



Figure 1-1. Overview of the EPA's process for reviewing NAAQS.

Anatomy of Air Quality Standards

- Key issues in criteria (S.108) and NAAQS (S.109)
 - Based on the latest scientific criteria....
 - Are the current/new standards **requisite** to *protect public health* with an **adequate margin of safety**
 - Do the standards *protect public welfare* (the environment, climate, materials, visibility, ecosystems....)
 - Costs of controlling pollution are not considered
 - The four major components of air quality standards
 - Indicator - i.e. what is *measured* (O_3 , TSP, $PM_{2.5}$...) and FRM
 - Averaging time - 1-hr, 8-hr, 24-hr, annual
 - Form - statistic – e.g. exceedance, concentration based
 - Level – e.g. $15 \mu g/m^3$ (PM), 0.08 ppm O_3 (gases)
 - The relative protection afforded by a “suite” of NAAQS is a function of all components for all standards combined

Members of the Clean Air Scientific Advisory Committee

Cox, Jr., Louis Anthony (Tony)	Chair	Cox Associates	Denver	CO
Boylan, James		Georgia Department of Natural Resources	Atlanta	GA
Frampton, Mark W.		University of Rochester Medical Center	Rochester	NY
Kendall, Ronald J.		Texas Tech University	Lubbock	TX
Lange, Sabine		Texas Commission on Environmental Quality	Austin	TX
Masuca, Corey M.		Jefferson County Department of Health	Birmingham	AL
Packham, Steven C.		Utah Department of Environmental Quality	Salt Lake City	UT

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<https://www.ucsusa.org/meeting-independent-particulate-matter-review-panel>

Meeting of the Independent Particulate Matter Review Panel

Thursday, October 10 – Friday, October 11,
2019

**[Final letter to Administrator Wheeler with the IPMRP's
recommendations](#)**

**Watch video recordings of the October 10-11 panel
meeting:**



Biosketches
Independent Particulate Matter Review Panel

H. Christopher Frey (Panel Chair)



Dr. H. Christopher Frey is the Glenn E. Futrell Distinguished University Professor of Environmental Engineering in the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. Dr. Frey's research includes quantification of uncertainty in engineering process technologies and emission factors, probabilistic methods for exposure assessment, measurement and modeling of human exposure to air pollution, and measurement and modeling of vehicle emissions. He has been the principal investigator or co-principal investigator for 75 externally sponsored research projects, and has published 133 journal papers, 216 conference papers, 75 technical reports, 8 book chapters, and one book. He teaches courses on air pollution control, environmental exposure and risk assessment, and sustainable infrastructure. Dr. Frey is an adjunct professor in the Division of the Environment and Sustainability at the Hong Kong University of Science and Technology, where he has taught a course on urban air quality and is part of a large team developing an exposure model for Hong Kong.

Dr. Frey served as a member (2008-2012) and chair (2012-2015) of the U.S. Environmental Protection Agency's Clean Air Scientific Advisory Committee (CASAC), has chaired CASAC Review Panels on Lead, Nitrogen Dioxide, and Ozone, and has served on CASAC Review Panels for all criteria pollutants including Lead, Nitrogen Dioxide, Ozone, Carbon Monoxide, Particulate Matter, and Sulfur Oxides. He served on