindsay Stanek and coworkers summarize the health portions of EPA’s Integrated Scientific Assessment (ISA) on particles. The ISA, which is peer reviewed by the external Clean Air Scientific Advisory Committee, represents a new approach to



summarizing the scientific criteria upon which ambient standards must be based (starts on page 12).

Next, Katherine Walker and coauthors from the Health Effects Institute, a public/private partnership cofunded by the automotive/oil industry and EPA, provide an overview of three recent studies they sponsored (starts on page 20).

Finally, Ron Wyzga and Annette Rohr of the Electric Power Research Institute (EPRI) summarize a decade of EPRI research on the difficult problem of evaluating the relative contribution of various particle components to the effects that have been associated with a constantly varying mixture (starts on page 28).

As these articles show, scientific research over just the last 15 years has greatly expanded our understanding of the health effects of particulate matter. Yet there are still significant uncertainties and remaining questions that need to be addressed so that policy-makers can continue to sharpen the focus of future air quality management programs.

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References

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2. Pope, C.A.; Dockery, D.W. 2006 Critical Review—D.W. Health Effects of Fine Particulate Air Pollution: Lines that Connect; *J. Air & Waste Manage. Assoc.* **2006**, 56 (6), 709–742; <http://secure.awma.org/journal/pdfs/2006/6/2006criticalreview.pdf>.

