

NARSTO Particulate Matter Assessment **Charge to the Assessment and Analysis Team**

The Charge

The NARSTO charter includes collaboration of public-private research on particulate matter in air (PM) and calls for scientifically credible assessments and guidance for air quality managers and policy makers.

Therefore, the Executive Assembly and Steering Committee charges the Assessment and Analysis Team to prepare an assessment (PM Assessment) of the state of scientific understanding of the atmospheric aerosol as it relates directly to policy questions and program management associated with implementing any new PM standards. Science topics to be addressed include air quality measurement methods and data, emissions information, atmospheric processes, and air quality modeling as they guide strategy development and implementation to reduce health and visibility impacts of PM.

The PM Assessment needs to be concise, scientifically credible, reasonably brief but comprehensive in its discussion, focusing attention on the strengths and weaknesses in current science underpinnings of air quality management tools. Specifically the PM Assessment must contain an orderly presentation of the elements of the PM problem that starts with a definition of the problem and then lays out the issues, as policy questions and corresponding science questions, to be resolved. This will include a discussion of where scientific knowledge appears to be sufficient, where important uncertainties lie and where future research would assist PM management in North America. Within this framework authors will explain why various scientific aspects of the PM issue are important to the policy community, provide direction as to what additional information could contribute to regulatory and other government decisions and thereby contribute to the overall priority setting for research within NARSTO. The PM Assessment is to be suitable for audiences consisting of air quality policy and management decision-makers, science-policy analysts, research managers, the science community and the public. The publication of this PM Assessment report is targeted for the end of 2002.

The NARSTO PM assessment should attempt to evaluate critically the reliability and applicability of the technical and scientific tools currently available to support decision making for PM management. Discussion should include implications of current monitoring approaches, air quality modeling, and its inputs such as emissions, meteorological factors, and aerosol processing. The assessment also should address the requirements perceived to be needed for substantial improvement of these tools that are within reach of scientific investigations in the next five to ten years. The judgement of the meaning or definition of subjective terms like reliability and substantial improvement are left to the discretion of the team.

Be mindful of the need to organize all of the scientific information presented such that it addresses and informs the policy issues facing environmental managers and regulators to the extent possible.*

Priorities should be tied to the decision-making process, that is, how will the new knowledge help make better decisions to improve air quality.

Provide explicit consideration of how implications of the science, or recent advances in the science, could apply to new approaches to reducing PM concentrations.

Be mindful of the treatment of interconnections among air quality issues: the multi-pollutant atmosphere.

* Adapted from: Review of the NARSTO Draft Report: An Assessment of Tropospheric Ozone Pollution - A North American Perspective by the Committee to Assess the NARSTO Program, National Research Council, January, 2000, Chair: M. Russell

Goals and Specific Objectives

The overall goal for the PM Assessment is to fully describe how current knowledge and future research can aid air quality policy and management decision making. To satisfy this goal several specific objectives are to be met.

1. Gain an understanding from **decision-makers** of information needs and constraints, including economic, policy, and implementation boundaries.
2. Provide a comprehensive conceptual model of aerosol formation and particulate matter distribution for **science-policy analysts and air quality decision makers**. The model is to accommodate changing knowledge about atmospheric processes, emission sources, emission control technology, exposure, and human health and environmental impacts. It is to address existing limits in information and forecast the implications of expected results from ongoing and future research.
3. Provide a plain language conceptual description of particulate matter air quality for the **public** which describes the relevance of the atmospheric science research with its recent progress and findings.
4. Recommend atmospheric science and related emissions research, with priorities tied to the decision making process, to **research managers** developing a coordinated research strategy for PM.
5. Provide a framework for **atmospheric scientists** which relates their work to standards, implementation and air quality management, and to health, exposure and environmental impact research for standard setting.
6. Provide a context for **researchers in related fields** to link their work to that of the atmospheric science community, supplying important information on the current state of knowledge of particle formation and distribution and offering opportunities for future research coordination.

Assumptions

This charge to the Analysis and Assessment Team and the objectives are predicated on a number of assumptions about the assessment process and surrounding events likely to take place over the course of the assessment.

1. The definition of the problem is reducing levels of PM. Regulatory agencies are expected to recommend both PM_{<2.5µm} (fine PM) and PM_{2.5µm-10µm} (coarse PM) standards over the next two years. This assessment will encompass a review of PM characteristics relevant to both size fractions.
2. The PM Assessment will contain contextual information on exposure, health and environmental impacts. This information will come from the extensive and in-depth science reviews, without update, prepared by Canada and the US during their air quality goals and standards setting process.
3. A summary of related environmental issues, including deposition, climate change, and air toxins, is required to provide context for a discussion of the science of atmospheric aerosol occurrence and exposure.
4. Addressing PM, ozone linkages and other co-pollutant linkages is important to understanding the PM issue.
5. It is appropriate for the PM Assessment to address contextual aspects of emission control technologies mainly by reference to existing publications and information.
6. It is necessary to achieve a balanced assessment picture for the PM issues facing the NARSTO member countries.
7. The PM assessment process should be fully open to public participation.
8. The PM assessment should explore accountability approaches which directly relate observations to determining the effectiveness of air quality management plans.
9. Given the continuing advancement of information on PM, this assessment will be the first in a series of periodic NARSTO assessments.