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**ECONOMIC COMMISSION FOR EUROPE**

**EXECUTIVE BODY FOR THE CONVENTION ON LONG-RANGE  
TRANSBOUNDARY AIR POLLUTION**

Steering Body to the Cooperative Programme for Monitoring and Evaluation  
of the Long-range Transmission of Air Pollutants in Europe (EMEP)

Thirty-fourth session

Geneva, 13–14 September 2010

Item Xa of the provisional agenda

**HEMISPHERIC TRANSPORT OF AIR POLLUTION**

Report by the Co-Chairs of the Task Force on Hemispheric Transport of Air Pollution

**INTRODUCTION**

1. This report summarizes the activities of the Task Force on Hemispheric Transport of Air Pollution (TF HTAP) held in accordance with the workplan decided by the Executive Body. It is divided into four parts. Part I discusses a workshop organised for the drafting of the HTAP 2010 Assessment Report and reviews of recent findings, held in Toronto, Canada, 11 to 13 November 2009. Part II discusses a second writers' workshop held in Chapel Hill, United States, 1 to 3 March 2010. Part III is a report of the final review workshop for HTAP 2010 held in Brussels, Belgium, 14 to 16 June 2010. This third workshop was combined with the sixth meeting of the TF HTAP and held in cooperation with the Global Atmospheric Pollution Forum. Part IV describes the activities of the TF HTAP for the remainder of 2010 and the proposed workplan for 2011. **The Executive Summary of the 2010 HTAP Assessment Report will be finalised by the co-chairs only after review by external experts and the EMEP Steering Body.**

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2. Further details of the TF HTAP workshops and activities may be found at [www.htap.org](http://www.htap.org).

### **I. FIRST WRITER'S WORKSHOP ON HTAP 2010 REPORT**

3. The workshop hosted by Environment Canada in Toronto, 11 to 13 November 2009, was attended by about 85 experts including those from the following Parties: Austria, Canada, Czech Republic, European Union, France, Germany, Italy, Norway, Spain, Switzerland, United Kingdom, and United States. In addition, experts from the following countries not Party to the Convention attended: People's Republic of China, India, Japan, Pakistan and Thailand. Representatives of the EMEP Chemical Coordinating Centre (CCC), MSC West and MSC-West and industry organisations participated.

4. Mr. T. Keating (United States) and Mr. A. Zuber (European Union), Co-Chairs of the TF HTAP, chaired the workshops.

#### **A. Workshop Objectives**

5. The workshop was organised by TF HTAP to focus on the drafting of the 2010 HTAP report through reviewing the policy-relevant science questions identified by the Task Force and the first rough drafts. The report will be divided into three technical parts (A: Ozone and PM, B: Atmospheric Mercury and C: POPs) and a policy-makers' summary (D: Synthesis). The workshop also reviewed the conclusions of the HTAP 2007 report and other recent reports, including the U.S. National Academy of Sciences report, "Global Sources of Local Pollution."

#### **B. Summary of workshop**

6. Lead authors of each chapter provided rough drafts or outlines of the report chapters addressing conceptual overview, observational evidence, emissions inventories and projections, regional and global modeling, and health and environmental impacts. Breakout sessions worked through the details of the chapters and identified cross-cutting themes and key messages and to foster consistency in organization and presentation of similar information.

(a) The participants took note that progress had been made in organizing the content of the report, but a number of issues needed to be addressed, such as harmonisation in cross-cutting concepts (such as on uncertainty analysis) and nomenclature between chapters and parts.

Furthermore, major gaps in the text still existed.

(b) The participants recommended that further work be done to harmonise the chapters, fill in the gaps, and update report drafts by late January 2010, in order to meet the overall deadline by September 2010.

## II. SECOND WORKSHOP ON HTAP 2010 REPORT

7. The second workshop hosted the United States Environmental Protection Agency in Chapel Hill, United States, 1 to 3 March 2010, was organised to review the first full drafts of the HTAP 2010 Assessment Report and to discuss the findings and recommendations of each chapter. In conjunction with this workshop, the U.S. EPA organized a meeting on 4 to 5 March 2010 to explore the state of science regarding the short-lived climate forcing of air pollutants.

8. The second TF HTAP workshop was attended by about 120 experts including those from the following Parties: Canada, Czech Republic, European Union, France, Germany, Ireland, Italy, the Netherlands, Spain, Switzerland, Ukraine, United Kingdom, and United States. In addition, experts from the following countries not Party to the Convention attended: People's Republic of China, India, Japan, Pakistan and Thailand. Representatives of the EMEP MSC East and MEC West and Centre for Integrated Assessment Modelling (CIAM), and industry organisations participated.

9. Mr. T. Keating (United States) and Mr. A. Zuber (European Union), Co-Chairs of the TF HTAP, chaired the workshop.

### A. Workshop Objectives

10. The workshop was organised by TF HTAP to review the first full drafts of the 2010 report and to discuss further results and analyses from the HTAP model intercomparison. In addition the workshop had the objective to make a first draft of the storylines for each of the reports.

### B. Summary of workshop

11. Lead authors of each chapter provided drafts for discussion, although not all chapters were complete. Breakout sessions worked through the details of the chapters and cross-cutting themes and drafted answers to the synthesis questions posed by the Co-Chairs to foster consistency in organization and presentation of similar information.

(a) The participants took note of the progress made and in particular of the draft answers to the synthesis questions that were based on the policy-relevant science questions identified by the Task Force at its first meeting in 2005.

(b) The participants recommended that a sixth chapter be added to each part (A to C) to bring forward and synthesize the findings and recommendations contained in each chapter.

12. Presentations of recent findings from the HTAP model intercomparison and other studies showed how modelling can provide a view of future air quality, including intercontinental transport of air pollution.

(a) The meeting took note of the projections for future air pollution from shipping, and the policy action by the United States and Canada to create a specific nitrogen oxide emissions control area (NECA) for shipping in the vicinity of the states. The participants also took note of efforts to use the results of source-receptor sensitivity analyses to linearly approximate the tropospheric ozone response to emission changes in VOC, NO<sub>x</sub>, and CO.

(b) The participants recommended the Task Force to pursue and deepen analysis that can inform the Convention on the response of changes in emissions in all sector and all regions and form the basis for future policy.

### III. REPORT REVIEW WORKSHOP AND 6<sup>TH</sup> MEETING OF THE TASK FORCE

13. The meeting was organized by the TF HTAP and hosted by the European Commission in Brussels, 14 to 16 June 2010. One session was organized jointly with Global Atmospheric Pollution Forum.

14. It was attended by more than 75 experts. Participants came from the following Parties to the Convention: Azerbaijan, Belgium, Canada, Croatia, Czech Republic, Cyprus, European Union, France, Germany, Italy, the Netherlands, Norway, Poland, Russian Federation, Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States and Uzbekistan. From outside the UNECE region, experts from Brazil, China, India, Japan, Mexico, Nigeria, Nepal, Pakistan, Thailand, Tunisia, and Zimbabwe participated. Representatives of the **WMO, UNEP, EMEP's CCC, MSC-W and MSC-E** and industry organizations also participated.

15. The workshop was chaired by Mr. T. Keating (United States) and André Zuber (European Community), Co-Chairs of the Task Force.

#### A. Workshop Objectives

16. The specific objectives of the workshop were to:

(a) Review and agree upon the principal policy relevant conclusions and recommendations of the HTAP 2010 assessment report describing the intercontinental transport of ozone, aerosols, mercury, and persistent organic pollutants;

(b) Discuss future directions for cooperation on air pollution issues at the hemispheric and global scales, in general, and the work of the TF HTAP, in particular. The exploration of future directions was organized in cooperation with the Global Air Pollution Forum.

**B. Summary of Conclusions**

17. The participants reviewed the status of the draft 2010 HTAP assessment. They noted that most of the chapters were close to completion but some gaps still remained. They also noted that further effort was needed to clarify the findings and recommendations in each chapter that would be brought forward to the summary chapters and synthesis for policy-makers.

18. The participants agreed that an integrated policy summary (comprising Part D of the HTAP 2010 report) should be drafted to describe:

(a) The observational evidence for the intercontinental transport of ozone, particulate matter, mercury, and persistent organic pollutants in the Northern Hemisphere, focusing on observed trends in remote locations, as well as observations of transport events or plumes and satellite observations.

(b) For each pollutant, the fraction of observed concentrations and deposition that is due to intercontinental transport associated with anthropogenic emissions, as distinguished from local and regional anthropogenic or natural emissions sources.

(c) The sensitivity of air pollution concentrations or deposition in one region of the world to changes in current emissions in other regions.

(d) The impact of intercontinental or global flows of pollutants on the ability to achieve policy objectives identified by the Convention, national governments, and international organizations.

(e) The contribution of intercontinental or global flows of pollutants to impacts on human health, natural and agricultural ecosystems, and near-term climate change, with a specific discussion of impacts in the Arctic.

(f) The effect of changes in emissions and climate over the next 20 to 40 years on intercontinental transport.

(g) The sources of uncertainty in our estimates of intercontinental flows, based on the ability of current models and emissions estimates to reproduce the magnitude, spatial patterns, and temporal trends in observed concentrations and deposition.

(h) The further efforts needed to improve our understanding of intercontinental transport and its impacts and our ability to assess these flows, including the development of an integrated system of observational data, emissions, and models.

19. The chapter lead authors agreed to revise their chapters to provide the information for this summary for policy-makers. The participants agreed that the editors, with input from the chapter lead authors, will draft the summary for policy-makers in line with the guidance provided by the Task Force. In addition, the Co-chairs will draft an executive summary highlighting the main policy-relevant findings to inform the Convention and other international bodies on the relevance of intercontinental transport of air pollutants. The Co-chairs intend to

present a draft of this executive summary to the EMEP Steering Body as an informal document for discussion at its 34th session and to finalize this for the Executive Body's 28th session.

20. The joint discussion between the TF HTAP and the Global Air Pollution Forum on future cooperation on global and hemispheric scales concluded that:

(a) Progress has been made in expanding regional cooperation on air pollution issues in other regions outside the Convention, and the role of the Global Air Pollution Forum in facilitating this progress. The participants noted the diversity of the regional frameworks that have been established and the interests in connecting air pollution policies to policies addressing climate change, human health, biodiversity, food security, urban planning, transportation, energy, and development.

(b) Important contributions have been made by the World Meteorological Organization, Group on Earth Observations, and the International Geosphere-Biosphere Program, UNEP, and the Convention in coordinating global efforts on monitoring, research, and information exchange. The participants identified strengths and weaknesses of different institutions and needs and opportunities for new institutional approaches.

(c) Outreach efforts of the TF HTAP have strengthened existing connections to WMO, GEO, IGBP, UNEP, and other regional networks, including EANET and the Malé Declaration. The resulting network of experts and exchange of information has helped advance the state of science. The participants encouraged continued efforts to bring these communities together through TF HTAP or other international bodies.

(d) There are needs and opportunities for broader inter-regional cooperation on both science and policy issues. The participants recognized the global nature of air pollution problems, in terms of the common causes, impacts, and solutions for air pollution in different regions of the world, as well as the impact of transboundary transport from one region to another.

(e) Emission inventories are fundamental for air quality management and the quality of available emissions information for many regions is poor. The Convention has strong capabilities in the area of emissions inventory development that could be used to improve the capacity in other regions. In turn, the Convention would benefit from the availability of improved emissions information from other regions.

(f) Impact assessments are important for establishing the case for intercontinental or global action on air pollution and engaging decision makers outside the Convention. The participants noted that the HTAP 2010 report will make a contribution to the characterization of impacts from intercontinental transport, but that further work is needed.

(g) It is important to consider both the co-benefits and tradeoffs associated with mitigating emissions that contribute to both air pollution and climate change.

(h) The enhancement of air quality science and management capacity is needed in all regions of the world. In the management arena, this need may be best addressed within the

framework of regional cooperation. In the science arena, this need may be best addressed facilitating active scientific collaboration.

#### IV. ACTIVITIES FOR THE REMAINDER OF 2010 AND DRAFT WORKPLAN FOR 2010

21. The main task for the remainder of 2010 will be to finalise the HTAP 2010 report in all parts (A: Ozone and PM, B: Mercury, C: POPs and D: Synthesis) and to ensure that the key messages of these report and the Executive Summary are conveyed to the Convention and its subsidiary groups as well as other relevant organisations dealing with regional and global air pollution. (A workshop scheduled for fall 2010 will be shifted to spring 2011.)

22. The main activities and time schedule proposed for 2011 are to:

(a) Pursue efforts for an increased understanding of the role of hemispheric transport of air pollution and in particular to:

(i) Continue to plan, conduct and analyse multi-model experiments to evaluate the importance of intercontinental transport of air pollution and in particular the linkages to short lived climate forcers (particularly methane, black carbon) and climate change in conjunction with other internationally coordinated studies;

(ii) Support the development of an electronic information network, to facilitate the integration and interoperability of relevant data on emissions, observations and modelling information for the assessment of intercontinental transport (including HTAP Modelling Data Server, EDGAR-HTAP, EBAS-HTAP, and GIOVANNI-HTAP) and make available for all interested parties, task forces, and EMEP centres data and tools related to the 2010 assessment,.

(iii) Improve the linkages between modelling efforts at the global and regional scales.

(b) Organize an annual meeting and workshop jointly with other international organisations (WMO, UNEP, GEO, IGBP, GAPP) to discuss the findings of the 2010 HTAP Assessment Report and other recent related assessments and discuss plans for continued work, tentatively in May 2011 ;

(c) Continue the cooperation with the EMEP centres and individual Convention task forces, including TFMM, TFRN, TFIAM and TFEIP;

(d) Continue and increase outreach efforts directed at experts in countries outside the UNECE region and international organizations dealing with global and regional air pollution.

Comment [Z1]: Does this section occur here as well as in the draft work plan for EMEP activities?