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

Twentieth session
(Geneva, 10-13 December 2002)
Item 9 of the provisional agenda

DRAFT WORK-PLAN FOR THE IMPLEMENTATION OF THE CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION IN 2003

Note by the secretariat

1. In preparing the draft work-plan, the secretariat has taken into consideration the current work-plan (ECE/EB.AIR/75, annex VI), as well as the decisions taken by the Working Group on Strategies and Review at its thirty-fourth session (EB.AIR/WG.5/74), the Implementation Committee at its ninth and tenth meetings (EB.AIR/2002/2), the Working Group on Effects at its twenty-first session (EB.AIR/WG.1/2002/2), and the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) at its twenty-sixth session (EB.AIR/GE.1/2002/2).

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2003 WORK-PLAN FOR THE IMPLEMENTATION OF THE CONVENTION

1. STRATEGIES AND POLICIES

1.1 STRATEGIES AND REVIEW

Description/objective: Assessment of ongoing scientific and technical activities in view of the potential need to revise existing protocols or prepare new ones; negotiating revisions to protocols, including their annexes; promoting the exchange of technology; preparing proposals for any strategic developments under the Convention. The Working Group on Strategies and Review will assist the Executive Body in all policy-related issues.

Main activities and time schedules:

Taking into account the relevant activities under EMEP and the Working Group on Effects, as well as the initiatives of the European Community, and on the basis of information received from its expert groups, the Working Group on Strategies and Review will, in particular:

(a) Assess work in preparation of a review of the 1999 Gothenburg Protocol, including progress in reducing acidification, eutrophication and ground-level ozone and the pollutants responsible for these effects, including work carried out under items 1.4 (economic assessment) and 1.9 (ammonia abatement). It will also review progress in the work on particulate matter pollution, including work carried out under items 2.3 (integrated assessment modelling). It will present a proposal for further action and required input for a review of the Protocol to the Executive Body;

(b) Assess work in preparation of a review of the Protocol on Heavy Metals, taking into account work carried out under item 1.6 below. It will prepare a proposal for further action and required input for a review of the Protocol, including a possible effect-based approach as a basis for future action;

(c) Assess work in preparation of a review of the Protocol on Persistent Organic Pollutants (POPs), also taking into account progress under item 1.5 below, including information on the pollutants scheduled for re-evaluation in the Protocol and on pollutants that are candidates for future inclusion. It will prepare a proposal for further action and required input for a review of the Protocol. It will also consider the detailed procedures required for technical review of new substances proposed by Parties as candidates for inclusion in the Protocol;

(d) Review progress in the exchange of information and technology, including the work on techno-economic issues (see item 1.7 below), information received on product-related measures to reduce emissions of volatile organic compounds (VOCs), POPs and heavy metals and progress in work carried out under item 1.8 below.

The thirty-fifth session of the Working Group on Strategies and Review will take place from 15 to 19 September 2003.

1.2 COMPLIANCE REVIEW

Description/objectives: Review of compliance by the Parties with their obligations under the Protocols to the Convention.

Main activities and time schedule: The Implementation Committee will evaluate the reporting by the Parties on their strategies and policies, including the reporting on technology-related obligations. It will complete its in-depth review of compliance by the Parties with the 1994 Sulphur Protocol, including their obligations to set emission limit values and fuel standards. The Committee will continue its dialogue with appropriate bodies and experts. It will also continue 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. Any submission or referral made under paragraph 3 (b) of the Committee's functions will be dealt with as a priority and the Committee may have to adjust its work-plan and time schedule accordingly. The Committee will continue to review the progress made by the Parties in response to decisions taken by the Executive Body based upon the Committee's recommendations.

(a) Eleventh meeting of the Implementation Committee on 28-30 April 2003;

(b) Twelfth meeting of the Implementation Committee in Geneva, on 3-5 September 2003;

(c) Sixth report by the Implementation Committee to the Executive Body at its twenty-first session.

1.3 REVIEWS OF STRATEGIES AND POLICIES FOR AIR POLLUTION ABATEMENT

Description/objectives: Overview of air pollution abatement in the UNECE region, giving a comprehensive description of national and international strategies and policies, including legislation in force and emission levels. Provide, together with emission data, a basis for the Implementation Committee to review compliance by Parties with their obligations under the protocols to the Convention. The reviews are carried out every two years.

Main activities and time schedule:

(a) Parties are invited to present corrections and additional information to the draft 2002 Summary Review (EB.AIR/2002/1 and Add.1) to the secretariat by 15 January 2003;

(b) The secretariat will then incorporate the additions and corrections and publish the review;

(c) The next review is scheduled for 2004. The secretariat will prepare a new draft outline and draft questionnaire for consideration by the Executive Body at its twenty-first session.

1.4 ECONOMIC ASSESSMENT OF BENEFITS FROM AIR POLLUTION ABATEMENT AND ECONOMIC INSTRUMENTS

Description/objectives: To develop further the economic work on benefits and economic instruments undertaken by the former Task Force on Economic Aspects of Abatement Strategies and to enable economic considerations to be taken into account in the discussion/review of the protocols to the Convention. Future workshops will cover the use of economic instruments to reduce transboundary air pollution and economic evaluation of damage to materials.

Main activities and time schedule: The Network of Experts on Benefits and Economic Instruments (NEBEI), led by the United Kingdom and with Mr. David Pearce as rapporteur, will provide the framework and expertise for a series of workshops. NEBEI will meet only on the occasion of planned workshops and include not only economists but also representatives from other specialist groups. It will collaborate closely with the Task Force on the Health Aspects of Air Pollution, the Working Group on Effects and the Task Force on Integrated Assessment Modelling.

1.5 FURTHER ASSESSMENT OF PERSISTENT ORGANIC POLLUTANTS

Description/objectives: Review the evidence on specific POP compounds with a view to:

(a) Making the best use of available knowledge to meet the existing obligations for substances listed in annexes I, II and III to the Protocol on POPs; and

(b) Assisting Parties in preparing preliminary risk profiles for substances that may be candidates for inclusion in the Protocol. The addition of new substances to annex I, II or III to the Protocol on POPs is regulated in Executive Body decision 1998/2 on procedures and information to be submitted to the Executive Body.

Main activities and time schedule:

(a) An Expert Group co-led by Canada and the Netherlands will:

(i) Continue, where appropriate, the review of available information provided by experts relating to the existing obligations for substances listed in annex I, II or III to the Protocol on POPs, together with expert judgement on this material;

(ii) Prepare an addendum to the compendium of information provided by national experts on substances not included in the Protocol after technical evaluation of this material;

(b) The fourth meeting of the Expert Group will take place in Oslo, in March 2003, to prepare a report to the Working Group on Strategies and Review for its thirty-fifth session and to discuss the need for further work.

1.6 REVIEW OF INFORMATION ON HEAVY METALS

Description/objectives: In preparation of the review of the Protocol on Heavy Metals, the issues to be addressed include:

(a) Collecting and evaluating available information (within and outside the framework of the Convention) on the effects of heavy metal pollution;

(b) Reviewing the information on abatement options and their costs, taking into account the synergies with the abatement of particulate matter (PM) and the work carried out under item 1.7 below;

(c) Assessing the measures scheduled for re-evaluation in the Protocol; and

(d) Reviewing the information on heavy metals not yet included in the Protocol.

Main activities and time schedule: An Expert Group on Heavy Metals (lead country to be established) will meet in the first half of 2003 to draw up a work programme for the preparation of the review of the Protocol. It will report to the Working Group on Strategies and Review at its thirty-fifth session.

1.7 TECHNO-ECONOMIC ISSUES

Description/objectives: To further explore best available techniques (BAT) for emission abatement, their efficiency and costs; to develop techno-economic databases and methodologies for evaluating uncertainties and to draw up draft revisions of techno-economic issues in annexes to protocols, including the Protocol on Heavy Metals:

Main activities and time schedule:

(a) The Expert Group on Techno-economic Issues, with France as its lead country, will continue its work toward the development of software describing emission control options, their costs and ranges of uncertainties. The Expert Group will hold several meetings during 2003, including: sectoral meetings, a workshop on software use, and one or two plenary sessions. The results of the sectoral meetings will be transmitted to the Expert Group at its plenary meetings;

(b) Tables will be prepared by the Expert Group's secretariat of in-country data on costs of abatement techniques in the selected sectors according to SNAP/NFR (Nomenclatures for reporting) as defined in the Guidelines for Estimating and Reporting Emissions Data, as well as explanatory notes to the tables;

(c) In 2003, validated data on typical installations, including information on investment and operational costs, etc., of abatement techniques will be submitted by countries and transmitted to the Centre for Integrated Assessment Modelling (CIAM). CIAM will aggregate the data and input it into the RAINS model. They will also be used in the updating of technical annexes to protocols to reflect emission control options and their costs, as part of the protocol review process, beginning in 2004.

1.8 EXCHANGE OF INFORMATION AND TECHNOLOGY

Description/objectives: To create favourable conditions for implementing technology-related obligations of the Convention and its protocols, to facilitate the implementation of existing protocols and the accession of non-Parties, particularly countries with economies in transition; to examine the needs for updating technical annexes and guidance documents to the protocols.

Main activities and time schedule:

(a) The secretariat will continue to collect information from Parties and international institutions on control technologies and product management practices for pollutants covered by the protocols and collaborate with other international bodies, e.g. European Integrated Pollution Prevention and Control Bureau in Seville (Spain);

. (b) Possibilities for convening further workshops on techniques and technologies for emissions from stationary sources, including economic aspects, focused on particulate matter, could be explored, should a host country come forward.

1.9 AMMONIA ABATEMENT

Description/Objectives: To promote the use of the Framework Advisory Code of Good Agricultural Practice for Reducing Ammonia Emissions, prepared by the Expert Group on Ammonia Abatement led by the United Kingdom, as a basis for Parties to draw up national codes and to quantify better relationships between recommended control options/techniques and resulting ammonia emissions (EB.AIR/WG.5/2002/3); this work to be done in collaboration with EMEP, in particular the agricultural panel of the Task Force on Emissions Inventories and Projections.

Main activities and time schedule:

(a) Preparation for the third meeting of the ad hoc Expert Group (28-30 October 2002, Vienna) to be held jointly with the agricultural panel of the Task Force on Emissions Inventories and Projections;

(b) Continued review of, and possible revisions, to the Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia (EB.AIR/1999/2, chap. V), taking into account the Framework Advisory Code of Good Agricultural Practice for Reducing Ammonia Emissions and the relevant section of the European Union Integrated Pollution Prevention and Control Best Available Technology reference document for pigs and poultry;

(c) Further consideration of non-agricultural ammonia emissions possibly underreported by Parties, in collaboration with the Task Force on Emission Inventories and Projections and the Task Force on Measurement and Modelling; improvement in the quality of reporting of ammonia emissions and measurements;

(d) Review, in cooperation with the Task Force on Measurement and Modelling, strategies to monitor reduction of nitrogen compounds.

1.10 COMMUNICATION STRATEGY FOR THE CONVENTION

Description/Objectives: To enhance communications concerning the work and successes of the Convention to the public and the press; to increase awareness about air pollution and to improve the dialogue on its abatement between Parties, non-governmental organizations and the public.

Main activities and time schedule: Organization of a workshop on enhanced communications for the Convention to identify concrete actions to improve its visibility and profile, scheduled for spring 2003 in London.

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

All work items listed below will be undertaken in close cooperation with Parties and national experts, and, where relevant, with other bodies under the Convention. Wherever relevant and possible, the EMEP centres (Chemical Coordinating Centre (CCC), Centre for Integrated Assessment Modelling (CIAM), Meteorological Synthesizing Centre-East (MSC-E) and Meteorological Synthesizing Centre-West (MSC-W)) will cooperate with other organizations, programmes and projects, including the Arctic Monitoring and Assessment Programme (AMAP), the EUREKA Project on the Transport and Chemical Transformation of Environmentally

Relevant Trace Constituents in the Troposphere over Europe: Second Phase (EUROTRAC-2), the European Commission's Clean Air for Europe (CAFE) programme, the European Environment Agency (including its Topic Centre for Air and Climate Change), the International Geosphere-Biosphere Programme (IGBP) and its International Global Atmospheric Chemistry (IGAC), activity, the marine commissions, the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), including its Global Atmosphere Watch (GAW) programme.

2.1 EMISSIONS

Description/objectives: Further develop the EMEP emission inventory, based on data submitted by Parties, provide information on emissions and projections that is transparent, consistent, comparable, complete and accurate, assist in the review of compliance, and provide assistance to Parties to help them fulfil their reporting tasks. The Task Force on Emission Inventories and Projections, led by the United Kingdom, with assistance by the centres, will provide a technical forum and expert network to share information, harmonize emission factors, establish methodologies for the evaluation of emission data and projections, and identify and resolve problems related to reporting.

Main activities and time schedule:

(a) The Task Force on Emission Inventories and Projections will continue to update and promote the Guidebook, including through work on heavy metals and particulate matter. It will work with Parties to improve the quality and completeness of emission reporting with a focus on validation and good practice. The Task Force will consider the results of the workshop on validation and evaluation of emission inventories held on 14 – 16 October 2002 in Gothenburg (Sweden). The twelfth meeting of the Task Force and an associated European Environment Information and Observation Network (EIONET) workshop will take place in Warsaw on 22-24 September 2003;

(b) By 15 February 2003, as requested by the secretariat and in accordance with the new Guidelines for estimating and reporting emissions data, Parties should submit 2001 emission data and projections and updates to data for earlier years as summarized in table 1 below (see annex) and in accordance with the reporting guidelines (EB.AIR/GE.1/2002/7 and Corr.1);

(c) MSC-W will compile the data and assure data quality, update the inventory database and make the emission database directly accessible via the Internet once the internal consistency is evaluated. It will present a report on 1980-2001 emissions to the Task Force. CIAM will support work on projections. MSC-E and CCC will support work on heavy metal and POP emission data.

2.2 ATMOSPHERIC MEASUREMENTS AND MODELLING

Description/objectives: Assess the results of implementing the protocols to the Convention and develop and ensure support for the atmospheric measurement and modelling tools necessary for further international air pollution abatement policies, including the review of protocols. The Task Force on Measurements and Modelling, led by the United Kingdom and co-chaired by WMO, with the assistance

of the centres, supports the Steering Body and its Bureau by: (i) reviewing and assessing the scientific and operational activities of EMEP related to monitoring and modelling; (ii) evaluating their contribution to the effective implementation and further development of the protocols; and (iii) drawing up specific proposals. It provides for closer collaboration among the Parties to the Convention, the centres, other bodies under the Convention, other international bodies and the scientific community in strengthening scientific communication and cooperation in air pollution monitoring and modelling.

Main activities and time schedule:

(a) The Task Force on Measurements and Modelling will investigate the trends in transboundary fluxes, concentrations and depositions over the lifetime of EMEP in different regions, making use of measurements and modelling results in preparation of an assessment report. Experts from participating Parties will complete the national assessments in 2003. CCC, MSC-E and MSC-W will assist Parties in the application of tools to assess their data. MSC-W will coordinate the input from national experts. CCC, MSC-E and MSC-W will also be responsible for drafting the general part of the report, giving an overall European perspective with the following chapters: (1) acidification and eutrophication, (2) ozone, (3) heavy metals and POPs, (4) summary. The assessment report will be presented to the Steering Body in September 2004;

(b) The Parties will report to CCC monitoring results for 2002 by 1 October 2003. A summary of required monitoring data is given in table 2 below (see annex). CCC will continue to collect monitoring data and evaluate and store them in the EMEP database. CCC will make the data available via the Internet once they have been checked. It will evaluate the data and report thereon to the Task Force. Data will be marked provisional until the Steering Body session following its approval. CCC will cooperate with EEA on the further development of the data exchange module (DEM) used for the submission of data to the EEA database. DEM will be optional for Parties to report data, as an alternative to the NASA Ames format. CCC will inform the Task Force on Measurements and Modelling of progress in further harmonizing reporting between EMEP and EEA, with the focus upon promoting the quality and consistency of data and reducing the burden on Parties;

(c) CCC, in consultation with the Task Force on Measurements and Modelling, will continue work to improve the EMEP Manual for Sampling and Chemical Analysis. It will update the quality assessment (QA) / quality control (QC) part of the Manual and expand the QA information available through the Internet. It will also include in the Manual alternative ammonia monitoring methods developed in the United Kingdom;

(d) The Task Force on Measurements and Modelling will continue to review the current monitoring strategy. This work will also cover ammonia, in cooperation with the Expert Group on Ammonia. CCC, in cooperation with MSC-E and MSC-W, will evaluate representativeness and site density to provide input into this work. They will further examine the approaches to combining modelling data with observations, such as data assimilation techniques. At selected sites, CCC will evaluate the regional representativeness and compare EMEP data with data from other monitoring networks. CCC will intensify collaboration with other national and international programmes to implement the ‘level’ approach for PM and extend it, where appropriate, to other pollutants. It will draft an outline for a new monitoring strategy for presentation to the Task Force at its fourth meeting. Parties, supported by CCC in close cooperation with EEA, will continue their efforts to improve the EMEP network in the

Mediterranean region and in Central and Eastern Europe. The Task Force will hold its fourth meeting in Valencia (Spain) in spring 2003 and present a proposal for a revised monitoring strategy to the Steering Body at its twenty-seventh session;

(e) MSC-W will, as a matter of the highest priority, prepare, in collaboration with interested Parties, a review of the Eulerian unified (photo-oxidants, acid deposition, particles) model, including validation and the comparison of model results and observations, and report to the Task Force in spring 2003. The Task Force will present conclusions on the unified Eulerian model to the Steering Body. The Task Force will review modelling progress also with a view to deciding whether MSC-W should present source-receptor matrices to the Steering Body by September 2003. MSC-W will prepare a version of the Lagrangian model to be accessible to Parties' experts via the Internet;

(f) The centres, in consultation with the Task Force, will cooperate on extending the modelling work to cover the whole northern hemisphere. An EMEP workshop on hemispheric air pollution problems, as follow-up to the one held on 7-9 October 2002 in Bad Breisig (Germany), is tentatively scheduled for autumn 2004.

2.3 INTEGRATED ASSESSMENT MODELLING

Description/objectives: Analyse scenarios on cost-effective reduction of acidification, eutrophication, tropospheric ozone, particulate matter (PM) pollution and related phenomena, including POPs and heavy metals pollution and the links between regional air pollution and climate change. Modelling will cover: (i) abatement options for reducing sulphur, nitrogen oxides, ammonia, VOCs and primary particulate matter, including structural measures in energy, transport and agriculture, and their costs; (ii) projections of emissions; (iii) assessments of the atmospheric transport of substances (including hemispheric transport); and (iv) analyses and quantification of environmental and health effects and benefits of emission reductions. Modelling will draw upon the results from other subsidiary bodies. The Task Force on Integrated Assessment Modelling, led by the Netherlands, will guide the work of CIAM at the International Institute for Applied Systems Analysis (IIASA). All activities will be conducted in close collaboration with related work led by the European Commission.

Main activities and time schedule:

(a) The Task Force on Integrated Assessment Modelling will continue to discuss modelling work by CIAM and other national and international initiatives. It will review progress in the preparation of model inputs covering all model elements and liaise with the responsible bodies under the Convention to this end. It will encourage and support national modelling activities carried out by National Focal Points for Integrated Assessment Modelling and promote the sharing of data and experience with integrated assessment modelling work outside the EMEP region. It will hold its twenty-eighth meeting in the Netherlands in May 2003;

(b) CIAM will pursue work on uncertainty analysis using error propagation. Work done in collaboration with MSC-W will focus on uncertainties in atmospheric transport models and related non-linearities from numerical advection and atmospheric chemical processes;

(c) CIAM will examine, in cooperation with the Coordination Center for Effects, options for covering the results of dynamic modelling in integrated assessment modelling;

(d) CIAM, in cooperation with MSC-W, will report on the differences between regional and

urban scale modelling and draw conclusions for future modelling work. Together with the Environment Institute of the EC Joint Research Centre, the centres will conduct a series of model intercomparison workshops covering different urban models that apply the same emission data and meteorological assumptions. MSC-W will develop numerical methods to nest urban meso-scale models in the regional model;

(e) CCC, in cooperation with CIAM, will further develop criteria for POPs and heavy metals emission projections for selected scenarios, starting with work on cadmium and lead, and present results to the Task Force on Integrated Assessment Modelling;

(f) CIAM, in consultation with the Task Force, will study the possibilities and resource requirements for extending work to the whole northern hemisphere. It will further study the links between air pollution and climate change. CIAM will also prepare for an evaluation of sectoral trends and discussion of possible baseline scenarios and scenarios of maximum feasible emission reductions taking into account the possibility of non-technical measures. The Task Force will hold a workshop on this topic at IIASA in Laxenburg (Austria) in January 2003.

2.4 ACIDIFYING AND EUTROPHYING COMPOUNDS

Description/objectives: Provide monitoring and modelling data on concentrations, depositions and transboundary fluxes of sulphur and nitrogen compounds over Europe. Analyse past, present and future exceedances of critical loads of acidifying and eutrophying depositions in Europe, in collaboration with the Coordination Center for Effects (CCE). Refine and complete emission data with specific focus on the spatial resolution. Support the preparations for the review of the Gothenburg Protocol.

Main activities and time schedule:

(a) MSC-W will calculate the transport of sulphur and nitrogen compounds with the unified Eulerian model. In cooperation with CCC, it will further validate the model by comparing model results with observations, including flux measurements, and further evaluating the differences between the Lagrangian and the Eulerian model. It will further develop the model based on these investigations. It will report on the validation of the model at the meeting of the Task Force on Measurements and Modelling in early 2003 and present a summary report at the twenty-seventh session of the Steering Body;

(b) CCC will arrange for laboratory comparisons of the main components in air and precipitation. These will be open to laboratories participating in monitoring programmes under the Working Group on Effects. CCC will start field comparisons for air chemistry for three sites and finalize and evaluate field comparisons for three other sites. CCC will investigate new methods for long-term flux monitoring for sulphur and nitrogen compounds, including dry and total deposition. It will continue to update metadata in the database;

(c) MSC-W, in cooperation with CCC, will provide an estimation of the base cation depositions so that they can be mapped on a European scale. It will prepare ecosystem-specific deposition maps in consultation with the Working Group on Effects and prepare, on that basis and in cooperation with CIAM, ecosystem-specific damage estimates for integrated assessment modelling.

2.5 PHOTO-OXIDANTS

Description/objectives: Provide monitoring and modelling data on concentrations and transboundary transport of ozone, NOx and VOCs. Evaluate short- and long-term exposures to photochemical oxidants. Refine and complete emission data with specific focus on the spatial resolution. Analyse scenarios of ground-level ozone and exceedances of critical levels. Support the preparations for the review of the Gothenburg Protocol.

Main activities and time schedule:

(a) MSC-W will calculate the short-term exposures of vegetation to photochemical oxidants for vegetation growing periods, as well as the potential exposure of humans. It will apply the revised ozone level II dry deposition sub-routine and evaluate the influence of boundary conditions and background values on the short-term exposures to humans and ecosystems;

(b) CCC will increase its links with national and other existing monitoring networks to improve the geographic coverage of ozone and VOC monitoring data, including data for trend analysis. CCC will also evaluate the QA/QC procedures and prepare a proposal on parameters to be measured as part of the draft outline for the monitoring strategy (item 2.2 (d) above). In collaboration with participating laboratories, it will arrange for campaigns with parallel sampling and analyses of VOCs;

(c) CIAM, in cooperation with MSC-W, will continue to evaluate the effects of control measures on photo-oxidants, paying particular attention to effects of scale. MSC-W and CIAM will, following the proposals developed under the Working Group on Effects (level II or revised level I approach), develop methods to evaluate exceedances of critical levels.

2.6 HEAVY METALS

Description/objectives: Provide monitoring and modelling data on concentrations, depositions and transboundary fluxes of cadmium (Cd), lead (Pb) and mercury (Hg). Develop further the Pb, Cd and Hg transport models in parallel with the development of heavy metal critical limits under the Working Group on Effects. Develop reliable emission data for Cd, Pb and Hg, as well as a preliminary data set for other metals. Support preparatory work for the review of the Protocol on Heavy Metals.

Main activities and time schedule:

(a) MSC-E will prepare information for 2001 for Pb, Cd and Hg on: deposition and air concentrations fields in Europe with a resolution of 50 km x 50 km; country-to-country deposition matrices; and deposition to the regional seas. It will furthermore present: 1990-2000 pollution trends for Pb, Cd and Hg; estimates for Hg atmospheric transport on a hemispheric scale; and, in cooperation with CCE, critical load exceedance maps for Pb and Cd. In cooperation with CCC, it will compare modelling results with monitoring data;

(b) MSC-E will further develop its models and its input data. It will, in particular, improve the parameterization of: Hg behaviour in environmental compartments; Pb, Cd, Hg dry deposition to different underlying surfaces; wet removal processes; and mercury atmospheric chemistry. MSC-E will continue the Hg model intercomparison study. At stage III, the modelled annual and monthly mean

concentrations will be compared with measurements. At stage IV export-import balances for Italy, Poland and the United Kingdom will be compared;

(c) In cooperation with Parties, CCC will enhance the completion of the superstation network (about ten monitoring sites in defined areas). It will complement EMEP data with data from other international programmes. It will report on the intercomparison for sampling and analytical techniques for Hg and on the analytical intercomparison of the other seven heavy metals measured in precipitation (see table 2 below). An intercomparison study on mercury will, if possible, be organized by Germany;

(d) MSC-E will prepare gridded anthropogenic emission data, based on officially submitted data and expert estimates, and collect available data on natural emissions. CCC and MSC-E, in consultation with national experts, will adjust European Hg emission inventories to modelling requirements. CCC will develop profiles of chemical species of heavy metal emissions.

2.7 PERSISTENT ORGANIC POLLUTANTS (POPs)

Description/objectives: Improve the monitoring and modelling data on concentrations, depositions and transboundary fluxes of selected POPs. Study further the physical-chemical processes of POPs in different environmental compartments, taking into account their transport within the EMEP region and on the hemispheric/global scale. Develop reliable emission data for the POPs listed in the Protocol, as well as a preliminary data set for other substances. Support preparatory work for the review of the Protocol on POPs.

Main activities and time schedule:

(a) MSC-E will prepare information for 2000 on: transboundary transport of Benzo[a]pyrene (BaP) (deposition and concentration fields and country-to-country matrix); transport and accumulation of PCDD/Fs in various compartments; pilot calculations for long-range transport on a hemispheric scale of PCBs, HCB and γ-HCH; and deposition of selected POPs to the regional seas. It will furthermore present: 1970-2000 pollution trends for B[b]F and PCDD/Fs. It will support the Expert Group on POPs and its national experts in their work and contribute to work to develop an effects-based approach under the Working Group on Effects;

(b) MSC-E will further develop its models by: modifying the modelled behaviour in soil; modifying modelled air/sea exchange; refining the physico-chemical properties of PAHs, PCBs, γ-HCH, PCDD/Fs and HCB; evaluating the influence of sea ice on hemispheric transport of the POPs; and refining the model input data. It will start the model intercomparisons study and organize the first meeting with experts from the Czech Republic, Lithuania, Switzerland, the United Kingdom and the United States. Stage I will compare model descriptions of behaviour in environmental media and parameterization for long-range transport and accumulation in multi-compartment models;

(c) In cooperation with Parties, CCC will enhance the completion of the superstation network (five to ten sampling sites). In cooperation with MSC-E, it will complement EMEP data with data from other international and national programmes for comparison with model results;

(d) CCC and MSC-E, in consultation with the Task Force on Emission Inventories and Projections and Parties, will improve the POPs emission data quality. They will adjust European emission inventories for POPs to the modelling requirements. CCC will develop profiles of chemical species of the selected POPs and collate information on the height of major point sources.

2.8 FINE PARTICULATES

Description/objectives: Provide an evaluation of concentrations, transboundary fluxes and cost-effective abatement strategies. Develop a reliable emission inventory for primary particulate matter (PM). Evaluate experience with reporting and review guidance for emission estimation and monitoring of air concentrations. Support the investigations on fine particulates in preparation of the review of the Gothenburg Protocol.

Main activities and time schedule:

(a) MSC-W will evaluate the impact of aerosol dynamic processes in the calculations of particulate mass distribution over Europe with the unified Eulerian model. In cooperation with CIAM, it will determine the influence of such processes on source-receptor relationships for particulate mass (see item 2.3 (d) above). It will report on model intercomparisons with other European aerosol modelling groups;

(b) CCC will evaluate the status of monitoring and quality assurance activities, in particular with a view to providing monitoring data for model validation. It will continue work on source apportionment and chemical mass closure in cooperation with national experts. CCC will further improve the implementation of the PM monitoring strategy by advising Parties on setting up additional sites and applying new methodologies. It will finalize its elemental carbon/organic carbon (EC/OC) measurement campaign in summer 2003 and report the results to the Task Force on Measurement and Modelling thereafter. CCC will strengthen cooperation with other research projects for level 2 and 3 monitoring as defined in the PM monitoring programme;

(c) MSC-W will evaluate the emission data reported by Parties and analyse the consequences of the allocation of PM concentrations. CIAM will review the projections reported by Parties. MSC-W and CIAM will analyse the re-suspension of PM and natural emissions and report to the Task Force on Emission Inventories and Projections. MSC-W will take further steps to examine the contribution of VOCs to secondary organic aerosols;

(d) CIAM, in collaboration with MSC-W, will further develop the framework for integrated assessment modelling of fine particulates, in particular to incorporate advances in atmospheric transport models. CIAM will report on the comments received by Parties in their review of their PM abatement cost curves available on the Internet. The centres will support the Task Force on the Health Aspects of Air Pollution by providing data allowing it to draw up recommendations on health indicators/ limit values for subsequent inclusion into integrated assessment modelling.

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

Description/objectives: Annual review of activities and results of the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution. Preparation of a draft annual

joint report based on the information provided by the lead countries and the programme coordinating centres, for consideration by the Working Group on Effects.

Main activities and time schedule:

(a) Submission of relevant information on the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution to the secretariat (20 May 2003);
(b) Submission of the 2003 joint report of the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution prepared by the secretariat, to the Working Group on Effects in 2003.

3.1.2 Major review of effects of air pollutants

Description/objectives: Review of knowledge on the effects of selected air pollutants based on the results of the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution as well as other relevant data and information. Preparation of the 2004 substantive report on the review and assessment of present air pollution effects and their recorded trends.

Main activities and time schedule:

(a) Editing of draft contributions, prepared by the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution, by the Bureau of the Working Group on Effects (December 2002 - February 2003);
(b) Preliminary draft of the 2004 substantive report to the Extended Bureau of the Working Group on Effects (February 2002);
(c) Draft of the 2004 substantive report to the Working Group on Effects (September 2003).

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

Description/objectives: Quantification of the multi-pollutant effects on the corrosion of selected materials under different environmental conditions, inter alia, as a basis for the economic evaluation of air pollution damage. 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.

Main activities and time schedule:

(a) Report on the trend in corrosion attack in the network of the multi-pollutant exposure programme to the Working Group on Effects in 2003;
(b) Report on the further development of a database of environmental data for the multi-pollutant exposure programme to the Working Group on Effects in 2003;

(c) Draft report on the activity and plans of the new research sub-centre on stock at risk and cultural heritage established in Italy;

(d) Exposure of (i) passive samplers for particulate matter and nitric acid and (ii) material specimens in connection with the MULTI-ASSESS programme (withdrawal in autumn 2003);

(e) Nineteenth meeting of the Programme Task Force, 8-9 May 2003, Munich, Germany;

(f) Workshop on the release of heavy metals due to corrosion (12-14 May 2003, Munich, Germany).

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

Description/objectives: Identification of the state of surface water ecosystems and their long-term changes, with respect to the regional variation and impact of selected air pollutants, and including effects on biota. 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.

Main activities and time schedule:

(a) Finalization and publication of the fifteen-year report of ICP Waters; a summary report to the Working Group on Effects in 2003;

(b) Publication of a report summarizing results of workshops on (i) heavy metals in surface waters (March 2002, Lillehammer, Norway); and (ii) biological response modelling (September 2002, Grimstad, Norway);

(c) Preparation of a report on possibilities and limitations of dynamic modelling of surface waters;

(d) Preparation of a draft report on biological recovery of surface waters;

(e) Organization of the 2003 biological and chemical intercalibrations; presentation of the 2002 results to the Working Group in 2003;

(f) Nineteenth meeting of the Programme Task Force, October 2003, Ticino, Switzerland (tentatively).

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

Description/objectives: Collection and assessment of comprehensive and comparable data on changes in forests under actual environmental conditions (in particular air pollution, including acidifying and eutrophying deposition, as well as other stresses) and determination of cause-effect relationships. 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), extensive large-scale monitoring (level I) and integrated evaluation of results are carried out.

Main activities and time schedule:

(a) Preparation of the 2003 executive and technical reports on Forest Condition in Europe (levels I and II); summary report on the 2002 monitoring results to the Working Group on Effects in 2003;

(b) Preparation of a report on quality assurance for water samples, soil and foliar samples, as well as crown condition assessment; information to the Working Group in 2003;

(c) Progress report on the further development of links between level I and level II monitoring to the Working Group in 2003;

(d) Further cooperation with other bodies within as well as outside the Convention (e.g. EANET, IUFRO);

(e) Nineteenth meeting of the Programme Task Force, 24-28 May 2003, Zagreb.

3.5 INTERNATIONAL COOPERATIVE PROGRAMME ON EFFECTS OF AIR POLLUTION ON NATURAL VEGETATION AND CROPS

Description/objectives: Evaluation of the effects of air pollutants and other stresses on natural vegetation and crops; identification of dose/response functions for a range of crops; assessment of economic losses caused by ozone effects on crops; validation of ozone critical levels for natural vegetation and crops and further development of the level II approach; evaluation of natural vegetation and crops as effective indicators of the potential for damage to natural ecosystems by ozone; evaluation and mapping of heavy metal deposition to vegetation; and evaluation of the impacts of nutrient nitrogen on semi-natural vegetation. A Programme Task Force, led by the United Kingdom, with the cooperation of the Programme's coordination centre (Centre for Ecology and Hydrology, Bangor Research Unit, Bangor, United Kingdom), is responsible for the detailed planning and coordination of the Programme.

Main activities and time schedule:

(a) The 2002/2003 annual report on the achievements of the Programme to the Working Group on Effects in 2003;

(b) Progress report on further development of the Programme's experiments on the effects of ambient ozone episodes on crops and natural vegetation to the Working Group in 2003;

(c) Report of the workshop on establishing ozone critical levels II (November 2002, Gothenburg, Sweden) to the Working Group in 2003;

(d) Contribution to the report of the workshop on empirical critical loads for nitrogen deposition on (semi-) natural ecosystems (November 2002, Bern);

(e) Progress report on monitoring heavy metals deposition to crops and natural vegetation, including a report on analysis of data from the Europe-wide heavy metals in mosses survey conducted in 2000/2001;

(f) Sixteenth meeting of the Programme Task Force, 27-30 January 2003, Velenje, Slovenia.

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

Description/objectives: Determination and prediction of the state of ecosystems and their long-term changes with respect to the regional variation and impact of selected air pollutants, with special attention to effects on biota. 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.

Main activities and time schedule:

(a) Preparation of the Twelfth Annual Report of ICP Integrated Monitoring; presentation to the Working Group on Effects in 2003;

(b) Continued calculation of: (i) sulphur and nitrogen compounds, base cations, organic carbon and H^+ budgets and trends; and (ii) heavy metal pools and fluxes; progress report to the Working Group in 2003;

(c) Further development of bioeffects indication, assessment of multi-pollutant, multi-effect relationships (in cooperation with ICP Forests); progress report to the Working Group in 2003;

(d) Report on the results of site-specific dynamic modelling and assessment of the recovery at selected ICP Integrated Monitoring sites, to the Working Group in 2003;

(e) Information on cooperation with and/or active participation in activities of other relevant international organizations/bodies, in addressing global environmental issues (e.g. climate change) to the Working Group in 2003;

(f) Eleventh meeting of the Programme Task Force, and integrated monitoring workshop, 8-10 May 2003, Helsinki.

3.7 INTERNATIONAL COOPERATIVE PROGRAMME ON MODELLING AND MAPPING OF CRITICAL LEVELS AND LOADS AND AIR POLLUTION EFFECTS, RISKS AND TRENDS

Description/objectives: Determination of critical loads and levels and their exceedances for selected pollutants, development and application of other methods for effect-based approaches such as dynamic modelling, and modelling and mapping of the present status and trends in impacts of air pollution. A Programme Task Force led by Germany is responsible for the detailed planning and coordination of activities. The Task Force uses and integrates available and accepted data, drawing, in particular, on the current work of other task forces, International Cooperative Programmes and EMEP. The Coordination Center for Effects (CCE at the National Institute of Public Health and the Environment, Bilthoven, Netherlands) provides scientific and technical support to the Task Force and to other effect-related activities, in particular by developing methods and models for calculating critical loads and levels and for applying other effect-based approaches, as well as by producing maps of critical loads and levels and their exceedances, and other risk parameters related to potential damage and recovery.

Main activities and time schedule:

(a) CCE to issue a call for eutrophication and acidification data to National Focal Centres to update critical loads database including an extension for data required for dynamic modelling (December 2002);

(b) Updated maps of critical loads and their exceedances to the Working Group on Effects in 2003;

(c) Final draft of the dynamic modelling manual and preliminary dynamic modelling results on a European scale to the Working Group in 2003;

(d) Further development of critical limits for heavy metals and their application;

(e) Preliminary revised maps of level II critical levels of ozone;

(f) Nineteenth meeting of the Programme Task Force and thirteenth CCE workshop, 19-23 May 2003, Tartu, Estonia.

3.8 EFFECTS OF AIR POLLUTANTS ON HUMAN HEALTH

Description/objectives: Preparation of state-of-the-art reports on the direct and indirect effects of long-range transboundary air pollution on human health.

(a) The World Health Organization (WHO) is invited to present relevant progress/technical reports to the Working Group on Effects, so that acquired knowledge of WHO can be applied in the further implementation of the Convention. Additional information/reports should 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 updating existing protocols, the joint Task Force of WHO/European Centre for Environment and Health (ECEH) and the Executive Body, led by WHO/ECEH, Bonn Office, evaluates and assesses the health effects of long-range transboundary air pollution and reports on the subject.

Main activities and time schedule:

(a) Report on a preliminary assessment of the health risk of particulate matter and ozone from long-range transboundary air pollution to the Working Group on Effects in 2003;

(b) Publication of report on assessment of the potential health risks of the selected POPs from long-range transboundary air pollution;

(c) Sixth meeting of the Task Force on the Health Aspects of Air Pollution, May 2003, Bonn, Germany (tentatively).

Annex

Table 1. The EMEP Emission Reporting Programme for 2002/2003

Emissions data should be submitted to the secretariat by 15 February 2003. Gridded data should reach the secretariat no later than 1 March 2003. This table is a summary of the reporting information contained in the Guidelines for Estimating and Reporting Emissions Data (EB.AIR/GE.1/2002/7 and Corr.1).

Description of contents	Components	Reporting years[1]
YEARLY: MINIMUM **(**and *ADDITIONAL)*		
A. National totals:		
1. Main pollutants	SO_x, NO_x, NH_3, NMVOC, CO	From 1980 to 2001
2. Particulate matter	$PM_{2.5,}$ $PM_{10,}$ TSP	For 2000 and 2001
3. Heavy metals	Pb, Cd, Hg / (*As, Cr, Cu, Ni, Se, Zn)*	From 1990 to 2001
4. POPs	(See note 2)	From 1990 to 2001
B. Sector emissions:		
1. Main pollutants	SO_x, NO_x, NH_3, NMVOC, CO	From 1980 to 2001
2. Particulate matter	$PM_{2.5,}$ PM_{10}, TSP	For 2000 and 2001
3. Heavy metals	Pb, Cd, Hg / (*As, Cr, Cu, Ni, Se, Zn)*	From 1990 to 2001
4. POPs	(See note 2)	From 1990 to 2001
5-YEARLY: MINIMUM REPORTING		
C. Gridded data in the EMEP 50x50 km^2 grid		
1. National totals	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	From 1990 to 2001 (PM for 2000 and 2001)
2. Sector emissions	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	For 2000 and 2001 (PM for 2000 and 2001)
D. Emissions from large point sources	Main pollutants, HM, PCDD/F, PAH, HCB, TSP	From 1990 to 2001 (TSP for 2000 and 2001)
E. Projected activity data and projected national total emissions		
1. National total emissions	See table IV 2A in EB/AIR/GE.1/2002/7 and Corr.1	2010, 2015, 2020
2. Energy consumption	See tables IV 2B, 2C in EB.AIR/GE.1/2002/7 and Corr.1	1990, 1995, 2000, 2010, 2015, 2020
3. Energy consumption for transport sector	See table IV 2D in EB.AIR/GE.1/2002/7 and Corr.1	1990, 1995, 2000, 2010, 2015, 2020
4. Agricultural activity	See table IV 2E in EB.AIR/GE.1/2002/7 and Corr.1	1990, 1995, 2000, 2010, 2015, 2020
5-YEARLY: ADDITIONAL REPORTING/FOR REVIEW AND ASSESSMENT PURPOSES		
VOC speciation / Height distribution / Temporal distribution		Parties are encouraged to review the information used for modelling at the Meteorological Synthesizing Centres available for review at http://webdab.emep.int/
Land-use data / Mercury breakdown		
% of toxic congeners of PCDD/F emissions		
Pre-1990 emissions of PAHs, HCB, PCDD/F and PCB		
Information on natural emissions		

1/ As a minimum, data for the base year of the relevant protocol and from the year of entry into force of that protocol to the latest year should be reported.

2/ Aldrin, Chlordane, Chlordecone, DDT, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene (HCB), Mirex, Toxaphene, Hexachlorocyclohexane (HCH), Hexabromobiphenyl, Polychlorinated biphenyls (PCBs), Dioxins/Furans (PCDD/F), Polycyclic Aromatic Hydrocarbons (PAHs), and as additional information: Short-chained chlorinated paraffins (SCCP), Pentachlorophenol (PCP).

Table 2. EMEP measurement programme 2003

Measurements are to be reported by 1 October.

	Components	Notes	Minimu reporting	Measurement period	Measurement frequency
Gas	SO_2		X	24 hours	daily
	NO_2		X	24 hours	daily
	HNO_3		Y	24 hours	daily
	NH_3		Y	24 hours	daily
	O_3		X	hourly means stored	continuously
	Light hydrocarbons C2-C7		Y	10-15 min.	twice a week
	Ketones and aldehydes		Y	8 hours	twice a week
	Hg		Y	24 hours	weekly
Particles	SO_4^{2-}		X	24 hours	daily
	NO_3^-		Y	24 hours	daily
	NH_4^+		Y	24 hours	daily
	Na, Mg, Ca, K (Cl)	*	Y	24 hours	daily
	PM10	*	X	24 hours	daily
	PMx (2.5 or 1.0)	**	Y	24 hours	daily
	Mineral dust		Y	24 hours	daily
	Elemental and organic carbon	*	Y	24 hours	daily
	Organic carbon speciation			weekly	weekly
	Cd, Pb (priority); Cu, Zn, As, Cr, Ni (additional)		Y	24 hours	weekly
	Chemical speciation as function of PM size		Y	24 hours	daily
	Number size distribution			hourly means stored	continuously
	Light scattering			hourly means stored	continuously
Gas & particles	$HNO_3(g)+NO_3^-(p)$,		X	24 hours	daily
	$NH_3(g)+NH_4^+(p)$		X	24 hours	daily
	POPs (PAH, PCB, HCB, chlordane, lindane, a-HCH, DDT/DDE)		Y	to be decided	to be decided
Precipitation	Amount, SO_4^{2-}, NO_3^-, Cl^-, pH, NH_4^+, Na^+, Mg_2^+, Ca_2^+, K^+, conductivity		X	24 hours/weekly	daily (weekly)
	Hg, Cd, Pb (priority), Cu, Zn, As, Cr, Ni (additional)		Y	weekly	weekly
	POPs (PAH, PCB, HCB, chlordane, lindane, α-HCH, DDT/DDE)		Y	to be decided	to be decided

Notes:

* The recommendation to measure PM10, elemental carbon, organic carbon and soluble base cations at all EMEP sites may not be feasible in the short run. However, measurements should be started at as many sites as possible and on at least one site in each country.

** As a European reference method for PM2.5 is not expected before 2004, countries are encouraged to start their measurements using other available methods.

X – At all sites.

Y – At a selection of sites only.