

CASAC's Role in Air Monitoring*

(Clean Air Scientific Advisory Committee)

R. Poirot, Vermont DEC

2006 National Air Monitoring Conference


Las Vegas Nevada, November 9, 2006



* Disclaimer: One Small State's Perspective Only...



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EPA Science Advisory Board



Congress established the EPA Science Advisory Board in 1978 and gave it a broad mandate to advise the Agency on technical matters. The Board's principal mission includes:

- Reviewing the quality and relevance of the scientific and technical information being used or proposed as the basis for Agency regulations
- Reviewing research programs and the technical basis of applied programs
- Reviewing generic approaches to regulatory science, including guidelines governing the use of scientific and technical information in regulatory decisions, and critiquing such analytic methods as mathematical modelling
- Advising the Agency on broad scientific matters in science, technology, social and economic issues
- Advising the Agency on emergency and other short-notice programs

[Hurricane Katrina Workgroup Advisory Activities](#)

Clean Air Scientific Advisory Committee

Enabling Legislation

Clean Air Act (CAA) Amendments of 1977 (Public Law 95-95)

42 USC Sec. 4209 (d)(2)(A)

The Administrator shall appoint an independent scientific review committee composed of seven members including at least

one member of the National Academy of Sciences,

one physician, and

one person representing State air pollution control agencies.

Clean Air Scientific Advisory Committee (CASAC)

Dr. Rogene Henderson, CHAIR, Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, NM

Dr. Douglas Crawford-Brown, Director, Carolina Environmental Program; University of North Carolina at Chapel Hill, Chapel Hill, NC

Dr. Armistead (Ted) Russell, Georgia Power Distinguished Professor of Environmental Engineering, Georgia Institute of Technology, Atlanta, GA

Dr. Ellis Cowling, University Distinguished Professor-at-Large, Colleges of Natural Resources and Agriculture and Life Sciences, North Carolina State U., Raleigh, NC

Dr. James Crapo, Professor, Department of Medicine, National Jewish Medical and Research Center, Denver, CO

Dr. Frank Speizer, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School, Boston, MA

Mr. Richard Poirot, Environmental Analyst, Air Pollution Control Division, Dept. of Environ. Cons., VT Agency of Natural Resources, Waterbury, VT

CASAC Duties:

Shall **Review** Primary and Secondary NAAQS and periodic Criteria Documents & Staff papers

Shall **Recommend** to the Administrator any new national ambient air quality standards and revisions of existing criteria and standards as may be appropriate

Shall also **Advise** the Administrator of areas in which additional knowledge is required to appraise the adequacy and basis of existing, new, or revised national ambient air quality standards,

Describe the research efforts necessary to provide the required information,

Advise the Administrator on the relative contribution to air pollution concentrations of natural as well as anthropogenic activity, and

Advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such national ambient air quality standards.

Recent & Pending CASAC Review Panels

Particulate Matter Review Panel

Ozone Review Panel

Lead Review Panel

**Ambient Air Monitoring and Methods
(AAMM) Subcommittee**

**CASAC Review of EPA Review of NAAQS
Review Processes**

**Currently forming SO₂ & NO_x Health &
Welfare Panels**

Additional Members of CASAC Ozone Review Panel

1. **Dr. John Balmes (M.D.)**, University of California, San Francisco (CA)
2. **Dr. William (Jim) Gauderman**, University of Southern California (CA)
3. **Dr. Henry Gong (M.D.)**, University of Southern California (CA)
4. **Dr. Paul J. Hanson**, Oak Ridge National Laboratory (TN)
5. **Dr. Jack Harkema**, Michigan State University (MI)
6. **Dr. Philip Hopke**, Clarkson University (NY)
7. **Dr. Michael T. Kleinman**, University of California, Irvine (CA)
8. **Dr. Allan Legge**, Biosphere Solutions (Canada)
9. **Dr. Mort Lippmann**, New York University (NY)
10. **Dr. Maria Morandi**, University of Texas, Houston (TX)
11. **Dr. Charles Plopper**, University of California, Davis (CA)
12. **Dr. Armistead (Ted) G. Russell**, Georgia Institute of Technology (GA)
13. **Dr. Elizabeth A. (Lianne) Sheppard**, University of Washington (WA)
14. **Dr. James S. Ultman**, Pennsylvania State University (PA)
15. **Dr. Sverre Vedal (M.D.)**, University of Washington School of Medicine (WA)
16. **Dr. James V. Zidek**, University of British Columbia (Canada)

CASAC Lead Criteria Document & Staff Paper Review

- Lead Standard (1.5 ug/m³ as 3-month avg.) set in 1978
- Last Review of 1986 CD & 1990 Supplement supported lower standard and shorter (1 month) averaging time,
- But (with phase-out of Pb in gasoline) air concentrations were < < Standards (and still declining) at most sites. So EPA employed a multi-media Pb exposure reduction strategy and did not lower Pb NAAQS

Now What?

- A lower Pb NAAQS is well justified (but would likely not be exceeded except near a few large point sources (and Air concentrations are still declining)
- Do we want a new Pb monitoring network (& methods)?
- Could Pb “graduate” from being a criteria pollutant?

CASAC PM Panel Review of PM CD(s) & Staff paper(s)

CASAC recommended:

- Lower PM_{2.5} 24-hr Primary from 65 to 30-35 ug/m³ 98th %ile
- Lower PM_{2.5} Annual Primary from 15 to 13-14 ug/m³
- New PM_{2.5} 2ndary 4 to 8-hr daylight 20-30 ug/m³, 92-98%
- New PM_{10-2.5} 24-hr “Urban” Primary from 50-70 ug/m³
- (Also consider New 2ndary PM_{10-2.5} = to Primary but not limited to “urban” environments.
- And New PM_{10-2.5} monitoring in both Urban & Rural Areas
- Did Not Recommend Exemptions for Mining & Agricultural

From CASAC 3/21/06 letter to Administrator Johnson:

The CASAC requests **reconsideration of the proposed ruling** for the level of the annual PM_{2.5} NAAQS so that the standard is set within the range previously recommended by the PM Panel, *i.e.*, **13 to 14 µg/m³**. The CASAC also recommends that the proposed 24-hour PM_{10-2.5} primary standard be accompanied by a **national monitoring program for PM_{10-2.5} in both urban and rural areas** to aid in informing future health and welfare effects studies on rural dusts. Moreover, the CASAC strongly recommends **expansion of our knowledge** of the toxicity of PM_{10-2.5} dusts **rather than exempting** specific industries (e.g., mining, agriculture). Finally, the CASAC requests that the **sub-daily secondary PM_{2.5} standard to protect visibility**, as recommended both in the PM Staff Paper and by the CASAC, be favorably reconsidered.

From CASAC 9/29/06 letter to Administrator Johnson:

In summary, the Agency has rejected the CASAC's expert scientific advice with regard to lowering the level of the annual primary fine particle (PM_{2.5}) standard and establishing a new coarse particle (PM_{10-2.5}) standard — both of which are consistent with the recommendations of the nationally-recognized science, medical and public health groups such as those cited above — and, in addition, EPA has not followed our advice in setting a separate secondary PM_{2.5} standard.

We note that, since the CASAC's inception in the late 1970s, the Agency has always accepted the Committee's scientific advice with regard to final NAAQS decisions. In view of this, we question whether you have appropriately given full consideration to CASAC's expert scientific advice — obtained through open, public processes — in your final decisions on the PM NAAQS.

CASAC Ambient Air Monitoring & Methods (AAMM) Subcommittee

CHAIRS

Mr. Richard L. Poirot* (Chair – Monitoring), VT DEC

Dr. Barbara Zielinska* (Chair – Methods), DRI, Reno

SUBCOMMITTEE MEMBERS

Mr. George Allen, NESCAUM

Dr. Ellis Cowling*, NC State University

Dr. Kenneth Demerjian, SUNY, Albany

Mr. Eric Edgerton, A.R. & A., Inc.

Dr. Philip Hopke, Clarkson University

Dr. Kazuhiko Ito, New York University

Dr. Thomas Lumley, U. of Washington

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Dr. Jay Turner, Washington University

Dr. Yousheng Zeng, Providence E & E Group

Dr. Judith Chow, DRI

Mr. Bart Croes, CARB

Dr. Delbert Eatough, BYU

Mr. Henry (Dirk) Felton, NYDEC

Dr. Rudolf Husar, Washington U.

Dr. Donna Kenski, LADCO

Dr. Peter McMurry, U. of Minnesota

Dr. Armistead Russell, Georgia Tech

Dr. Warren H. White, U. Cal – Davis

From: 4/20/05 CASAC AAMM Subcommittee Advisory on EPA's National Ambient Air Monitoring Strategy

- Need to fund “Level 1” NCore (methods development) sites
- Add additional monitoring for Hg species for CAMR
- Add continuous aerosol species & NMOC at Level 2 sites
- Enhance AIRNOW-type data reporting & distribution systems
- Identify & allocate critical resources for Data Analysis
- Need better continuous methods for gas & particle N species
- Harmonize PM Speciation methods from IMPROVE & STN (especially for Carbon)

IMPROVE-type Carbon Sampling to be added to STN sites

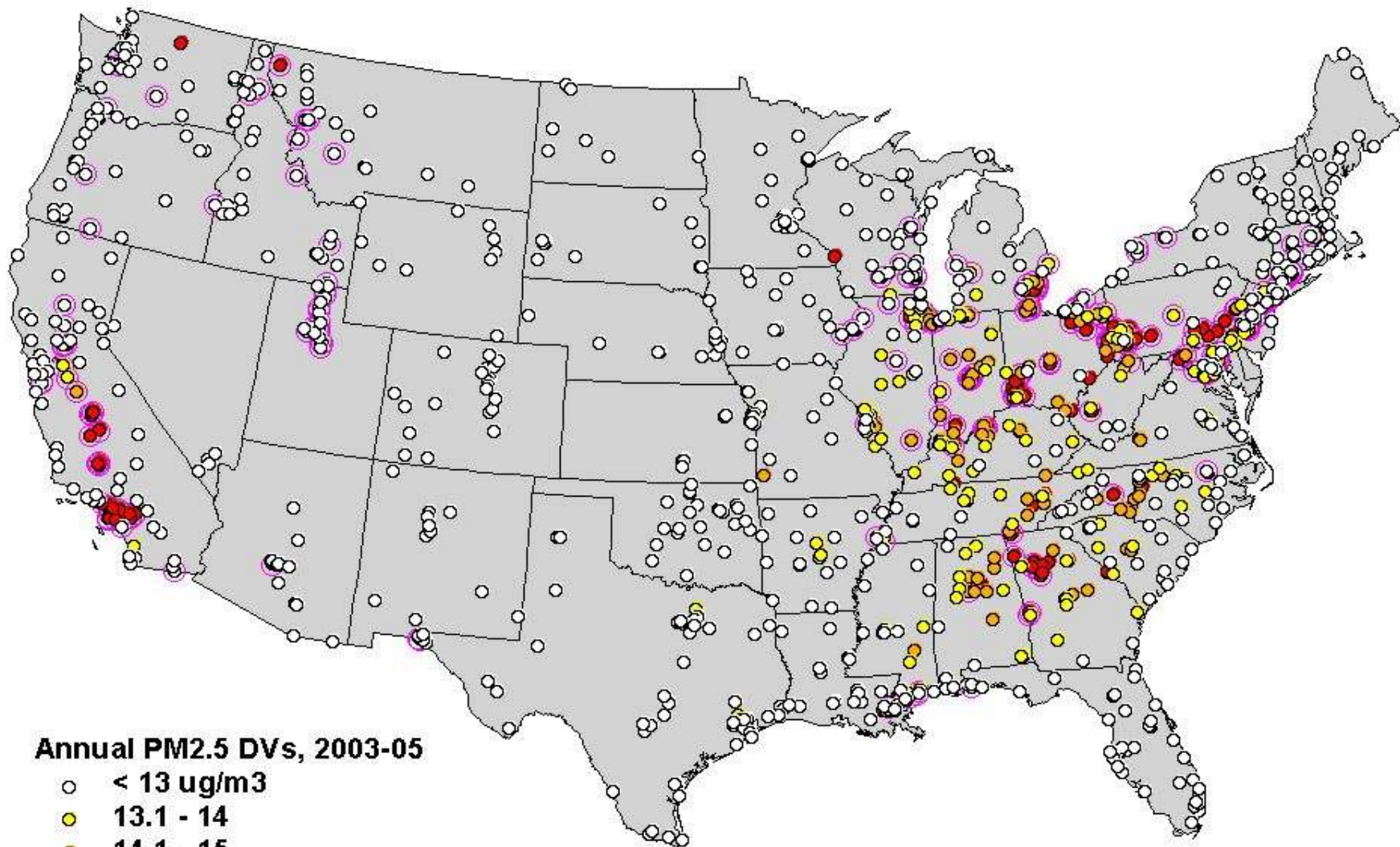


Figure 2. Picture of URG-3000N Controller and Sampling Module

STN Sites to receive first 50+ IMPROVE Carbon Samplers



Figure 1. Map of Selected STN and SLAMS Sites



Annual PM_{2.5} DVs, 2003-05

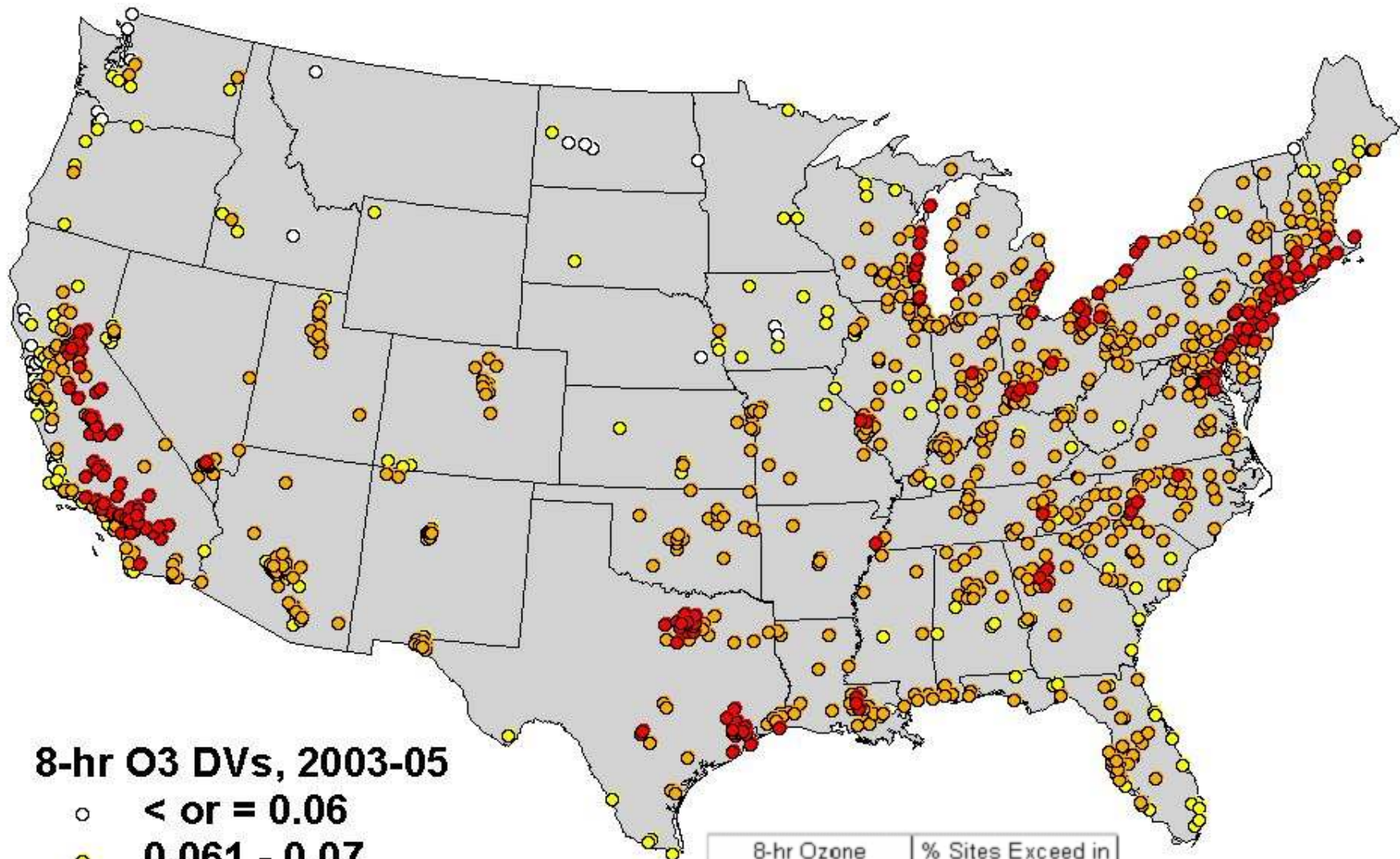
- < 13 $\mu\text{g}/\text{m}^3$
- 13.1 - 14
- 14.1 - 15
- > 15 $\mu\text{g}/\text{m}^3$

24-hr PM_{2.5} DVs, 2003-05

- ☆ > 35 for 24 hr

Annual PM _{2.5} Threshold ($\mu\text{g}/\text{m}^3$)	% Sites Exceed in 2003-05
15	14%
14	24%
13	36%
12	49%
11	60%

Annual PM _{2.5} Threshold ($\mu\text{g}/\text{m}^3$)	% Sites Exceed in 2003-05
10	70%
9	78%
8	85%
7	90%
6	95%



8-hr O₃ DVs, 2003-05

- < or = 0.06
- 0.061 - 0.07
- 0.071 - 0.084
- > or = 0.085

8-hr Ozone Threshold (ppm)	% Sites Exceed in 2003-05
0.084	18%
0.082	23%
0.080	37%
0.074	63%
0.070	84%
0.064	92%
0.060	97%

CASAC's (Future) Role in Air Monitoring (SLT perspectives)

- Importance of Public Comments in Science Review Process
- Remind the token State Rep of Implementation Issues
- Who should be next token State Rep (Recommendations)?
- Advocate future use of (relatively new) AAMM Subcom
- Whatever happened to Secondary Standards?
- Secondary Standards based on Deposition or Flux?
- Standards & Strategies for Pollutants with no Thresholds?
- Life Beyond NAAQS and Compliance Monitoring...?