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ECONOMIC COMMISSION FOR EUROPE

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

**REPORT OF THE SIXTEENTH SESSION OF THE EXECUTIVE BODY**

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## **Introduction**

1. The sixteenth session of the Executive Body for the Convention on Long-range Transboundary Air Pollution was convened in Geneva from 8 to 11 December 1998.
2. The meeting was attended by representatives of the following Parties to the Convention: Austria; Belgium; Canada; Croatia; Cyprus; Czech Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Netherlands; Norway; Poland; Portugal; Romania; Russian Federation; Slovakia; Slovenia; Spain; Sweden; Switzerland; Turkey; Ukraine; United Kingdom; United States of America; and the European Community (EC).
3. Representatives from the World Health Organization's Regional Office for Europe (WHO/EURO), the World Meteorological Organization (WMO) and the International Atomic Energy Agency (IAEA) also attended.
4. Representatives of the following non-governmental organizations were present: International Council of Environmental Law (ICEL); International Institute for Applied Systems Analysis (IIASA); International Union of Producers and Distributors of Electrical Energy (UNIPEDE); and the World Conservation Union (IUCN).
5. Mr. J. Thompson (Norway) chaired the meeting.

### **I. ADOPTION OF THE AGENDA**

6. The agenda, as contained in document ECE/EB.AIR/58, was adopted with the following changes: item 7 "Progress in selected areas of cooperation" and item 9 "Activities of ECE bodies and international organizations relevant to the Convention" would be considered immediately after item 5 "Implementation Committee". Item 6 "Restructuring of the Executive Body" would follow item 8 "Work-plan".

### **II. MATTERS ARISING FROM THE FIFTY-THIRD SESSION OF THE ECONOMIC COMMISSION FOR EUROPE AND THE SPECIAL AND FIFTH SESSIONS OF THE COMMITTEE ON ENVIRONMENTAL POLICY OF CONCERN TO THE EXECUTIVE BODY**

7. The Director of the Environment and Human Settlements Division, Mr. K. Bärlund, informed the Executive Body of the major achievements of the Aarhus Ministerial Conference "Environment for Europe", in particular the adoption of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

8. He also provided information on the ECE reform process and budget preparations for the 2000-2001 biennium. The environmental programmes, like all other programmes, were unlikely to receive additional resources.

9. Moreover, he informed the Executive Body of the recent restructuring of the Environment and Human Settlements Division, implying, *inter alia*, a merger of the air and water programmes into a new unit headed by Mr. Lars Nordberg. In this connection he informed the Executive Body that Mr. Nordberg would reach the mandatory retirement age on 31 March 1999, but that ECE had requested an extension of his contract to secure continuity of secretariat services during the negotiations and finalization of the protocol on nitrogen oxides and related substances.

10. The secretariat informed the Executive Body of the current status of ratification of the protocols. The delegation of Croatia announced that it had recently ratified the 1994 Oslo Protocol on Further Reduction of Sulphur Emissions, bringing the number of ratifications to twenty-two out of twenty-eight Signatories. The delegation of Canada announced that Canada had recently ratified the 1998 Aarhus Protocols on Persistent Organic Pollutants and on Heavy Metals, which, according to information available at the secretariat, would make it the first country to do so.

### **III. STRATEGIES AND POLICIES OF PARTIES AND SIGNATORIES TO THE CONVENTION FOR THE ABATEMENT OF AIR POLLUTION**

11. The secretariat introduced the draft 1998 major review of strategies and policies for air pollution abatement (EB.AIR/1998/3 and Add.1), and the document on emission data (EB.AIR/GE.1/1998/4). The report represented a consolidation of current information and was reformatted to make it easier for the layperson to read. The expanded section on implementation was seen as especially significant.

12. Delegations expressed their satisfaction with the report. Many also made corrections and amendments to it or indicated that additional information would be submitted to the secretariat.

13. Some delegations saw the report as a resource to influence people within their countries or to disseminate information to the public. It was suggested that the report, or a summary of it, should go onto an Internet site. Some delegations suggested that consideration should be given to the use of the information and analysis within the Convention, for instance to further implementation.

14. Responding to a suggestion by the delegation of Denmark, Ms. K. Hillman (Canada), Chairperson of the Implementation Committee, explained that sending a letter to Parties setting out their compliance problems would be very time-consuming for the Implementation Committee. A letter highlighting deficiencies in reporting data would cause fewer problems.

15. The Executive Body:

(a) Adopted the 1998 Major Review of Strategies and Policies for Air Pollution Abatement, subject to the corrections and further information provided by Parties;

(b) Set 15 January 1999 as the deadline for Parties to submit comments and corrections to the secretariat;

(c) Decided to send a letter to Parties highlighting their deficiencies in reporting data;

(d) Decided to make the report, or an extract of it, available on the Internet and to prepare a summary of it for the promotion of the twentieth anniversary of the Convention; and

(e) Decided to hold a seminar on Friday, 26 March 1999, during the twenty-ninth session of the Working Group on Strategies to discuss how the document could be used to further implementation.

#### **IV. ACTIVITIES OF THE WORKING GROUP ON STRATEGIES**

16. Mr. L. Björkbom (Sweden), Chairman of the Working Group on Strategies, introduced the reports of the twenty-fourth, twenty-fifth, twenty-sixth and twenty-seventh sessions of the Working Group (EB.AIR/WG.5/50, 52 and Corr.1, 54 and 56). He highlighted the completion of the Protocol on Heavy Metals (ECE/EB.AIR/61) and the Protocol on Persistent Organic Pollutants (ECE/EB.AIR/60), which had been presented to the Executive Body at its special session at ministerial level on 24 June 1998.

17. Mr. Björkbom emphasized that substantial progress had also been made in the preparation of a draft protocol on nitrogen oxides and related substances. In particular, the analysis of abatement scenarios for a multi-effect, multi-pollutant protocol had advanced to such a stage that the Working Group could decide on a guiding scenario for the negotiations at its next session. In doing so, the Working Group would have to recognize that uncertainties remained and that the protocol should foresee a review clause to deal with scientific advances. With four negotiating sessions scheduled, it should be

possible to finalize negotiations, as requested in the Aarhus Ministerial Declaration (ECE/EB.AIR/57, annex I) in 1999. The work on technical annexes should continue in parallel to the negotiations.

18. The Chairman of the Working Group on Strategies also presented a note on the basis for the multi-effect, multi-pollutant protocol prepared, at his initiative, for delegations to support the negotiations. The text had been circulated by the secretariat in the three official languages. It aimed at giving those who were not experts in the field a simple introduction to the complex scientific and technical work underlying the protocol preparations.

19. Several delegations noted that the Working Group on Strategies had a difficult and ambitious task ahead. Analysis showed that some Parties would have to make substantial and sometimes very costly emission reductions to reach some of the environmental targets. The situation might require further thinking about burden sharing than during previous negotiations.

20. Several delegations welcomed the close collaboration with the European Commission in the work. The high degree of consistency in the modelling work made it possible for the resulting legal requirements to be fully compatible. The Chairman of the Executive Body informed delegations about consultations between European Commission representatives and the Executive Body's Bureau. The main objective was now to continue the cooperation and ensure that the scientific work necessary for the policy work continued also after completion of the multi-effect, multi-pollutant protocol at the same level of consistency and quality.

21. The delegation of the United States stated that paragraph 36 of the report of the twenty-seventh session of the Working Group on Strategies (EB.AIR/WG.5/56) could lead to misunderstandings as it did not represent the United States position properly. While the United States had a comprehensive programme for reducing the emissions of nitrogen oxides and was currently working bilaterally with Canada on developing an approach for addressing nitrogen oxides emissions in North America, the United States had not yet decided whether to participate in the negotiations of the protocol on nitrogen oxides and related substances.

22. With respect to the request by the Working Group on Strategies for guidance on how to deal with sulphur emission reductions in the negotiations (EB.AIR/WG.5/56, para. 43), delegations agreed that, for those Parties that considered sulphur emission reductions more cost-effective for reducing acidification than nitrogen reduction, this option should be open. Several delegations preferred to defer a decision on whether sulphur emission reductions beyond those required under the Oslo Protocol should be specified

in the multi-effect, multi-pollutant protocol, or whether they should be part of an amendment to the Oslo Protocol. Such a decision should be made in the light of the modelled abatement scenario that would guide the negotiation, which would be decided upon only in January 1999.

23. The Chairperson of the Implementation Committee introduced a draft decision regarding the review foreseen under article 8 of the 1994 Oslo Protocol, on behalf of the Executive Body's Bureau.

24. The Executive Body:

(a) Took note of the reports of the Working Group on Strategies (EB.AIR/WG.5/50, 52 and Corr.1, 54 and 56), expressing its special appreciation to Mr. Lars Björkbom for guiding the work of the Working Group in such a firm and expeditious manner;

(b) Also took note of the good progress in the work on the multi-effect, multi-pollutant protocol, noting, in particular, that the modelling work had now advanced sufficiently to provide guidance for the negotiations;

(c) Adopted decision 1998/5 on the review foreseen under article 8 of the Oslo Protocol (see annex I below);

(d) Requested the Working Group on Strategies to study the options for covering obligations on sulphur emission reductions in the negotiations in the light of the abatement scenario selected to guide these negotiations and present a recommendation to the Executive Body in due time for a special session to be convened in the first half of 1999;

(e) Expressed grave concern about the potential disruption in the secretariat's work during the final negotiation process owing to the announced retirement of the team leader responsible for the Convention, Mr. Lars Nordberg. It warned that the Convention's important work to protect public health and the environment would be jeopardized and, consequently, urged its Chairman to intervene on its behalf at the appropriate level to ensure that the excellent secretariat team could continue under Mr. Nordberg's leadership at least until the adoption of the multi-effect, multi-pollutant protocol.

#### **V. IMPLEMENTATION COMMITTEE**

25. Ms. K. Hillman (Canada), Chairperson of the Implementation Committee, presented the first report of the Committee (EB.AIR/1998/4), including the results of its first two meetings, which focused on the review of compliance

with the reporting requirements in the protocols. As requested by the Executive Body, the Committee had proposed a long-term programme for its work (EB.AIR/1998/4, annex) and conducted a preliminary review of the draft of chapter V of the Major Review. Ms. Hillman also reminded the Executive Body of paragraph 3 of decision 1997/2 (ECE/EB.AIR/53, annex III) regarding the intention of the Executive Body to use the same compliance procedures also for the Oslo Protocol, which had now entered into force. Ms. Hillman expressed her thanks to the other members of the Implementation Committee and to the secretariat for the active and constructive support in the work of the Committee.

26. Several delegations commended the Implementation Committee for its good start in a new priority area. Some delegations raised questions on specific issues of the Committee's report. One delegation expressed its concern over the fact that there might not be a sufficient number of Committee members representing Parties that had ratified the Oslo Protocol for the Committee to carry out a substantive review of compliance with its provisions. Several delegations supported the intention of the Committee to start examining the quality of the reported information, especially the emission data and information about emission standards. Several delegations also supported the intended work to revise the questionnaire used for reviews on strategies and policies. The Chairman of the Working Group on Effects suggested that this revision could also cover the obligations that were not specifically covered by reporting obligations, but had been suggested under part D of the Committee's long-term work programme.

27. The Executive Body:

(a) Took note with great satisfaction of the Implementation Committee's report (EB.AIR/1998/4), expressing its appreciation to the Chairperson;

(b) Adopted decision 1998/6 concerning the application of decision 1997/2 to the Oslo Protocol (see annex II below);

(c) Confirmed that its intention was that paragraph 10 of the annex to its decision 1997/2 should not apply to the function set out in paragraph 3 (a) of that annex nor to the work foreseen under part III of the work programme annexed to the report of the Implementation Committee;

(d) Endorsed the Implementation Committee's long-term work programme (EB.AIR/1998/4, annex);



(e) Requested the secretariat to use pre-filled questionnaires when requesting information from Parties on strategies and policies for air pollution abatement in the future, in line with the suggestions made by the Implementation Committee (EB.AIR/1998/4, para. 26);

(f) Requested the Implementation Committee to consider how it could cover in its work:

- (i) Action taken by Signatories to protocols regarding the implementation of protocol provisions;
- (ii) Provisions in the political declarations that had been adopted in conjunction with some of the protocols,

and report back to the Executive Body at its seventeenth session;

(g) Also requested the Implementation Committee to present to it a proposal regarding the timing of the reviews on strategies and policies, expressing its preference for a flexible schedule that would take into account the target dates for obligations in the protocols;

(h) Re-elected to the Implementation Committee:

- Ms. Kirsten Hillman (Canada) as Chairperson;
- Mr. Bohuslav Brix (Czech Republic) and Ms. Nataly Karpova (Russian Federation); and

elected as a new member to the Committee:

- Mr. David van Hoogstraten (United States).

## **VI. PROGRESS IN SELECTED AREAS OF COOPERATION**

### **A. Cooperative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP)**

28. Mr. M. Williams (United Kingdom), Chairman of the EMEP Steering Body, introduced the report of its twenty-second session (EB.AIR/GE.1/1998/2). He reported on the progress of MSC-W in modelling acidifying pollutants and photochemical oxidants, of MSC-E in the basic scientific modelling work of HMs and POPs and of CCC in its efforts, *inter alia*, to further improve the quality assurance of monitoring data. The EMEP work on emission inventories was discussed in the context of strategies and policies (chapter III above). The Steering Body had noted with great satisfaction the progress of work of the

EMEP centres and their enthusiasm to implement the work programme and to seek further cooperation with other international and national scientific groups active in this field. He also stressed the need for continuous high-quality secretariat support for EMEP, including sufficient quantity of input.

29. Furthermore, Mr. Williams drew the attention of the Executive Body to the visions for the EMEP work by 2005/2010 and to the seventh-phase programme (1999-2001) prepared by the Steering Body (EB.AIR/GE.1/1998/3/Rev.1). During its next phase, EMEP would actively change its emphasis from a compartmentalized approach focusing on reports of the individual EMEP centres to a more integrated approach. It would address subjects and issues of importance to the Convention and the follow-up to the implementation of its protocols involving the work of two or all three EMEP centres. According to these principles the secretariat had already restructured the 1999 annual work plan for EMEP (EB.AIR/GE.1/1998/7/Add.1).

30. The secretariat demonstrated the EMEP website (<http://www.emep.int>) and circulated a proposal for its content and use prepared by MSC-W. EMEP had taken major steps in 1998 to develop the dissemination of its results and to better publicize its work. Cyprus requested to be included in all relevant EMEP maps in the future. The Executive Body supported this request.

31. The secretariat also informed the Executive Body about the recent steps taken to further strengthen cooperation between EMEP and the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. A note submitted by the OSPAR secretariat was circulated. In this context, it was also noted that cooperation between EMEP and HELCOM had become stronger.

32. In the ensuing discussion, several delegates noted with appreciation the excellent work done by EMEP in providing the scientific underpinning for the work programme of the Convention. A well functioning and forward-looking EMEP was regarded as necessary for the Convention. Therefore, it needed appropriate financial contributions from Parties. Monitoring the implementation of the Convention and its present protocols was seen as a continuing major task. Also, EMEP should actively provide the information needed for the possible revision of the protocols. High priority should be given to the further validation of emission data now that the emission database for the Convention at MSC-W was operational. Many delegates also requested EMEP to increase cooperation with other organizations (such as the European Community, the European Environment Agency, the Barcelona Convention) and, in particular, with north American scientists active in this field.

33. As a result of the discussion, the Executive Body:

(a) Took note of the report on the twenty-second session of the Steering Body and the results annexed to it (EB.AIR/GE.1/1998/2);

(b) Also took note of the emission data (EB.AIR/GE.1/1998/4 and the update circulated at the meeting) and reminded the Parties to report emissions annually in due time, as requested by the secretariat, fill in gaps in the data and carefully check data consistency;

(c) Encouraged Parties to apply the draft reporting guidelines (EB.AIR/GE.1/1997/5) on a trial basis, as feasible, in an effort to improve the quality of emission data, and provide further comments on these guidelines to the secretariat by the end of January 1999;

(d) Drew the attention of the Parties to their responsibility to maintain the necessary monitoring network and expand it to cover the whole EMEP area; encouraged the Parties to improve further their EMEP monitoring so as to improve the quality of measurements and to nominate, if they had not done so, their national quality assurance managers; and reminded them to report monitoring data in due time;

(e) Continued to encourage cooperation on emissions, atmospheric monitoring and modelling between EMEP and the regional marine commissions, HELCOM and OSPARCOM;

(f) Approved the posting of the EMEP results on the Internet as proposed by the Steering Body and as summarized in the informal note circulated at the meeting;

(g) Approved the seventh-phase programme of EMEP and decided to take it and the visions for the EMEP work by 2005/2010, presented by the Steering Body, into account when finalizing the 1999 work-plan for the implementation of the Convention.

B. Effects of major air pollutants on human health and the environment

34. Mr. K. Bull (United Kingdom), Chairman of the Working Group on Effects, introduced the report on the seventeenth session of the Working Group (EB.AIR/WG.1/1998/2) and reviewed the results achieved by the Working Group on Effects, the International Cooperative Programmes, the Mapping Programme and the Task Force on the Health Aspects of Air Pollution.

35. He noted, in particular:

(a) The important results achieved by the International Cooperative Programmes (ICPs), the Mapping Programme and the Task Force on the Health Aspects of Air Pollution (EB.AIR/WG.1/1998/4), which contributed substantively to the effective implementation of the Convention and to the establishment of a scientific basis for the preparation of the new multi-pollutant, multi-effect protocol on nitrogen oxides and related substances;

(b) The document prepared by the Bureau and approved by the Working Group on Effects on the further development of the effect-oriented activities (EB.AIR/WG.1/1998/3);

(c) The ongoing external review of the effect-oriented activities, the results of which might have an important impact on the further development and future orientation, objectives, structure and scope of the programmes' activities. The Working Group had agreed to reconsider the further development of the effect-oriented activities at its eighteenth session in 1999;

(d) The progress in the mapping of critical levels and loads and the approval of the updated maps of critical loads of sulphur and nutrient nitrogen by the Working Group on Effects, the effort of Parties and CCE to provide for transparency in critical loads data, and the use, by integrated assessment modellers, of the target-setting methods (accumulated exceedances and maximum depositions);

(e) The positive steps taken by ICP on the Assessment and Monitoring of Air Pollution Effects on Forests to streamline its activities, as reflected in its paper on the present status and proposed strategy for further developing ICP Forests until the year 2001 (EB.AIR/WG.1/1998/7), in its revised objectives and its proposed priorities for the years 1998-2001;

(f) The establishment of the Task Force on the Health Aspects of Air Pollution, the approval of its terms of reference, its short-term priorities and its plan of action for 1998/1999 and the important role of the European Centre for Environment and Health of the World Health Organization (WHO) in initiating its activities;

(g) The publication of a number of technical and/or summary reports on specific topics and programmes' activities, and the organization of several workshops;

(h) The preparation of the draft of the substantive report: Trends in Impacts of Long-range Transboundary Air Pollution, carried out with partial

financial assistance from the European Commission, and plans for its finalization and wider distribution;

(i) The workshops to be organized in 1999 and hosted by: (i) Switzerland on critical levels for ozone - level II (April 1999); (ii) Germany on heavy metals (October 1999); and (iii) Denmark on critical loads for acidity and eutrophication - criteria, concept and biological indicators (November 1999);

(j) The approval of the note on the financing of the effect-oriented activities (EB.AIR/WG.1/1998/15) by the Working Group, which had also confirmed that the estimated 1999 essential coordination costs of different elements of the effect-oriented activities as provided in document EB.AIR/WG.1/1997/14 were still valid, had reiterated the need to share the coordinating costs more equally and had invited its Bureau, in collaboration with the secretariat, to establish a transparent method for recording and presenting all kinds of voluntary contributions.

36. He also noted the continuing need to regularly update the objectives and the methods of work of the individual programmes, in view of the Executive Body's changing priorities.

37. He reiterated the crucial importance of the work carried out by the National Focal Points, and of the continuing support provided by the lead countries and coordinating centres.

38. Mr. M. Krzyzanowski, representative of the European Centre for Environment and Health of the World Health Organization (WHO/ECEH) and Chairman of the Task Force on the Health Aspects of Air Pollution, reviewed the Task Force's activities concerning the health impact of particulate matter from the long-range transport of air pollution. He noted that, at its second meeting in January 1999, the Task Force would (i) consider the first draft of the report on the topic, based on submissions provided by government experts; (ii) decide on the finalization of the report for submission to the Working Group on Effects in August 1999; and (iii) discuss the further development of its activities.

39. The Executive Body welcomed the important results achieved by the Working Group on Effects and its subsidiary bodies in effect-oriented activities, commended their high scientific quality and noted with appreciation their substantial contribution to the effective implementation of the Convention.

40. The Executive Body also noted the importance of the health-related work under the Convention and welcomed the timely contribution of the Task Force to the important topic of effects of particulate matter. The Executive Body considered that the Task Force's future priorities should be determined by the Convention's change in emphasis towards reviewing and possibly extending existing protocols. In particular the health effects of ozone and nitrogen oxides, which were included in the current negotiations on the multi-pollutant protocol and related to mobile sources, as well as heavy metals and POPs, whose protocols might enter into force fairly rapidly, would merit special attention.

41. Several delegations, while appreciating the voluntary contributions to the Trust Fund for the partial financing of the effect-oriented activities and stressing the importance of the substantial financial support provided over the years by host and/or lead countries for the activities of the programme coordinating centres, reiterated the need for a long-term mechanism for the mandatory financing of these activities.

42. The Executive Body:

(a) Took note of the report of the seventeenth session of the Working Group on Effects (EB.AIR/WG.1/1998/2);

(b) Took note of the significant results achieved by the International Cooperative Programmes and the Mapping Programme, and their substantive contribution to the effective implementation of the Convention and to the establishment of a scientific basis for the preparation of the new multi-pollutant, multi-effect protocol on nitrogen oxides and related substances, as presented in the 1998 joint report of the International Cooperative Programmes and the Mapping Programme (EB.AIR/WG.1/1998/4);

(c) Approved the note on the further development of the effect-oriented activities (EB.AIR/WG.1/1998/3), and endorsed the plan of the Working Group to reconsider it at its eighteenth session in 1999, taking into account any changes proposed by the Task Forces, the conclusions and recommendations of the ongoing external review, and the Executive Body's deliberations on its medium- and long-term activities (EB.AIR/WG.1/1998/2, para. 13 (c));

(d) Endorsed the updated European maps of critical loads of sulphur and nutrient nitrogen (EB.AIR/WG.1/1998/5);

(e) Noted the effort of ICP Forests to streamline its activities as outlined in its paper on the present status and proposed strategy for further

developing ICP Forests until the year 2001 (EB.AIR/WG.1/1998/7)  
(EB.AIR/WG.1/1998/2, para. 24 (a) and (d));

(f) Endorsed the plans for finalizing the substantive report on trends and invited the Bureau of the Working Group on Effects to consider preparing a concise version of the report for the general public (EB.AIR/WG.1/1998/2, paras. 43 and 44 (b) and (d)-(e));

(g) Welcomed Germany's proposal to host a workshop on heavy metals in late 1999 (EB.AIR/WG.1/1998/2, para. 46 (c));

(h) Welcomed the establishment of the Task Force on the Health Aspects of Air Pollution, noted its terms of reference, its short-term priorities and its plan of action for the forthcoming year, and expressed appreciation to the European Centre for Environment and Health of WHO for its important role in initiating these activities (EB.AIR/WG.1/1998/2, paras. 49-51);

(i) Noted document EB.AIR/WG.1/1998/15 on the financing of effect-oriented activities and invited the Bureau of the Working Group on Effects to continue to provide information on voluntary contributions (earmarked and non-earmarked) to the Trust Fund, on the understanding that direct financial contributions of lead countries or host countries to the coordinating centres should be acknowledged in an accompanying text. Other forms of contributions (e.g. hosting of task force meetings and workshops, support of the national focal centres, indirect contributions/support to Programme Coordinating Centres) should be recorded separately by the secretariat.

#### C. Technologies for emission control

43. Mr. L. Lindau (Sweden), Chairman of the Working Group on Abatement Techniques, introduced the report on its sixth session (EB.AIR/WG.6/1998/2). In particular, he reported on progress in the preparation of input for the negotiation of a protocol to reduce emissions of nitrogen oxides and related substances in the form of guiding documents on abatement techniques for VOCs, NOx and ammonia emissions from stationary and mobile sources, including agriculture, and draft annexes on limit values for VOCs and NOx prepared by the Task Forces on the Assessment of Abatement Options/Techniques for VOCs and NOx led by Germany, the expert group on ammonia led by the United Kingdom, and the secretariat assisted by another expert group on mobile sources.

44. He suggested organizing drafting groups with the participation of experts in parallel with the sessions of the Working Group on Strategies in

1999 and to limit the number of further meetings of the Task Forces and the expert groups so that the Working Group on Abatement Techniques could finalize its input.

45. The Executive Body:

(a) Took note of the report on the sixth session of the Working Group on Abatement Techniques (EB.AIR/WG.6/1998/2);

(b) Took note of the progress made by the Task Forces on the Assessment of Abatement Options/Techniques for VOCs and NOx and requested the Working Group on Strategies to finalize guiding documents on control techniques for emissions of VOCs and NOx from stationary sources and related draft annexes on limit values for emissions of VOCs and NOx from stationary sources;

(c) Took note of the progress made by the expert group in preparing a draft document on control options/techniques for preventing and abating emissions of reduced nitrogen and invited it to finalize its work, taking into account particularly best agricultural practices brought to its attention by the Parties;

(d) Invited Parties to actively participate in the awareness-raising campaign and organize target-oriented workshop(s) on best available control options and techniques for preventing and abating emissions of ammonia from agriculture, as well as other workshops addressing air pollution problems within selected sectors, based on the needs of countries in transition;

(e) Took note of the progress made by the expert group on control techniques for emissions of VOCs and NOx from selected mobile sources and invited it to finalize its work related to best available control techniques for emissions of VOCs and NOx and emission limit values for VOCs and NOx for new mobile sources;

(f) Invited Parties to consider a list of future potential activities in order to develop on that basis concrete projects, e.g. workshops, studies and expert groups, in consultation with the Bureau of the Working Group on Abatement Techniques and the secretariat; and

(g) Established a task force on by-products with Austria as lead country, to focus on residues containing heavy metals and persistent organic pollutants.



## **VII. ACTIVITIES OF ECE BODIES AND INTERNATIONAL ORGANIZATIONS RELEVANT TO THE CONVENTION**

46. The secretariat informed the Executive Body about ongoing activities of principal subsidiary bodies of ECE with relevance to its work-plan, in particular the Committee on Sustainable Energy, the ECE/FAO Temperate and Boreal Forest Resource Assessment 2000 and the Ministerial Conference on the Protection of Forests in Europe, held in June 1998, and the Inland Transport Committee and the amendments to relevant ECE Regulations, notably Nos 67, 83, 85 and 101 covering vehicles fuelled with LPG and CNG and related equipment.

47. The secretariat also provided information on the most relevant activities of other international organizations, particularly the International Civil Aviation Organization (ICAO) and the Arctic Monitoring and Assessment Programme (AMAP), and made information material from these and other organizations available.

48. The representative of the World Health Organization (WHO/ECEH) reported on its work related to the assessment of the health effects of air pollution in Europe as input to the 3rd Ministerial Conference on Health and Environment to be held in June 1999 in London (United Kingdom) and to the update of the WHO Air Quality Guidelines. The representatives of the World Meteorological Organization (WMO) and the International Atomic Energy Agency (IAEA) provided information and distributed notes on their activities in relation to the Convention.

49. The Executive Body recognized, in particular, the valuable cooperation between the Working Group on Effects and WHO/ECEH, as well as between EMEP and WMO, and expressed a wish to further strengthen these ties.

## **VIII. WORK-PLAN**

50. The secretariat introduced the draft work-plan for the implementation of the Convention (EB.AIR/1998/7 and Add.1), amended to reflect the discussion and decisions taken by the Executive Body earlier in the present session, and a tentative list of meetings for 1999.

51. The secretariat also presented a note on air pollution and transport (EB.AIR/1998/9), based on the Programme of Joint Action (ECE/RCTE/CONF./3/FINAL) adopted by the UN/ECE Regional Conference on Transport and the Environment in Vienna in 1997.

52. The Executive Body took note of the note on air pollution and transport (EB.AIR/1998/9), underlining the importance of measures in the transport sector for achieving the objectives of the Convention and requested its subsidiary bodies and the relevant Task Forces to take into account the appropriate programme elements set out in the note when developing future work plans and, where possible, already start the implementation of the activities in 1999.

53. The Executive Body adopted its work-plan for 1999 as contained in annex III below.

54. The Executive Body tentatively scheduled its seventeenth session from 6 to 10 December 1999. A provisional list of 1999 meetings is contained in annex IV below.

#### **IX. RESTRUCTURING OF THE EXECUTIVE BODY**

55. The Chairman of the Executive Body presented a proposal for the organization of work after the completion of ongoing negotiations (EB.AIR/1998/5), prepared by the Bureau at the request of the Executive Body at its fifteenth session (ECE/EB.AIR/53, para. 46). The Bureau had prepared the proposal on the basis of a note on future priorities (EB.AIR/1997/3) adopted by the Executive Body, taking into consideration a number of factors that were or would become important to the work under the Convention, including: the need for a stable basis for the scientific work supporting the policy work under the Convention; the political changes in the region, including the enlargement of the European Community; and the different air pollution policy approaches on both sides of the Atlantic.

56. Many delegations complimented the Executive Body's Bureau for its clear, concise and far-sighted proposal. Delegations agreed that the emphasis of work should shift to the implementation of protocols and a review of compliance with their obligations. Several delegations stressed that important gaps between the outcome of adopted policies and environmental objectives remained to be closed and that further political support was needed to extend the protocols. Human health impacts of air pollution, including those due to particulate matter, were highlighted as a specific area of concern. Several delegations emphasized the need to raise the visibility of the Convention within and beyond the UN/ECE region.

57. Some delegations also highlighted the importance of continuing the close cooperation between the Executive Body and the EC. This cooperation would strengthen the political support for the Convention in countries with economies in transition that aim at acceding to the EC. The delegation of the

Netherlands drew the attention to the fact that the EC was using much of the work developed under the Convention and expressed its wish for this cooperation to be further intensified, possibly leading to a full integration of the two activities. The delegation was of the view that the EC should, in the short and medium term, increase its voluntary contributions and provide, in the long run, some structural funding for the integrated assessment modelling work and the effect-oriented activities.

58. On the basis of a broad discussion of the proposal, the Executive Body:

(a) Approved the general approach used in the proposal, expressing its appreciation for the work of the Bureau;

(b) Requested its Bureau to revise the note in early 1999, taking into account the points raised in the discussion, and, in particular, to reflect in the note:

- The need for continued political support for the work and ways and means to achieve this;
- The potential for the work under the Convention to respond to new environmental challenges and/or to extend its scope beyond the UN/ECE region;
- The importance of the work of the Working Group on Strategies and Review in advancing abatement policies so as to fully protect human health and the environment and the resulting need for ensuring the continuity of the work of this body by having it meet at least annually;
- The importance of the Task Force on Integrated Assessment Modelling to ensure transparency of and accessibility to this core activity, which should be retained as the body responsible for this work, the need to ensure an institutional set-up for integrated assessment modelling work that would sustain the expert work presently gathered at IIASA;
- The need for flexible communication lines, in addition to the reporting lines shown in the proposal, to serve the objectives of the activities, especially by directly linking the Implementation Committee and the Task Force on Integrated Assessment Modelling to the Working Group on Strategies and Review;

- The need for a clear explanation of the work needed on abatement techniques, which would include: the work, through specialized task forces, to update technical annexes to the protocols; the work to enhance the transfer of technologies and know-how using the resources of other national and international institutions; the work on abatement options and their costs, which could be conducted in a specialized sub-group of the Task Force on Integrated Assessment Modelling that would also explore new measures to reduce emissions, including structural measures;

(c) Also requested its Bureau to draft the mandates for the bodies working in the new structure, including a clear indication of the communication lines and present a proposal to it at its seventeenth session.

#### **X. FINANCIAL ISSUES**

59. The secretariat introduced document EB.AIR/1998/8 on the financial requirements for the implementation of EMEP. In particular, the secretariat drew the attention of the Executive Body to the status of the Trust Fund. The Steering Body and its Bureau had revised the EMEP budgeting principle to follow the new structure of the 1999 work programme.

60. In the ensuing discussion, several delegations noted the high quality of the EMEP work and the importance of continuing to guarantee international financing for this work.

61. The Executive Body:

(a) Adopted the total 1999 budget for EMEP and the use of resources (see annex V and reservations in paragraph 62 below);

(b) Decided that the mandatory 1999 contributions to EMEP would be based on the 1999 United Nations scale of assessments (see annex VI and reservations in paragraph 62 below);

(c) Decided provisionally that the level of the 2000 budget for EMEP would be the same as in 1999 and requested the Steering Body, with the assistance of its Bureau, to consider further the details of the centres' budgets for 2000 together with the work-plan for approval by the Executive Body at its seventeenth session. The mandatory contributions for 2000 would be based on the United Nations scale of assessments for 2000. The same reservations as for 1999 mentioned above under point (b) and detailed in paragraph 62 below were noted;

(d) Would approve any possible change in the mandatory contributions only after a thorough analysis of the total budget by the EMEP Steering Body and requested it to consider the feasibility of fixing the mandatory contributions for a three-year period, starting from 2001, and report back to the Executive Body at its seventeenth session;

(e) Urged Parties to pay their arrears to the Trust Fund and recommended that Parties should pay their contributions in cash to the Trust Fund as early as possible during the fiscal year;

(f) Requested the Steering Body, with the assistance of its Bureau and the secretariat and in consultation with the United Nations auditors, to continue its work to develop the budgeting and auditing procedures and follow-up mechanisms as decided at the Steering Body's twenty-first session.

62. Germany reserved its position on its 1999 and 2000 mandatory contributions calculated on the basis of United Nations scales of assessments for these years (see annex VI). Furthermore, France, Italy and the European Community reserved their positions on the 1999 and 2000 budgets.

63. The Russian Federation drew the attention of the Executive Body to the fact that the 10% increase in the EMEP budget for 1999 compared to 1998 was justified by the need for activities related to the new Protocols on Heavy Metals and Persistent Organic Pollutants. However, the distribution of the financial resources for different purposes in 1999 was not in agreement with this reasoning. The funds for these activities rose only 6%.

64. The Chairman of the Working Group on Effects, referring to the current financial situation of the effect-oriented activities, noted with appreciation that there had been some increase in voluntary contributions over the past two years. Both earmarked and non-earmarked contributions to the Trust Fund were deployed to fund additional agreed activities at the programme centres. He also noted that while non-earmarked contributions could be allocated to areas specified by the Working Group on Effects and its Bureau, a number of Parties provided contributions earmarked only for specific programmes and/or activities. To ensure the highest efficiency in the use of these financial resources, the Chairman invited the Parties to make their contributions without earmarking them, if possible, and, if they had to earmark them, to do so with due regard to the work-plan for the Convention and/or in consultation with the Bureau of the Working Group on Effects.

65. At the invitation of the Chairman of the Executive Body, the following Parties pledged earmarked or non-earmarked voluntary contributions to the effect-oriented activities in 1999 or indicated their willingness to do so in

the near future: Canada, Denmark, Germany, Hungary, Netherlands, Norway, Switzerland (also for 1998), the United States of America, and the European Community.

66. The Executive Body:

(a) Again stressed the need to establish a stable long-term financial mechanism for the core activities under the Convention, including, besides EMEP, the effect-oriented activities and integrated assessment modelling, and urged delegations to continue their efforts to gather support from their Governments for such a mechanism;

(b) Welcomed the voluntary contributions to the effect-oriented activities in 1999, as pledged by Parties at the present session, and invited other Parties to explore possibilities for making pledges, using the indicative scale of contributions as annexed to the report of the twenty-second session of the Working Group on Strategies (EB.AIR/WG.5/46, annex I).

**XI. ELECTION OF OFFICERS**

67. Mr. J. Thompson (Norway) was re-elected Chairman; Messrs. J. Beale (United States), L. Björkbom (Sweden), K. Bull (United Kingdom), R. Görden (Germany), L. Lindau (Sweden), M. Williams (United Kingdom) and J. Zurek (Poland) were re-elected Vice-Chairmen. The Executive Body decided to include also the Chairperson of the Implementation Committee in its Bureau and, accordingly, elected Ms. K. Hillman Vice-Chairperson. The Executive Body also re-elected Mr. L. Björkbom as Chairman of the Working Group on Strategies, and Mr. L. Lindau as Chairman of the Working Group on Abatement Techniques.

**XII. ADOPTION OF THE REPORT**

68. The Executive Body adopted for general distribution the report of its sixteenth session on 11 December 1998.

Annex I

**DECISION 1998/5 ON THE REVIEW FORESEEN  
UNDER ARTICLE 8 OF THE 1994 OSLO PROTOCOL**

The Executive Body,

Referring to the review requirement contained in article 8 of the 1994 Oslo Protocol,

Recalling its 1996 decision that the first review of the 1994 Oslo Protocol should be completed within six months after the first session of the Executive Body following the entry into force of the Protocol (ECE/EB.AIR/49, para. 74),

Noting that the 1994 Oslo Protocol entered into force on 5 August 1998,

Recognizing that many elements of the review required by article 8 of the 1994 Oslo Protocol have been considered or will be considered during the negotiations for the multi-pollutant, multi-effect protocol,

1. Requests the Working Group on Strategies, with the assistance of the Implementation Committee, to confirm by June 1999 that it has reviewed for the purposes of article 8 of the 1994 Oslo Protocol, in the context of the negotiations of the multi-pollutant, multi-effect protocol and in accordance with paragraph 2 (b) of article 8:

- (a) The information supplied by the Parties and EMEP;
- (b) The data on the effects of depositions of sulphur and other acidifying compounds; and
- (c) The obligations set out in the Protocol, including
  - (i) The obligations in relation to calculated and internationally optimized allocations of emission reductions referred to in article 5, paragraph 5; and
  - (ii) The adequacy of the obligations and the progress made towards achieving the objectives of the Protocol.

2. Requests its bureau to review the outcome of this work and report to it at its seventeenth session.

Annex II

**DECISION 1998/6 CONCERNING THE APPLICATION  
OF THE COMPLIANCE PROCEDURE TO THE OSLO PROTOCOL**

The Parties to the 1994 Protocol on Further Reduction of Sulphur Emissions meeting within the Executive Body decide that the structure, functions and procedures set out in the annex to decision 1997/2 shall apply to the review of compliance with article 7, paragraph 3, of that Protocol, in place of the regime adopted at the special session of the Executive Body in Oslo on 14 June 1994.



Annex III

**1999 WORK-PLAN FOR THE IMPLEMENTATION OF THE CONVENTION**

**1. STRATEGIES AND POLICIES**

**1.1 REVIEW OF STRATEGIES AND POLICIES**

Objective: To give a comprehensive overview of national and international strategies and policies, including legislation in force and emission levels, in order to evaluate the status of implementation of the Convention and its protocols (major review). To review recent developments in national abatement strategies and policies of Parties, and Signatories, giving special attention to the review of the status of implementation of the protocols (update). The reviews will be carried out every two years alternating between a major review and an update.

Method of work: The secretariat will prepare a draft review (major review or update) based on the information provided by Parties, and by Signatories, and from other official sources, to be reviewed by the Implementation Committee and then submitted for consideration by the Executive Body. In the interest of achieving uniformity, national presentations of information on strategies and policies should conform to the outline approved by the Executive Body (EB.AIR/1997/2, as amended) and to a questionnaire to be prepared by the secretariat with the assistance of the Implementation Committee. The questionnaire will use as a basis the outline adopted by the Executive Body and the obligations of Parties set out in the protocols to the Convention. Reporting on current and projected emission data will be detailed in 2.3.

Time schedule: The major review and update will be prepared alternatively every two years. A major review was prepared in 1998 and will be published after additions and corrections have been incorporated; the next update will be prepared in 2000.

**1.2 REVIEW OF COMPLIANCE**

Objective: To review compliance by the Parties with their obligations under the protocols to the Convention.

Method of work: The Implementation Committee will prepare recommendations for revising the questionnaire used for reporting strategies and policies, with a view to developing and highlighting questions that focus on the reporting obligations under the protocols. It will review compliance of Parties with the relevant protocols in the light of the information contained in the 1998 Major Review. The Committee will seek guidance from appropriate subsidiary bodies

and experts (e.g. EMEP, Task Force on Emission Inventories, Working Group on Abatement Techniques) as to: (i) whether the emission data submitted with respect to sulphur, NO<sub>x</sub> and VOCs, and the basis for the calculation of that data, are satisfactory for the purposes of assessing compliance; (ii) what information is required to assess compliance with technology-related obligations in the NO<sub>x</sub> and VOC Protocols. It will also start consideration of compliance issues related to obligations in the protocols that are not subject to specific reporting requirements, such as provisions dealing with research and monitoring.

Time schedule:

- (a) Third meeting of the Implementation Committee in Ottawa (Canada), 1-3 March 1999;
- (b) Fourth meeting of the Implementation Committee in September 1999 in Berlin (Germany);
- (c) Report to the Executive Body at its seventeenth session.

**1.3 PREPARATION OF A PROTOCOL TO REDUCE EMISSIONS OF NITROGEN OXIDES AND RELATED SUBSTANCES**

Objective: To prepare a protocol using a multi-pollutant approach and addressing photochemical pollution, acidification and eutrophication.

Method of work: The Working Group on Strategies will continue negotiations on a draft protocol using as a basis the information it receives from its Task Forces and from other subsidiary bodies, as well as any proposals submitted by Parties. In its efforts it will also take into account cost-effective measures to reduce sulphur emissions.

Time schedule:

- (a) Twenty-eighth session of the Working Group on Strategies, Geneva, 25-29 January 1999;
- (b) Twenty-ninth session of the Working Group on Strategies, Geneva, 22-26 March 1999;
- (c) Thirtieth session of the Working Group on Strategies, Geneva, 31 May - 4 June 1999;

(d) Thirty-first session of the Working Group on Strategies, 30 August - 3 September 1999;

(e) Submission of a draft protocol to the Executive Body at its seventeenth session.

#### **1.4 ECONOMIC AND FINANCIAL ISSUES**

##### **1.4.1 Integrated assessment modelling**

Objective: To analyse scenarios on cost-effective reduction of acidification, eutrophication, photochemical oxidant pollution and related phenomena, including: (i) abatement measures to reduce emissions of SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub> and VOCs; (ii) the abatement potential in the energy, transport and agricultural sectors, also considering structural measures; and (iii) further analysis of model robustness and uncertainties.

Method of work: The two international institutes, the International Institute for Applied Systems Analysis (IIASA) and the Stockholm Environment Institute (SEI), and national modelling groups will continue their work on the analysis of effect-oriented and least-cost abatement strategies under the guidance of the Task Force on Integrated Assessment Modelling, led by the Netherlands. The Task Force will cooperate closely with the Task Force on Economic Aspects of Abatement Strategies, the Task Force on Emission Inventories and the Working Group on Abatement Techniques. Where appropriate, modelling groups will incorporate into their models, data made available by EMEP, the Working Group on Effects and other subsidiary bodies of the Executive Body. Based on cooperation with the World Health Organization and the European Environment Agency's Topic Centre on Air Quality, the modelling work will also cover the exposure of urban and rural populations to excess ozone and, if possible, the potential health risks of the other pollutants considered. Early in 1999, the Task Force will prepare a long-term work programme, including the further development of cost functions, to cover the period after the adoption of the multi-effect, multi-pollutant protocol.

##### Time schedule:

(a) Twenty-third meeting of the Task Force, 10-12 March 1999 in Les Diablerets (Switzerland);

(b) Twenty-fourth meeting of the Task Force, 8-9 June 1999 in Bilthoven (Netherlands) (tentatively);

- (c) Further meetings if requested by the Working Group on Strategies;
- (d) Progress reports to the Working Group on Strategies in 1999.

#### 1.4.2 Economic aspects of abatement strategies

Objective: To support the Working Group on Strategies in the development of existing and new agreements; to make the implementation of agreements more cost-effective; and to promote an exchange of experience between national experts concerning, in particular, the application of economic instruments.

Method of work: The Task Force on Economic Aspects of Abatement Strategies, led by the United Kingdom, will, in close cooperation with the Working Group on Effects, the Task Force on Integrated Assessment Modelling and other relevant subsidiary bodies, as a first priority, perform work on the economic evaluation of damage caused by different air pollutants, in particular for the purpose of advising the Working Group on Strategies on the best assessment of damage avoidance associated with emission reduction scenarios. It will comment, as appropriate, on the derivation and interpretation of cost functions. Early in 1999, the Task Force will prepare a long-term work programme, to cover the period after the adoption of the multi-effect, multi-pollutant protocol. It will further investigate the following items:

(a) Economic evaluation of damage: monetary valuation of benefits and secondary benefits of abating acidifying, ozone-forming and eutrophying substances, through the development of dose-response functions, stock-at-risk data and economic unit values for health effects; buildings/materials including cultural and historic monuments; crops; ecosystem effects (forests, freshwaters) and visibility; similar work on heavy metals and persistent organic pollutants will be pursued, as relevant for those substances;

(b) National economic instruments: evaluation of national experiences in the application of taxes, charges, and emission trading schemes, taking into consideration the information provided in the reviews on strategies and policies, for the preparation of a guidance document, possibly a protocol annex, on economic instruments; international harmonization of economic instruments;

(c) International instruments (joint implementation, burden sharing).

Time schedule:

- (a) Fifteenth meeting of the Task Force, 10-11 June 1999 in Bilthoven (Netherlands), (tentatively);
- (b) Further meetings if requested by the Working Group on Strategies;
- (c) Progress reports to the Working Group on Strategies in 1999.

**2. COOPERATIVE PROGRAMME FOR MONITORING AND EVALUATION OF THE LONG-RANGE TRANSMISSION OF AIR POLLUTANTS IN EUROPE (EMEP)**

The work-plan of EMEP for 1999 is based on the note on the visions for the EMEP work by 2005/2010, which also includes the draft seventh-phase programme (EB.AIR/GE.1/1998/3), and on the draft budget for 1999 (EB.AIR/GE.1/1998/2, annex IV, table 1). The implementation of the work programme of the Meteorological Synthesizing Centre-West requires extrabudgetary resources, however. The overall objective of the EMEP programme is to provide ECE Governments and the Executive Body with regular information on past and predicted emissions and concentrations and/or depositions of air pollutants in the EMEP region and, in particular, on the quantity and significance of their long-range transport. The programme elements are implemented by the Parties together with the Chemical Coordinating Centre (CCC) and the Meteorological Synthesizing Centres (MSC-E and MSC-W) in cooperation with the World Meteorological Organization (WMO). The Bureau of the EMEP Steering Body assesses and directs the EMEP work between the Steering Body sessions, and submits the results of its work to the Steering Body and, subsequently, to the Executive Body. The Executive Body annually considers the priority of the EMEP activities.

**2.1 DEPOSITION OF ACIDIFYING AND EUTROPHYING COMPOUNDS**

Objective: Continue to provide monitoring results and modelling data on transboundary fluxes, concentrations and depositions of sulphur and nitrogen compounds over Europe. Analyse the past, present and future situation in Europe with regard to the exceedance of critical loads of deposition of acidifying and eutrophying compounds, in collaboration with the Coordinating Center for Effects (CCE). Evaluate/participate in the evaluation of the effects of specific control measures on acid deposition, and strengthen the ability of EMEP to give guidance on the most cost-effective way of achieving environmental goals.

Method of work and time schedule:

(a) The Parties will report their basic EMEP programme monitoring results to CCC twice a year: by 1 December data from January to June, and by 1 June data from July to December. CCC will develop measurements (in 1999, prepare in particular the switch to weekly sampling of precipitation) and carry out quality assurance, in cooperation with the national quality assurance managers, and store data in the monitoring database. The exchange of monitoring information and experiences with the WMO/Global Atmospheric Watch Programme, the North American experts and other European research groups will be continued and increased;

(b) CCC and MSC-W will together study further the EMEP monitoring stations' representativeness and the monitoring network design in relation to the evolving needs of the Convention;

(c) MSC-W will calculate the annual transboundary transport of sulphur and nitrogen compounds. On request, it will supply specific additional information for the joint implementation of the 1994 Sulphur Protocol. It will provide scientific modelling input to the International Institute for Applied Systems Analysis (IIASA) for its work for the Convention and evaluate the effects of specific control measures on acid deposition, and strengthen the ability of EMEP to give long-term guidance on the most cost-effective way of achieving environmental goals;

(d) MSC-W will continue the evaluation and analysis of the source-receptor matrices produced by the Eulerian model and compare them with the matrices produced by the Lagrangian model. MSC-W aims to have the Eulerian model operational for the calculation of the country-to-country budgets in 1999;

(e) CCC and MSC-W will together carry out trend analysis of concentrations and depositions of acidifying pollutants, evaluate the results and the reporting. Specific attention will be given to the reporting to the Baltic Marine Environment Protection Commission (HELCOM) and the Oslo-Paris Commission for the Protection of the Marine Environment of the North-East Atlantic (OSPARCOM), as agreed between EMEP and these organizations. Both centres will put their detailed results on the EMEP Internet website once the Steering Body has derestricted them;

(f) EMEP centres, in cooperation with WMO, will organize a second workshop on data analysis and interpretation in Dubrovnik, Croatia, from 4 to 8 October 1999.

Expected output: Data reports on 1997 monitoring and quality assurance activities, source-allocated information for 1997, past, present and future depositions and exceedances of critical loads (SO<sub>4</sub>, NO<sub>3</sub> and NH<sub>4</sub> and total acid deposition), strengthening of the ability of EMEP to give guidance on the most cost-effective way of attaining environmental goals. 1997 monitoring and modelling data available on the EMEP website by the end of October 1999. Recommendations on the monitoring network design.

## **2.2 PHOTO-OXIDANTS**

Objective: Continue to provide monitoring results on ozone and volatile organic compounds (VOCs). Develop and verify the EMEP Eulerian photo-oxidant model. Evaluate short- and long-term exposures to photochemical oxidants. Incorporate acidifying and eutrophying pollutants and improve the gas and aqueous phase chemistry to proceed towards a combined oxidant/acidification model. Study global models to assess the future trends of tropospheric baseline concentrations of ozone and the influence of source regions outside Europe on European ozone levels and, in collaboration with CCE, study the exceedances of critical levels.

### Method of work and time schedule:

(a) The Parties will report their ozone and VOC monitoring results to CCC as described above for acidifying pollutants. CCC will carry out quality assurance and store data. It will continue improving the collection of ozone measurement results for the EMEP monitoring database from existing national and other international ozone networks;

(b) MSC-W will calculate the short-term exposures to photochemical oxidants for vegetation periods, and the potential exposure of humans. It will also compare the Lagrangian and the multi-layer ozone models and develop further a coupled acid rain and photochemical model;

(c) CCC and MSC-W will together report on results. Both centres will put the detailed data on the EMEP Internet website. Photo-oxidants will be included in the programme of the workshop on data analysis and interpretation;

(d) MSC-W, in cooperation with Oslo University, will study global models to assess the future trends in troposphere baseline concentrations of ozone and the influence of source regions outside Europe on European ozone levels and exceedances of critical levels;

(e) MSC-W will evaluate the effects of specific control measures on photo-oxidants in cooperation with IIASA, and strengthen the ability of EMEP

to give long-term guidance on the most cost-effective way of attaining environmental goals.

Expected output: Data reports on 1997 monitoring and quality assurance activities, strengthening of the ability of EMEP to give guidance on the most cost-effective way of attaining environmental goals and evaluation of the effects of the specific control measures on photo-oxidants. 1997 monitoring and modelling data available on the EMEP website by the end of October 1999.

### **2.3 HEAVY METALS (HMs)**

Objective: Provide more monitoring and modelling data on transboundary fluxes, concentrations and depositions of cadmium, lead and mercury over Europe. Develop the modelling bases of heavy metals to make them operational and verify the models. Analyse the past, present and future long-range transport of heavy metals in Europe. Develop the models in parallel with the work on effects and critical loads, as necessary.

Method of work and time schedule:

(a) In 1999 the Parties will start their preparations for including trace metals - first priority Hg, Cd, Pb and second priority Cu, Zn, As, Cr, Ni - in the EMEP measurement programme. About ten monitoring sites would be sufficient to support modelling purposes in Europe: in northern and southern Scandinavia, western Russia/Belarus, southern Finland/Baltic, Baltic/Poland, central Europe/Czech Republic/Slovakia/Hungary, Balkan, Ireland/United Kingdom, Portugal/Spain, southern France/Italy, and Germany/Netherlands. CCC will organize a technical workshop in spring 1999 to exchange experience and consider the details of HM sampling and analytical procedures, quality assurance and laboratory comparisons. CCC will continue to collect HM measurement results for the EMEP monitoring database from existing national and other international networks. CCC will also study the possibilities for using under the Convention the results of the available large-scale moss surveys;

(b) MSC-E will continue to develop lead and cadmium transport models and validate models based on all available monitoring data from different networks. For the mercury model, the atmospheric physico-chemical scheme and exchange process of mercury between surface and atmosphere will be further improved so as to have an operational model available in 1999. To facilitate the preliminary modelling work of HMs, MSC-E will, also in 1999, in cooperation with the Task Force on Emission Inventories, evaluate the quality of the HM emission estimates made by experts;



(c) CCC and MSC-E will together report on results. Specific attention will be given to the reporting to the marine commissions HELCOM and OSPARCOM, as agreed. Both centres will put their detailed data on the EMEP Internet website;

(d) MSC-E in cooperation with WMO will organize a workshop on modelling of atmospheric transport and deposition of mercury (Geneva, 1-3 December 1999).

Expected output: Progress reports on monitoring and quality assurance activities, and model development and validation. Preliminary calculated source-receptor matrices for Cd, Pb and Hg. Progress reports available on the EMEP website by the end of October 1999. Recommendations by the workshop on directions and priorities for future work, for further consideration by the Steering Body.

#### **2.4 PERSISTENT ORGANIC POLLUTANTS (POPs)**

Objective: Increase the provision of monitoring and modelling data on transboundary fluxes, concentrations and depositions of selected POPs over Europe. Develop the modelling bases of selected POPs and verify the functioning of the models. Study further the physico-chemical processes of POPs in different environmental compartments, taking also into account their global transport.

##### Method of work and time schedule:

(a) CCC will continue to collect the monitoring data on POPs available from other international programmes. It is proposed that as a first step PAH, PCB, HCB, chlordanes, lindane,  $\alpha$ -HCH, DDT/DDE should be included in the EMEP measurement programme at five sampling sites: Scandinavia/Baltic, northern Atlantic region, continental Europe, Mediterranean region, south Atlantic region. To this end, financial support to laboratories able and willing to analyse samples from one or more countries may be necessary, or one central laboratory should be found. Due to the time-consuming and expensive chemical analysis, and the low concentrations of some POPs, both the sampling techniques and the analysis must be taken into account when selecting further compounds later. CCC will organize a laboratory comparison and include POP standard operating procedures and quality control routines in the manual for sampling and chemical analysis;

(b) MSC-E will continue to develop and validate POP transport models and, in particular for individual PCBs, B(a)P and dioxins. As with HMs, it will, also in 1999, in cooperation with the Task Force on Emission

Inventories, evaluate the quality of the POP emission estimates made by experts to facilitate the preliminary modelling work;

(c) An EMEP/WMO workshop will be organized on modelling of atmospheric transport and deposition of persistent organic pollutants (Geneva, 1-3 December 1999).

Expected output: Progress reports on monitoring and quality assurance activities, and model development. Progress reports available on the EMEP website by the end of October 1999. Recommendations by the workshop on directions and priorities for future work for further consideration by the Steering Body.

## **2.5 FINE PARTICULATES**

Objective: Provide the Task Force on Health and the Executive Body with further information on the transboundary transport of fine particulates.

Method of work and time schedule:

(a) The EMEP centres will provide background information to the Task Force on the Health Aspects of Air Pollution on available monitoring and modelling results of the long-transport and the atmospheric concentrations of primary and secondary particles;

(b) CCC will, in cooperation with the other EMEP centres, evaluate the quality of the available expert emission estimates of primary particles. Based on these analyses, MSC-W will evaluate the possibility of including primary aerosols in the Eulerian acid deposition model;

(c) MSC-W will develop further the Eulerian acid deposition model in order to include secondary aerosols resulting from the atmospheric oxidation of volatile organic compounds;

(d) The Task Force on Emission Inventories will consider work needed for emission inventories (see 2.6 below);

(e) Switzerland, in cooperation with the EMEP centres and WMO, will organize a workshop to consider further the state of the art in particulate measurements and modelling and to prepare recommendations on future work (22-25 November 1999 in Davos).

Expected output: Background information on particulate matter to the Task Force on Health. Progress report on modelling activities. Recommendations by the workshop on directions and priorities of the future work.

## 2.6 EMISSIONS

Objective: The objectives of the EMEP emission inventory activities are to assist the Parties to fulfil their reporting tasks, store the reported emission data and control their quality; report on the available data; evaluate emission inventory requirements under the Convention to ensure an adequate flow of reliable information on emissions and emission projections; provide information to monitor compliance with international emission control agreements, and, as far as possible, cooperate and harmonize emission information with other relevant international work.

### Method of work and time schedule:

(a) All Parties will submit their 1998 emission data from the territories covered by EMEP (national totals and source categories) for SO<sub>x</sub>, NO<sub>x</sub>, NMVOCs, CH<sub>4</sub>, NH<sub>3</sub>, CO, HMs (priority metals: Cd, Hg and Pb) and selected POPs and possible updates of previous figures to the secretariat, as requested by 31 December 1999, in accordance with the guidance given by the Steering Body and the Executive Body and making use of the Atmospheric Emission Inventory Guidebook. For CO<sub>2</sub>, the same data as reported under the United Nations Framework Convention on Climate Change should be submitted;

(b) Based on the official emission data received by the secretariat, MSC-W will update the emission database for the Convention. The first quality control of the national totals will be performed within three months after receipt of the data, which is also the deadline for Parties to complete data (if missing) with respect to source classification. MSC-W will report on emissions and the status of verification to the Bureau in spring 1999 and to the Steering Body at its twenty-third session. The latest data will be made available to the Executive Body at its seventeenth session for consideration in the context of the strategies and policies. MSC-W will develop further methods and a scientific basis for compliance monitoring;

(c) MSC-W will also develop further methods for verifying emission data and controlling their quality, in cooperation with the European Environment Agency's Topic Centre on Air Emissions and in consultation with the secretariat, the other EMEP centres and the Task Force on Emission Inventories;

(d) MSC-W will prepare a joint report with the European Environment Agency (EEA) on the quality assessment of the geographical distribution of sub-sectoral emission data; possibilities for harmonizing emission inventories and data collection methods should also be explored;

(e) MSC-W and the secretariat, in cooperation with the Chairman of the Task Force on Emission Inventories and in consultation with the other EMEP centres, will finalize the emission reporting guidelines for consideration at the twenty-third session of the Steering Body and for possible approval by the Executive Body at its seventeenth session;

(f) The Task Force on Emission Inventories, which provides a technical forum and expert network to discuss, exchange information and harmonize emission data, including emission factors, methodologies, projection models and guidelines, will evaluate the emission factors and methodologies and update the Guidebook accordingly. In particular, the Task Force will consider the extension of the Guidebook to cover particulate matter and give more detailed information on VOC species. The eighth meeting of the Task Force will be held in Denmark in May 1999.

Expected output: Emission data reports (data per country/component/sub-sector/year and geographical distribution every five years; emission trends) showing officially reported data and available expert estimates to the Steering Body and the Executive Body. Data also available on the EMEP website. Special analyses of compliance or possible non-compliance, as necessary, using measurements, inverse modelling and independent emission estimates. Report with EEA on the quality assessment of the geographical distribution of sub-sectoral emission data.

### **3. EFFECTS OF MAJOR AIR POLLUTANTS ON HUMAN HEALTH AND THE ENVIRONMENT**

#### **3.1 REVIEW OF EFFECTS OF MAJOR AIR POLLUTANTS**

##### **3.1.1 Annual reports on progress in effects-oriented activities**

Objective: To review annually the activities of the International Cooperative Programmes and the Mapping Programme and the results achieved during the reporting period.

Method of work: The secretariat will prepare a draft annual summary report based on the information provided by the lead countries and the programme coordinating centres, including a list of future activities to be addressed by all programmes in response to the priority needs of the Executive Body, for consideration by the Working Group on Effects.

Time schedule:

(a) Submission of relevant information on the International Cooperative Programmes, the Mapping Programme and the Task Force on the Health Aspects of Air Pollution to the secretariat (31 May 1999);

(b) Draft 1999 joint report of the International Cooperative Programmes and the Mapping Programme to the Working Group on Effects in 1999.

3.1.2 Major review of effects of air pollutants

Objective: To review knowledge on the effects of selected air pollutants based on the results from the International Cooperative Programmes and the Mapping Programme as well as other relevant data and knowledge. The substantive report on trends in impacts of long-range transboundary air pollution, drafted in 1998, will be finalized and published in 1999.

Method of work: The Working Group on Effects at its seventeenth session approved the summary of the substantive report, agreed on the organization of the work for finalizing it and requested its Chairman and the Institute of Terrestrial Ecology (United Kingdom) to continue to coordinate the work.

Time schedule:

(a) Submission of amendments to the substantive reports by the International Cooperative Programmes and the Mapping Programme to the Bureau of the Working Group in January 1999;

(b) Finalization of the substantive report and preparation of a draft outline of its condensed version by the Bureau in February 1999;

(c) Submission of the substantive report and the draft outline of its short version to the Working Group on Effects in 1999.

**3.2 INTERNATIONAL COOPERATIVE PROGRAMME ON EFFECTS OF AIR POLLUTION ON MATERIALS, INCLUDING HISTORIC AND CULTURAL MONUMENTS**

Objective: To quantify the multi-pollutant effects in the changing pollution situation; to further analyse the trends in corrosion effects; to further develop dose/response functions quantifying the corrosion effects of nitrogen oxides and ozone on their own, and in combination with sulphur dioxide, under different environmental conditions, inter alia, as a basis for the economic evaluation of air pollution damage.

Method of work: A Programme Task Force led by Sweden, in cooperation with the Programme's main research centre (Swedish Corrosion Institute, Stockholm), is responsible for the detailed planning and coordination of the Programme. The evaluation of effects is based on the results of a materials' exposure programme covering, to the extent possible, a wide geographical range and making full use of existing national programmes.

Time schedule:

(a) Preparation and publication of proceedings of the Workshop on quantification of effects of air pollutants on materials (May 1998, Berlin, Germany), spring 1999;

(b) A progress report on the development of the new exposure programme on multi-pollutant effects and trends to the Working Group on Effects in 1999;

(c) A progress report on plans for advancing activities on modelling and mapping areas with an increased corrosion risk, including preparation of a workshop (in cooperation with the Task Force on Mapping), to the Working Group on Effects in 1999;

(d) A progress report on the creation of a database of environmental data for the first year of operation of the new exposure programme with the new network of test sites to the Working Group on Effects in 1999;

(e) Fifteenth meeting of the Programme Task Force, 9-11 June 1999, Toronto, Canada.

### **3.3 INTERNATIONAL COOPERATIVE PROGRAMME ON ASSESSMENT AND MONITORING OF ACIDIFICATION OF RIVERS AND LAKES**

Objective: To identify long-term trends and variations in the chemistry and biota of aquatic ecosystems owing to atmospheric pollutants, in order to provide, inter alia, information on the degree and geographical extent of acidification of surface waters; to yield more complete information on dose/response relationships under different geographical conditions and to correlate changes in depositions with the physical, chemical and biological status of lakes and streams.

Method of work: A Programme Task Force led by Norway, which also provides the Programme's centre (Norwegian Institute for Water Research, Oslo), is responsible for the detailed planning and coordination of the Programme. It will base its work on existing programmes in participating countries and cooperate with designated national laboratories and institutes.

Time schedule:

(a) Drafting of the twelve-year report of ICP Waters; progress report to the Working Group on Effects in 1999;

(b) Presentation of the results of the 1998 biological and chemical intercalibrations and critical assessment of trends in intercalibration results to the Working Group in 1999;

(c) A progress report on the further development of the regional lake and river database to the Working Group on Effects in 1999;

(d) A report on the results of the Workshop on biological monitoring methods (in cooperation with ICP Integrated Monitoring) to the Working Group in 1999;

(e) Fifteenth meeting of the Programme Task Force, 6-8 October 1999 (tentatively), Verbania Pallanza (Italy).

**3.4 INTERNATIONAL COOPERATIVE PROGRAMME ON ASSESSMENT AND MONITORING OF AIR POLLUTION EFFECTS ON FORESTS**

Objective: To collect comprehensive and comparable data on changes in forests under actual environmental conditions (in particular air pollution, including acidifying deposition, as well as other stresses) and to determine cause-effect relationships.

Method of work: A Programme Task Force led by Germany, in cooperation with the Programme's main coordinating centre (Federal Research Centre for Forestry and Forest Products, Hamburg, Germany), is responsible for the detailed planning and coordination of the Programme. Intensive monitoring of forest ecosystems on the permanent sample plots (level II) is expected to provide more detailed information on the effects of air pollution on forests. The results of extensive large-scale monitoring (level I) carried out in cooperation with the European Commission will be evaluated in an integrated way, inter alia by developing statistical analyses to relate air pollution to level I parameters and by bringing together all necessary information.

Time schedule:

(a) A progress report on the further evaluation of the intensive monitoring data from permanent sample plots (level II) to the Working Group on Effects in 1999;

(b) A progress report on the integrated evaluations of the large-scale monitoring data from the systematic transnational grid (level I) to the Working Group in 1999;

(c) A summary report on the 1998 monitoring results (in particular on level II) to the Working Group in 1999;

(d) A summary of the latest scientific knowledge on the impact of air pollution on forests to the Working Group on Effects in 1999;

(e) A progress report on the further development of level III monitoring activities (special forest ecosystem analysis in cooperation with ICP Integrated Monitoring) to the Working Group on Effects in 1999;

(f) Fifteenth meeting of the Programme Task Force, 29 May - 2 June 1999 in Vilnius, Lithuania.

### **3.5 INTERNATIONAL COOPERATIVE PROGRAMME ON EFFECTS OF AIR POLLUTION AND OTHER STRESSES ON CROPS AND NON-WOOD PLANTS**

Objective: To evaluate the effects of air pollutants and other stresses on crops and non-wood plants; to identify realistic dose/response functions for a range of economically important crops, and for the range of crops at risk from air pollution; to validate and substantiate ozone critical levels for crops and non-wood plants; and to evaluate crops and non-wood plants as effective indicators of the potential for damage to natural ecosystems.

Method of work: A Programme Task Force, led by the United Kingdom, with the cooperation of the Programme's coordination centre (Nottingham Trent University, Nottingham, United Kingdom), is responsible for the detailed planning and coordination of the Programme, implemented with the cooperation of laboratories designated by participating Parties. Annual field experiments on selected crops and non-wood plants will continue and the programme results will be analysed and interpreted. A computer model is being developed to link injury and yield responses of plants to the physical and pollution climate. Data will be analysed to detect trends in ozone, climate data and effects (yield reduction and visible injury) in different climatic zones in Europe. Stocks at risk will be monitored. The Task Force will cooperate with other programmes and the Coordination Center for Effects in preparing preliminary maps of critical levels of ozone for crops and their exceedances and with the Task Force on Economic Aspects of Abatement Strategies on an economic assessment of crop losses due to ozone.



Time schedule:

(a) The 1999 annual status report on the achievements of the Programme to the Working Group on Effects in 1999;

(b) Further development of models from ICP Non-wood Plants and Crops data for use in identifying and quantifying the impact of level II factors on the ozone dose-response of crops; presentation of a technical report on further progress with level II modelling for crops and natural vegetation to the Working Group in 1999;

(c) A progress report on identification of characteristics of natural and semi-natural plant communities associated with ozone sensitivity to the Working Group in 1999;

(d) Information on progress in level II mapping (carried out in collaboration with other groups/programmes) to the Working Group in 1999;

(e) Twelfth meeting of the Programme Task Force, 26-29 January 1999, Beaumaris, Anglesey, United Kingdom.

**3.6 INTERNATIONAL COOPERATIVE PROGRAMME ON INTEGRATED MONITORING OF AIR POLLUTION EFFECTS ON ECOSYSTEMS**

Objective: To determine and predict the state of ecosystems (or catchments) and their changes in a long-term perspective, with respect to the regional variation and impact of air pollutants, especially nitrogen, sulphur and ozone, and including effects on biota.

Method of work: A Programme Task Force led by Sweden is responsible for planning, coordinating and evaluating the Programme. The Programme's centre (Finnish Environment Institute, Helsinki) is entrusted with collecting, storing, processing and analysing data from countries taking part in the Programme. Validated mathematical models will be used for the simulation of ecosystem responses. Monitoring activities and the collection, processing and evaluating of data, as well as the coordination of monitoring networks and harmonization of monitoring methods, will continue. Dynamic modelling, including the setting-up of projects to link geochemical models to biological effects models, and the application of the soil-vegetation-atmosphere-transfer (SVAT) model to selected integrated monitoring sites will continue.

Time schedule:

(a) Presentation of the Eighth Annual Report to the Working Group on Effects in 1999;

(b) Further development of the integrated monitoring database, inclusion of quality controlled national data; processing of additional information (background information/site descriptions) at the Programme Centre and inclusion in a geographical information system (GIS);

(c) Development of a scientific strategy for the investigation of heavy-metal fluxes at ICP Integrated Monitoring sites; a progress report to the Working Group in 1999;

(d) Continuing cooperation with ICP Forests on the further development of level III monitoring activities;

(e) Seventh meeting of the Programme Task Force, 19-21 April 1999, Wallingford (United Kingdom).

### **3.7 MAPPING OF CRITICAL LEVELS AND LOADS**

Objective: To determine critical levels and loads for forests, crops, natural vegetation, soil/groundwater and materials, with particular attention to the direct effects of air concentrations of SO<sub>2</sub>, NO<sub>2</sub> and O<sub>3</sub> and the indirect effects of long-term deposition of sulphur and nitrogen compounds, the mapping of geographical areas experiencing higher than critical levels and loads and the establishment of appropriate methods as a basis for assessing potential damage.

Method of work: A Task Force led by Germany is responsible for the detailed planning and coordination of activities. The Task Force will further use and integrate available and accepted data on critical levels and loads at the regional, national and local levels, drawing on current work of other task forces, International Cooperative Programmes and EMEP. The Coordination Center for Effects (CCE) gives scientific and technical support to the Task Force on Mapping, in collaboration with a Pilot Sub-centre, programme centres of other ICPs, and National Focal Points, by producing maps of critical loads and levels and their exceedances for use by the Working Group on Effects and as required by the Working Group on Strategies and their task forces. Efforts will be made to quantify uncertainties in the critical load data. Workshops will be organized, as appropriate, for updating the mapping manual and methodology. National pilot programmes for the mapping of critical levels and

loads on the basis of a common manual and methodology will continue. European stock-at-risk maps, based on European land-use maps, will be further developed.

Time schedule:

- (a) A progress report on the further analysis of critical loads data (documentation of input parameters, uncertainties analysis) to the Working Group on Effects in 1999;
- (b) Continuing development of the critical loads/levels methodology (level II critical levels, exceedance formulations, dynamic modelling); a progress report to the Working Group in 1999;
- (c) Workshop on critical levels for ozone; level II, 11-15 April 1999, Gerzensee, Switzerland;
- (d) Tenth CCE Workshop on mapping critical levels and loads, 15-18 June 1999, Prague, Czech Republic;
- (e) Fifteenth meeting of the Task Force on Mapping, 17-18 May 1999, Berlin, Germany;
- (f) Workshop on heavy metals (Bad Harzburg follow-up workshop), 12-15 October 1999 (Germany);
- (g) Workshop on critical loads for acidity and eutrophication: criteria, concepts and biological indicators, 21-25 November 1999, Copenhagen, Denmark.

**3.8 EFFECTS OF AIR POLLUTANTS ON HUMAN HEALTH**

Objective: To prepare state-of-the-art reports on the direct and indirect effects of air pollutants on human health.

Method of work:

(a) WHO is invited to present relevant progress/technical reports to the Working Group on Effects for consideration, so that acquired knowledge of WHO can be applied in the further implementation of the Convention. Additional information/reports will be provided, when appropriate, by other international organizations, interested Governments, and/or other subsidiary bodies under the Convention.

(b) To support the Working Group on Effects and the Executive Body in preparing/substantiating new and/or updated protocols, the joint Task Force of WHO/European Centre for Environment and Health (ECEH) and the Executive Body, led by WHO/ECEH, will evaluate and assess the health effects of long-range transboundary air pollution and provide necessary information on the subject. Starting with particulate matter, the Task Force on the Health Aspects of Air Pollution will prepare reports, for consideration by the Working Group on Effects. These should take into account the health effects of specific exposures to air pollution, in order to quantify the contribution of transboundary air pollution to human health risks and to define priorities that may serve as a guide for monitoring and abatement strategies.

Time schedule:

(a) Preparation of a draft report summarizing information needed to assess the impact of the implementation of the Convention on Long-range Transboundary Air Pollution and its protocols, in particular the reduction of health risk from particulate matter, for submission to the Working Group on Effects in 1999;

(b) Second meeting of the Task Force on the Health Aspects of Air Pollution, 21-22 January 1999, Bilthoven, Netherlands;

(c) Third meeting of the Task Force on the Health Aspects of Air Pollution, autumn 1999.

#### **4. TECHNOLOGIES FOR EMISSION CONTROL**

##### **4.1 EXCHANGE OF TECHNOLOGY FOR AIR POLLUTION CONTROL**

Objective: The creation of favourable conditions for establishing contacts and cooperation among appropriate organizations and individuals in the private and public sectors that are capable of providing technology, design and engineering services, equipment or finance. Strengthening and harmonizing the legal frameworks for air pollution abatement techniques in the region and particularly improving and aligning their emission, performance and technology standards could facilitate trade and technology cooperation between Parties in the ECE region and accelerate the accession to and/or implementation of existing protocols to the Convention by Parties, particularly by countries in transition.

Method of work: Parties will organize target-oriented workshops focusing in particular on technology-related problems within specific industrial sectors, including the implementation of different abatement

techniques as recommended in technical annexes to protocols. Parties to the Convention, in particular countries in transition, will identify their needs for such workshops and submit information to the secretariat.

Time schedule:

(a) Workshop in Bologna (Italy) in spring 1999 on the implementation of VOC abatement techniques in the surface coating and dry-cleaning sectors and report on its outcome to the Working Group on Abatement Techniques at its seventh session in 1999;

(b) Collection of information by the secretariat from Parties and international institutions on successful schemes for the exchange of technology and report on the outcome to the Working Group at its seventh session in 1999;

(c) Workshop tentatively scheduled to take place in France in spring 1999 on techno-economic databases on production processes and related emission abatement options, including BAT and associated costs, in order to provide input in a longer time-frame for integrated assessment modelling and report to the Working Group at its seventh session;

(d) Workshops to be organized by Parties ready to lead relevant activities (EB.AIR/WG.6/1998/2, annex IV) and progress report to the Working Group at its seventh session.

#### **4.2 OPTIONS FOR REDUCING EMISSIONS OF AMMONIA**

Objective: In order to incorporate NH<sub>3</sub> in the development of the multi-pollutant, multi-effect protocol, a report on control options and abatement techniques for reducing ammonia emissions and their costs will be prepared. It will also cover industry. Draft technical document on control techniques for emissions of reduced nitrogen compounds will be prepared, as required.

Method of work: On the basis of additional information to be provided by Parties, mainly on best agricultural practices and on the scope and content of the draft technical document on control techniques for emissions of reduced nitrogen compounds, a group of governmentally designated experts, led by the United Kingdom, will prepare its final version, taking into account the requirements of the Working Group on Strategies. Consideration of comments/additions and new proposals, if any, by the expert group and preparation of a draft revised version of the technical document on control options/techniques and possibly a draft annex on mandatory measures.

Time schedule:

(a) Meeting of the expert group to finalize the draft documents, tentatively scheduled for 2-3 March 1999 in Bern (Switzerland);

(b) Workshops for the dissemination of knowledge and experience of ammonia abatement in agriculture to Parties not yet fully involved in the work of the expert group; first workshop tentatively scheduled for spring or autumn 1999;

(c) Finalization of input to a multi-pollutant, multi-effect protocol according to the guidance by the Working Group on Strategies and final reporting to the Working Group on Abatement Techniques at its seventh session in 1999.

#### **4.3 CONTROL OPTIONS AND TECHNIQUES FOR EMISSIONS FROM STATIONARY AND MOBILE SOURCES**

Objective: Preparation of input to the negotiation process under the work-plan for the implementation of the Convention on options and techniques for preventing and reducing emissions, including their efficiencies and costs. The input will serve to update and prepare technical guiding documents to existing and future protocols and to develop annexes on emission limit values for air pollution abatement.

Method of work: Seminars and workshops for reviewing present and future technology options and cost-efficient techniques for preventing and reducing emissions used in new and existing plants, including information on their investment and operating cost, aggregated at activity, process and/or sector level, will be organized. Task Forces and groups of governmentally designated experts will regularly assess the economic and environmental performance of relevant options and techniques and their actual application at sector and/or plant level. Draft proposals for updating and preparing technical guiding documents on control options and techniques and for annexes on emission limit values will be prepared. Consideration of comments/additions and new proposals, if any, by the Task Forces and preparation of draft revised versions of technical documents on control options/techniques and draft annexes on limit values for emissions of NO<sub>x</sub> and VOCs from stationary sources following the guidance of the Working Group on Strategies. Available knowledge and experience of other organizations will be collected and used, particularly of EC regarding mobile sources. Progress of work and proposals for draft technical guiding documents and annexes will be regularly reported to the Working Group on Strategies and the Working Group on Abatement Techniques for review and consideration and subsequent adoption by the Executive Body, as required.

Time schedule:

(a) Meetings of the Task Forces and/or drafting groups depending on the negotiation needs in order to finalize draft technical documents on control options/techniques and draft annexes on limit values for emissions of NOx and VOCs from stationary sources, and reporting to the Working Group at its seventh session in 1999;

(b) Preparation of final versions of the technical documents on VOCs and NOx and on emission limit values from mobile sources on the basis of comments/additions and new proposals by the expert group and final reporting to the Working Group at its seventh session in 1999.

**4.4 MANAGEMENT OF BY-PRODUCTS/RESIDUES CONTAINING HEAVY METALS (HMs) AND PERSISTENT ORGANIC POLLUTANTS (POPs)**

Objective: Preparation of a state-of-the-art report on the management and use of by-products/residues containing primarily heavy metals and persistent organic pollutants generated by different combustion and industrial processes, including incineration and other control techniques. The report should also cover the problem of final waste disposal. Based on the output of the Task Force's work, conclusions and action-oriented recommendations, including proposals to modify or to extend control techniques for managing in an integrated manner pollution, mainly by HMs and POPs, will be drawn up for consideration by the Working Group on Abatement Techniques and the Working Group on Strategies.

Method of work: A Task Force under the leadership of Austria will prepare a state-of-the-art report, an executive summary, including conclusions and draft recommendations and, where appropriate, proposals to modify or to extend control techniques under the existing protocols to the Convention. Based on the output of the Task Force's work, conclusions and action-oriented recommendations, including proposals to modify or to extend control techniques for managing in an integrated manner by-products, mainly HMs and POPs, will be drawn up for consideration by the Working Group on Abatement Techniques and the Working Group on Strategies.

Time schedule:

(a) First meeting of the Task Force, 26-28 April 1999, Salzburg (Austria);

(b) Progress report to the Working Group on Abatement Techniques at its seventh session in 1999;

(c) Second meeting of the Task Force, autumn 1999;

(d) Final draft report for consideration by the Working Groups on Abatement Techniques and on Strategies and the Executive Body in 2001.



Annex IV

**PROVISIONAL LIST OF MEETINGS FOR 1999**

|  |  |
|--|--|
| 25-29 January 1999<br>Geneva           | Working Group on Strategies<br>(twenty-eighth session)     |
| 22-26 March 1999<br>Geneva             | Working Group on Strategies<br>(twenty-ninth session)      |
| 31 May 1999                            | Executive Body for the Convention<br>(special session)     |
| 31 May - 4 June 1999<br>Geneva         | Working Group on Strategies<br>(thirtieth session)         |
| 1-2 July 1999<br>Geneva                | Working Group on Abatement Techniques<br>(seventh session) |
| 25-27 August 1999<br>Geneva            | Working Group on Effects<br>(eighteenth session)           |
| 30 August - 3 September 1999<br>Geneva | Working Group on Strategies<br>(thirty-first session)      |
| 6-8 September 1999<br>Geneva           | EMEP Steering Body<br>(twenty-third session)               |
| 6-10 December 1999<br>Geneva           | Executive Body for the Convention<br>(seventeenth session) |

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|-----------------------------------|---|
| 1-3 March 1999<br>Ottawa (Canada) | Implementation Committee<br>(third meeting) |
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| September 1999<br>Berlin (Germany) | Implementation Committee<br>(fourth meeting) |
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| 21-22 January 1999<br>Bilthoven (Netherlands) | Task Force on the Health Aspects of Air<br>Pollution (second meeting) |
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|---|---|
| 26-29 January 1999<br>Beaumaris, Anglesey<br>(United Kingdom) | Programme Task Force, ICP on Effects of Air<br>Pollution and Other Stresses on Crops and<br>Non-wood Plants (twelfth meeting) |
| 2-3 March 1999<br>Bern (Switzerland)<br>(tentatively)         | Expert meeting on abatement<br>options/techniques for ammonia emissions   |
| 10-12 March 1999<br>Les Diablerets (Switzerland)              | Task Force on Integrated Assessment<br>Modelling (twenty-third meeting)   |
| 11-15 April 1999<br>Gerzensee (Switzerland)                   | Workshop on critical levels for ozone;<br>level II  |
| 19-21 April 1999<br>Wallingford (United Kingdom)              | Programme Task Force, ICP on Integrated<br>Monitoring of Air Pollution Effects on<br>Ecosystems (seventh meeting)             |
| 26-28 April 1999<br>Salzburg (Austria)                        | Task Force on Management of By-products<br>Containing Heavy Metals and POPs (first<br>meeting)                                |
| Spring 1999<br>Bologna (Italy)                                | Workshop on the implementation of VOC<br>abatement techniques in the surface<br>coating and dry-cleaning sectors              |
| Spring 1999 (tentatively)<br>(France)                         | Workshop on techno-economic databases on<br>production processes and related emission<br>abatement options                    |
| 17-18 May 1999<br>Berlin (Germany)                            | Task Force on Mapping of Critical Loads<br>and Levels (fifteenth meeting)   |
| May 1999<br>(Denmark)   | Task Force on Emission Inventories<br>(eighth meeting)  |
| 29 May - 2 June 1999<br>Vilnius (Lithuania)<br>(tentatively)  | Programme Task Force, ICP on Assessment<br>and Monitoring of Air Pollution Effects<br>on Forests (fifteenth meeting)          |
| 8-9 June 1999<br>Bilthoven (Netherlands)<br>(tentatively)     | Task Force on Integrated Assessment<br>Modelling (twenty-fourth meeting)  |

|   |   |
|---|---|
| 9-11 June 1999<br>Toronto (Canada)                          | Programme Task Force, ICP on Effects of Air Pollution on Materials, Including Historic and Cultural Monuments (fifteenth meeting) |
| 10-11 June 1999<br>Bilthoven (Netherlands)<br>(tentatively) | Task Force on Economic Aspects of Abatement Strategies (fifteenth meeting)  |
| 15-18 June 1999<br>Prague (Czech Republic)                  | Tenth CCE Mapping Workshop  |
| 4-8 October 1999<br>Dubrovnik (Croatia)                     | Second EMEP/WMO Workshop on data analysis and interpretation  |
| 6-8 October 1999 (tentatively)<br>Verbania Pallanza (Italy) | Programme Task Force, ICP on Assessment and Monitoring of Acidification of Rivers and Lakes (fifteenth meeting)                   |
| 12-15 October 1999<br>(Germany)                             | Workshop on heavy metals (Bad Harzburg follow-up workshop, organized by the Task Force on Mapping)                                |
| 21-25 November 1999<br>Copenhagen (Denmark)                 | Workshop on critical loads for acidity and eutrophication: criteria, concepts and biological indicators                           |
| 22-25 November 1999<br>Davos (Switzerland)                  | EMEP/WMO Workshop on fine particles - emissions, modelling and measurements   |
| Autumn 1999   | Task Force on the Health Aspects of Air Pollution (third meeting)   |
| Autumn 1999   | Task Force on Management of By-products Containing Heavy Metals and POPs (second meeting)   |
| 1-3 December 1999<br>Geneva                                 | WMO/EMEP MSC-E Workshop on modelling of atmospheric transport and deposition of persistent organic pollutants and mercury         |

Annex V

**1999 EMEP BUDGET COVERED BY THE MANDATORY CONTRIBUTIONS  
(IN US\$ OR EQUIVALENT)**

|       |                                    | CCC       | MSC-E                | MSC-W                 |
|-------|------------------------------------|-----------|----------------------|-----------------------|
| I.    | Acid deposition                    |           |                      |                       |
|       | Modelling                          |           |                      | 247,500               |
|       | Measurements                       | 440,000   |                      |                       |
| II.   | Photo-oxidants                     |           |                      |                       |
|       | Modelling                          |           |                      | 215,600               |
|       | Measurements                       | 255,200   | 255,200              |                       |
| III.  | Heavy metals                       |           |                      |                       |
|       | Modelling                          | 176,000   | 176,000              |                       |
|       | Measurements                       | 55,000    | 55,000               |                       |
| IV.   | Persistent organic pollutants      |           |                      |                       |
|       | Modelling                          | 203,500   | 203,500              |                       |
|       | Measurements                       | 60,500    | 60,500               |                       |
| V.    | Integrated assessment<br>modelling |           |                      | 66,220 <sup>a/</sup>  |
| VI.   | Small particles                    | 66,000    | 27,500               | 11,000                |
| VII.  | Emission database                  | 176,000   |                      | 22,000                |
|       | Sub-total                          | 1,961,520 | 838,200              | 412,500 <sup>b/</sup> |
| VIII. | Programme support<br>cost (3%)     | 60,666    |                      |                       |
|       | Belarus (in kind to MSC-E)         |           | 3,910 <sup>c/</sup>  |                       |
|       | Ukraine (in kind to MSC-E)         |           | 14,399 <sup>c/</sup> |                       |
|       | <b>TOTAL</b>                       |           |                      | <b>2,040,495</b>      |

"Modelling" includes all necessary elements of the activity, such as: input data preparation for model runs (emission data, meteorological data, etc.), model development, model verification and model calculations.

"Measurements" includes data monitoring, data storage, quality control and quality assurance, etc.

<sup>a/</sup> To be used for external consultancy.

<sup>b/</sup> Expected contributions in kind from Belarus and Ukraine to MSC-E to be added.

<sup>c/</sup> Contributions calculated on the basis of the 1999 scale of assessments.

Annex VI  
Mandatory EMEP contribution for 1999 and 2000 calculated on the basis of the  
1999 and 2000 United Nations scales of assessments

| Parties to the<br>EMEP Protocol       | UN 1999             | EMEP            | 1999 contribution |                  | UN 2000             | EMEP            | 2000 contribution |                  |
|---------------------------------------|---------------------|-----------------|-------------------|------------------|---------------------|-----------------|-------------------|------------------|
|                                       | assess.<br>rate (%) | share<br>%      | %                 | US\$             | assess.<br>rate (%) | share<br>%      | %                 | US\$             |
| Belarus                               | 0,0820              | 0,1909          | 0,1916            | 3.910            | 0,0570              | 0,1345          | 0,1349            | 2.753            |
| Bosnia and Herzegovina                | 0,0050              | 0,0116          | 0,0117            | 238              | 0,0050              | 0,0118          | 0,0118            | 241              |
| Bulgaria                              | 0,0190              | 0,0442          | 0,0444            | 906              | 0,0110              | 0,0260          | 0,0260            | 531              |
| Canada                                | 2,7540              |                 |                   | voluntary        | 2,7320              |                 |                   | voluntary        |
| Croatia                               | 0,0360              | 0,0838          | 0,0841            | 1.716            | 0,0300              | 0,0708          | 0,0710            | 1.449            |
| Cyprus                                | 0,0340              | 0,0792          | 0,0794            | 1.621            | 0,0340              | 0,0802          | 0,0805            | 1.642            |
| Czech Republic                        | 0,1210              | 0,2817          | 0,2827            | 5.769            | 0,1070              | 0,2525          | 0,2533            | 5.168            |
| Hungary                               | 0,1200              | 0,2794          | 0,2804            | 5.721            | 0,1200              | 0,2832          | 0,2840            | 5.796            |
| Latvia                                | 0,0240              | 0,0559          | 0,0561            | 1.144            | 0,0170              | 0,0401          | 0,0402            | 821              |
| Liechtenstein                         | 0,0060              | 0,0140          | 0,0140            | 286              | 0,0060              | 0,0142          | 0,0142            | 290              |
| Malta                                 | 0,0140              | 0,0326          | 0,0327            | 667              | 0,0140              | 0,0330          | 0,0331            | 676              |
| Norway                                | 0,6100              | 1,4202          | 1,4253            | 29.084           | 0,6100              | 1,4396          | 1,4438            | 29.460           |
| Poland                                | 0,2070              | 0,4820          | 0,4837            | 9.869            | 0,1960              | 0,4626          | 0,4639            | 9.466            |
| Russian Federation                    | 1,4870              | 3,4621          | 3,4745            | 70.898           | 1,0770              | 2,5418          | 2,5491            | 52.015           |
| Slovakia                              | 0,0390              | 0,0908          | 0,0911            | 1.859            | 0,0350              | 0,0826          | 0,0828            | 1.690            |
| Slovenia                              | 0,0610              | 0,1420          | 0,1425            | 2.908            | 0,0610              | 0,1440          | 0,1444            | 2.946            |
| Switzerland                           | 1,2150              | 2,8289          | 2,8390            | 57.929           | 1,2150              | 2,8675          | 2,8757            | 58.679           |
| Turkey                                | 0,4400              | 1,0244          | 1,0281            | 20.978           | 0,4400              | 1,0384          | 1,0414            | 21.250           |
| Ukraine                               | 0,3020              | 0,7031          | 0,7057            | 14.399           | 0,1900              | 0,4484          | 0,4497            | 9.176            |
| United States                         | 25,0000             |                 |                   | voluntary        | 25,0000             |                 |                   | voluntary        |
| Yugoslavia                            | 0,0340              | 0,0792          | 0,0794            | 1.621            | 0,0260              | 0,0614          | 0,0615            | 1.256            |
| Austria                               | 0,9410              | 2,1909          | 2,1987            | 44.865           | 0,9420              | 2,2232          | 2,2296            | 45.495           |
| Belgium                               | 1,1030              | 2,5681          | 2,5773            | 52.589           | 1,1040              | 2,6055          | 2,6130            | 53.319           |
| Denmark                               | 0,6910              | 1,6088          | 1,6146            | 32.946           | 0,6920              | 1,6332          | 1,6379            | 33.421           |
| Finland                               | 0,5420              | 1,2619          | 1,2664            | 25.842           | 0,5430              | 1,2815          | 1,2852            | 26.225           |
| France                                | 6,5400              | 15,2269         | 15,2814           | 311.816          | 6,5450              | 15,4465         | 15,4911           | 316.096          |
| Germany                               | 9,8080              | 22,8357         | 22,9174           | 467.629          | 9,8570              | 23,2630         | 23,3302           | 476.052          |
| Greece                                | 0,3510              | 0,8172          | 0,8201            | 16.735           | 0,3510              | 0,8284          | 0,8308            | 16.952           |
| Ireland                               | 0,2240              | 0,5215          | 0,5234            | 10.680           | 0,2240              | 0,5287          | 0,5302            | 10.818           |
| Italy                                 | 5,4320              | 12,6472         | 12,6924           | 258.989          | 5,4370              | 12,8316         | 12,8686           | 262.585          |
| Luxembourg                            | 0,0680              | 0,1583          | 0,1589            | 3.242            | 0,0680              | 0,1605          | 0,1609            | 3.284            |
| Netherlands                           | 1,6310              | 3,7974          | 3,8110            | 77.763           | 1,6320              | 3,8516          | 3,8627            | 78.819           |
| Portugal                              | 0,4170              | 0,9709          | 0,9744            | 19.882           | 0,4310              | 1,0172          | 1,0201            | 20.816           |
| Spain                                 | 2,5890              | 6,0279          | 6,0495            | 123.439          | 2,5910              | 6,1149          | 6,1325            | 125.135          |
| Sweden                                | 1,0840              | 2,5239          | 2,5329            | 51.683           | 1,0790              | 2,5465          | 2,5538            | 52.111           |
| United Kingdom                        | 5,0900              | 11,8509         | 11,8933           | 242.683          | 5,0920              | 12,0174         | 12,0521           | 245.923          |
| European Community                    |                     | 3,3300          | 3,3419            | 68.192           |                     | 3,3300          | 3,3396            | 68.145           |
| <b>Total</b>                          |                     | <b>99,6438</b>  | <b>100,0000</b>   | <b>2.040.500</b> |                     | <b>99,7121</b>  | <b>100,0000</b>   | <b>2.040.500</b> |
| Non-parties to the EMEP<br>Protocol:  |                     |                 |                   |                  |                     |                 |                   |                  |
| Armenia                               | 0,0110              | 0,0256          |                   |                  | 0,0060              | 0,0142          |                   |                  |
| Holy See                              | 0,0010              | 0,0023          |                   |                  | 0,0010              | 0,0024          |                   |                  |
| Iceland                               | 0,0320              | 0,0745          |                   |                  | 0,0320              | 0,0755          |                   |                  |
| Lithuania                             | 0,0220              | 0,0512          |                   |                  | 0,0150              | 0,0354          |                   |                  |
| Republic of Moldova                   | 0,0180              | 0,0419          |                   |                  | 0,0100              | 0,0236          |                   |                  |
| Romania                               | 0,0670              | 0,1560          |                   |                  | 0,0560              | 0,1322          |                   |                  |
| San Marino                            | 0,0020              | 0,0047          |                   |                  | 0,0020              | 0,0047          |                   |                  |
| <b>Total (excl. Canada &amp; USA)</b> | <b>41,5200</b>      | <b>100,0000</b> |                   |                  | <b>40,9610</b>      | <b>100,0000</b> |                   |                  |

Note: For France, Germany, Italy and the European Community, see ECE/EB.AIR/59, para 62.