

## APPENDIX E. PREPARATION OF THIS ASSESSMENT

The development of *Particulate Matter Science for Policy Makers: A NARSTO Assessment* began in January 1999. The development process incorporated guidance from scientists, policy makers, industry, academia, and the public, with the goal of providing air-quality regulators with as useful and scientifically advanced tools as possible.

Interactions with the policy community began in January 1999 as well, at the *NARSTO Fine Particle Characterization and Atmospheric Process Research Planning Workshop* in Crystal City, Virginia. This workshop, which included both science and policy-program representatives, was held to assist NARSTO in the preparation of its PM Research Strategy and included a session on “Assessment and Linkages.” That session culminated in a definition of the context, purpose, audience, and timing for a PM assessment.

From autumn 1999 through March 2000, the NARSTO Assessment and Analysis Team co-chairs prepared a draft set of policy questions to frame this Assessment. The questions were based upon a consolidation of questions from materials used at in the Crystal City Workshop, found in the NARSTO Strategy and Charter, and used in the NARSTO Ozone Assessment. This initial set of questions was part of the March 2000 Assessment Plan approved by the Executive Assembly and Executive Steering Committee.

The NARSTO Executive Assembly first commissioned the preparation of a PM science assessment in March 2000, and charged the Analysis and Assessment Team Co-Chairs with selecting the authors, outlining a scope, and proposing a process for completion of the assessment by the end of 2003. The Charge was subsequently approved by the NARSTO Executive Steering Committee. The Analysis and Assessment Co-Chairs identified as Lead Authors internationally recognized experts in the areas to be covered by this Assessment, and had the Lead Authors approved by the Executive Steering Committee. Subsequently, a three-person Assessment Co-Chair arrangement was established. These Assessment Co-Chairs and Lead Authors met during the spring of 2000 and outlined the technical

guidelines for the assessment process. Among these guidelines was an underlying theme that the Assessment should focus on usefulness to policy makers. As such, it was to take advantage of recent discipline-specific reviews, present summary technical judgments and insights that are known to and scientifically defensible by the authors, present current data and information, and present information in a reader-friendly manner with the few references cited being centrally important to information or judgments.

Further comments on the policy questions from NARSTO members directed that they be more basic, and similar to those used in the Ozone Assessment. The Assessment Co-Chairs re-drafted the policy questions into a final draft form, and presented them to assessment authors at their first meeting in May 2000. At that time the co-chairs drafted a set of science questions for each policy question, to guide the authors in their writing.

During August 2000 through October 2000, hour-long interviews were held with a representative set (67) of senior policy makers at 49 federal, state, and provincial environment departments and private industries in Canada, the United States, and Mexico. Interview questions, stemming back to guidance from the U.S. National Research Council’s peer review of the Ozone Assessment, sought to identify senior policy-maker goals in managing air quality, to determine the information required by them to meet their goals, and to gauge their impressions of uncertainties in the atmospheric science as of that time in relation to managing PM.

Responses to interview questions led to the confirmation of eight policy questions, which are fundamental to solving the PM-management problem in North America and useful in organizing the scope and content of the NARSTO PM Assessment:

- PQ1. Is there a significant PM problem and how confident are we?
- PQ2. Where there is a PM problem, what is its composition and what factors contribute to elevated concentrations?

## APPENDIX E

- PQ3. What broad, pollutant-based, approaches might be taken to fix the problem?
- PQ4. What source-specific options are there for fixing the problem, given the broad control approaches above?
- PQ5. What is the relationship between PM, its components, and other air-pollution problems on which the atmospheric science community is working?
- PQ6. How can we measure our progress? How can we determine the effectiveness of our actions in bringing about emission reductions and air-quality improvements, with their corresponding exposure reductions and health improvements?
- PQ7. When and how should we reassess and update our implementation programs to adjust for any weaknesses in our plan, and take advantage of advances in science and technology?
- PQ8. What further atmospheric-sciences information will be needed in the periodic reviews of our national standards?

Generalizations from the interview results in relationship to the policy questions framing this Assessment are that 80 percent of government respondents explicitly agreed that identified policy questions would give them the information they needed to make decisions, 77 percent of industry respondents explicitly recognized that these policy questions describe the breadth of science needed to implement the standards, and no one said that these questions were inappropriate or incomplete in the context of implementation information needs.

The 67 senior policy makers interviewed in the first phase of this assessment represented a cross-section of officials and their principal advisors. They were selected because they were seen as being the highest-ranking members of their organization or the ones who would be expected to advise the ultimate decision maker on the organization's position regarding PM policies and programs. From the federal government (12 United States, 6 Canadian, and 3 Mexican), interviewees included an Assistant Administrator, Office Directors, Director Generals, Directors, and U.S. Legislative Chiefs of Staff. From state and provincial government (19 United States, 7 Canadian, and 4 Mexican), interviewees included Commissioners, a Board Chair, a Secretary, Air Directors, Assistant Directors, Executive Officers, Executive Directors, and Executive Coordinators. Industry representatives came from organizations most involved in past rule-making actions, and included auto makers, petroleum industries, chemical manufacturers, and forest- and paper-product manufacturers. Private-sector interviewees (12 United States and 3 Canadian) included Vice Presidents, Senior Legal Advisors, Directors of Regulatory Affairs, and Directors of Public Policy.

Drafts of this Assessment were thoroughly reviewed by the full NARSTO membership during July and August 2001. A revised draft, responding to NARSTO membership comments, was released in January 2001 for external review by the public and a tri-national panel of experts convened by the National Research Council of the United States, the Royal Society of Canada, and the United States-Mexico Foundation for Science. This final document addresses these comments and has been reviewed and approved by the NARSTO Executive Steering Committee.