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

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(Geneva, 15-18 December 2003)  
Item 8 of the provisional agenda

**DRAFT WORK-PLAN FOR THE IMPLEMENTATION OF THE CONVENTION  
ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION IN 2004**

Note by the secretariat

1. In preparing the draft work-plan, the secretariat has taken into consideration the current work-plan (ECE/EB.AIR/77, Add.2, annex XIII), as well as the decisions taken by the Working Group on Strategies and Review at its thirty-fifth session (EB.AIR/WG.5/76), the Implementation Committee at its eleventh and twelfth meetings (EB.AIR/2003/1 and Add.1), the Working Group on Effects at its twenty-second session (EB.AIR/WG.1/2003/2), 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-seventh session (EB.AIR/GE.1/2003/2).

Documents prepared under the auspices or at the request of the Executive Body for the Convention on Long-range Transboundary Air Pollution for GENERAL circulation should be considered provisional unless APPROVED by the Executive Body.

## **2004 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), 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 proposals for further action and required inputs for review of 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-sixth session of the Working Group on Strategies and Review will take place from 14 to 17 September 2004.

#### **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 make preparations for an in-depth review of compliance by the Parties with the 1998 Protocol on POPs. 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) Thirteenth meeting of the Implementation Committee, 4-6 May 2004;
- (b) Fourteenth meeting of the Implementation Committee in Geneva, 22-24 September 2004;
- (c) Seventh report by the Implementation Committee to the Executive Body at its twenty-second 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. Reviews for purposes of compliance are carried out every two years; a general policy review is carried out every four years.

Main activities and time schedule:

The review for purposes of compliance is scheduled for 2004. The draft questionnaire, considered by the Executive Body at its twenty-first session (EB.AIR/2003/2/Add.1), will be made available by the secretariat through the Convention's Internet home page as of 31 January 2004, with a deadline for responses of 31 March 2004. Replies will be made available to the Implementation Committee and the secretariat will prepare a summary report of the replies for the Committee.

### **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 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. Ståle Navrud (Norway) 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. A third workshop is tentatively scheduled for spring 2005 in Italy on the subject of damage to materials including cultural heritage.

## **1.5 REVIEW AND REASSESSMENT OF PERSISTENT ORGANIC POLLUTANTS**

Description/objectives: To begin work on the review of the 1998 Protocol on POPs including the reassessments of production and use for annexes I, II and III to the Protocol as specified in its annexes, and the review of effectiveness and sufficiency as specified in article 10 of the Protocol; to prepare for the technical review of officially submitted dossiers of new substances proposed by Parties for inclusion into annexes I, II and III to the Protocol.

Main activities and time schedule:

As agreed by the Executive Body at its twenty-first session and the Parties to the Protocol on POPs meeting at that session, work will be initiated to plan the preparation of technical reports related to the use reassessments identified and scheduled in annexes I, II and III to the Protocol on POPs. Plans for gathering the technical components of the first review of the sufficiency and effectiveness of the Protocol will also be prepared. Short- and long-term work-plans and reports on progress in the preparations will be prepared for consideration at the thirty-sixth session of the Working Group on Strategies and Review. The Working Group on Effects and the EMEP Steering Body are requested to contribute to and participate in this work.

The Working Group on Strategies and Review will report to the Executive Body at its twenty-second session on progress in the technical components of the sufficiency and effectiveness review, and provide recommendations regarding the scheduled use reassessments.

## **1.6 REVIEW OF INFORMATION ON HEAVY METALS**

Description/objectives: In preparation for the review of the Protocol on Heavy Metals:

- (a) Collect and evaluate available information (within and outside the framework of the Convention) on the effects of heavy metal pollution;
- (b) In collaboration with the relevant bodies under the Working Group on Effects and the EMEP Steering Body, assess the potential for using an effects-based approach for the review of and possible revision of the Protocol;
- (c) Review 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;
- (d) Assess measures scheduled for re-evaluation in the Protocol; and
- (e) Review the information on heavy metals not yet included in the Protocol.

Main activities and time schedule:

An Expert Group on Heavy Metals, led by Germany, will address the objectives in

collaboration with relevant bodies under the Convention. It will further develop its work-plan and activities taking into account the results of its first meeting, as well as the conclusions from the technical and scientific workshop on heavy metals, held on 17-18 November 2003 (Frankfurt, Germany). It will report to the Working Group on Strategies and Review at its thirty-sixth session. The second meeting of the Expert group will be held from 31 March to 1 April 2004 in Brussels.

## **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.

Main activities and time schedule:

(a) The Expert Group on Techno-economic Issues, with France as its lead country, will continue its work on developing software for describing emission control options, their costs and ranges of uncertainties. The Expert Group will hold several meetings during 2004, including sectoral meetings and one or two plenary sessions. At its plenary meetings the Expert Group will consider the results of the sectoral meetings;

(b) Work will continue on the collection of in-country data on costs of abatement techniques in the selected sectors according to the nomenclatures for reporting as defined in the Guidelines for Estimating and Reporting Emission Data;

(c) In 2004, 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 include them in the RAINS model. These data may also be used for updating technical annexes to protocols to reflect emission control options and their costs, as part of the protocol review process.

## **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) A workshop on abatement options for particulate matter will be organized by the United States of America in Indiana in June 2004. Possibilities for convening further workshops on techniques and technologies for emissions from stationary sources, including economic aspects, focused on particulate matter or other topics, could be explored, should other host countries come forward;

(c) The secretariat will follow progress on the project proposal for capacity-building for air quality management and the application of clean-coal combustion technologies in Central Asia, which has sought funding from the United Nations Development Account, plan and implement the project if it is funded, and report to the Working Group on Strategies and Review at its thirty-sixth session;

(d) The Russian Federation in collaboration with the secretariat will circulate a questionnaire to countries in Eastern Europe, the Caucasus and Central Asia (EECCA) to gather information on national requirements for capacity-building.

## **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 relationships between recommended control options/techniques and resulting ammonia emissions (EB.AIR/WG.5/2002/3). The work shall be done in collaboration with EMEP, in particular the agricultural panel of the Task Force on Emissions Inventories and Projections and the Task Force on Measurements and Modelling, and shall include efforts to strengthen links with EECCA countries, encouraging their participation in meetings and workshops.

### Main activities and time schedule:

(a) Work towards improving the quality of ammonia emission inventories, including through the use of a questionnaire circulated by CIAM to fill statistical gaps in agricultural emissions;

(b) Workshop on agricultural emission abatement options to be held in Poland in spring 2004;

(c) Plan future work to compare national inventories, projections and abatement strategies;

(d) 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;

(e) Further consideration of non-agricultural ammonia emissions that are possibly underreported by Parties, in collaboration with the Task Force on Emission Inventories and Projections and the Task Force on Measurement and Modelling; consider ways to improve the quality of reporting of ammonia emissions and measurements;

(f) Review, in cooperation with the Task Force on Measurement and Modelling, strategies to measure emissions of nitrogen compounds and consider future workshop comparing measurement and modelling techniques used in Europe.

## **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.

Follow up on recommendations made at the workshop on a communication strategy for the Convention (EB.AIR/WG.5/2003/7).

Main activities and time schedule:

- (a) The secretariat in collaboration with the Bureau of the Executive Body will take priority action to plan a media event to mark the twenty-fifth anniversary of the Convention in November 2004;
- (b) Continued consideration of the implementation of the recommendations of the workshop on communications through a task force, expert group, network of experts and or workshops;
- (c) Continued consideration of issues of outreach especially with regard to the possible development of a global forum on air pollution;
- (d) The secretariat, with support of the United States of America, will continue to develop and rationalize the Convention's web site ensuring it is easy to use and fit for purpose.

## **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 (EEA) (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, with assistance from the centres and in cooperation with the European Environment Information and Observation Network (EIONET), will provide a technical forum and expert network to: share information, harmonize emission factors, establish methodologies for the evaluation of emission data and projections, identify and resolve problems related to reporting, and serve as a peer review body for scientific work on emissions undertaken by EMEP.

Main activities and time schedule:

(a) The Task Force on Emission Inventories and Projections will continue to maintain and promote the Atmospheric Emission Inventory Guidebook, in close collaboration with EEA. The Task Force will work with Parties to improve the quality, consistency and completeness of emission reporting with a focus on validation and good practice. The Task Force in cooperation with the EMEP centres, EEA and the European Commission's Joint Research Centre (JRC) will develop an emission inventory improvement programme. The Task Force will hold its thirteenth meeting jointly with EIONET in autumn 2004. CIAM and MSC-W, together with the European Topic Centre on Air and Climate Change, will support the Task Force in its work on emission data review;

(b) By 15 February 2004, or 1 March 2004 for gridded data, as requested by the secretariat and in accordance with the Guidelines for Estimating and Reporting Emissions Data (EB.AIR/GE.1/2002/7 and Corr.1. also published in the Air Pollution Studies series, No. 15), Parties should submit 2002 emission data and projections and updates to data for earlier years as summarized in the table below;

(c) MSC-W will compile the data and assure data consistency, update the inventory database and make the emission database available at <http://webdab.emep.int>. It will establish and document procedures for testing the comparability and accuracy of the reported emissions, their trends and spatial distribution. It will present a report on 1980-2002 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. MSC-W will continue to develop the electronic checking tool REPDAB to facilitate the validation of data reported by Parties.

## 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. MSC-W will coordinate the input from national experts. The Swedish editor of the report, supported by CCC, MSC-E and MSC-W, will finalize the drafting of the report, including part 2 on the overall European perspective with the following chapters: (1) acidification and eutrophication, (2) ozone, (3) heavy metals and persistent organic pollutants (POPs), (4) particulate matter, (5) summary. A final draft will be presented to the Task Force for comment

before the end of February 2004. The assessment report will be presented to the Steering Body in September 2004;

(b) The Parties will report to CCC monitoring results for 2003 by 1 October 2004 in accordance with the draft monitoring strategy (EB.AIR/GE.1/2003/3/Add.1). CCC will continue to collect the 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 with a specific focus on policy-relevant aspects. Data will be marked provisional until their approval at the Steering Body's session. 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;

(d) The Task Force on Measurements and Modelling, supported by CCC, will assist Parties to implement the draft monitoring strategy and carry out further work for the possible adoption of a monitoring strategy next year. This work will aim at consolidating the EMEP monitoring network as outlined in the draft strategy, taking into account the requirements of the protocols and the relevant EC directives. CCC, in cooperation with MSC-E and MSC-W, will further examine the approaches to combining modelling data with observations, such as data assimilation techniques. CCC will intensify collaboration with other national and international programmes to implement the 'level' approach in the draft monitoring strategy. It will provide training and guidance to Parties to establish advanced monitoring sites for level 1, 2 and 3 monitoring. Parties, supported by CCC, 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 fifth meeting in April 2004 and report on progress to the Steering Body at its twenty-eighth session;

(e) MSC-W, in collaboration with interested Parties and the other centres, will continue to assist the Task Force in the evaluation of the unified (photo-oxidants, acid deposition, particles) Eulerian model, including validation, model intercomparison, and the comparison of model results and observations. The Task Force will hold a workshop on the review and evaluation of the unified EMEP model on 3-5 November 2003 in Oslo. MSC-W, together with the workshop's Chair, will prepare a report on the workshop and the model evaluation by January 2004 for discussion at the fifth meeting of the Task Force. The Task Force will present its conclusions and recommendations on this work to the Steering Body at its twenty-eighth session;

(f) The centres, in consultation with the Task Force, will cooperate on extending the modelling work to cover the whole Northern hemisphere. MSC-W will compile the meteorological data for hemispheric modelling and present initial hemispheric model simulations focusing on the analysis of the influence from the free troposphere on ozone levels in Europe. CCC will develop a strategy to derive three-dimensional fields of priority substances on the basis of surface and satellite observations, remote sensing and other sensors. It will collaborate with monitoring networks outside the EMEP area to link measurements at regional and hemispheric scales. The Bureau will review the status and potential of this work, and prepare a note on its policy-related aspects for discussion initially by the Bureau of the Executive Body. An EMEP workshop on hemispheric air pollution will be held, as follow-up to the one held on 7-9 October 2002 in Bad Breisig (Germany);

(g) The Centres in consultation with the Task Force, and in cooperation with EEA and JRC, will assess the links between regional-scale pollution and that at the urban and local scales, in particular for PM and ozone. They will take into account inter alia the findings of the City Delta project and report their findings to the EMEP Steering Body.

### 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, volatile organic compounds (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 the baseline scenarios for the review of the Gothenburg Protocol 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, outside the EMEP region. The Task Force will hold a workshop, possibly on the review of the RAINS model, on 22-23 January 2004 (tentatively) at IIASA in Laxenburg (Austria). It will hold its twenty-ninth meeting on 10-12 May 2004 in Paris/Chantilly;

(b) CIAM will pursue work on the baseline scenarios covering all Parties in the EMEP region. Priority will go to an overall analysis of uncertainty using error propagation. Work done in collaboration with MSC-W will focus on uncertainties in atmospheric transport models and related non-linearities in the source-receptor relationships and investigate the inter-annual variability of source-receptor relationships;

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

(d) CIAM, in cooperation with MSC-W, will develop methods to cover, in integrated assessment models, the systematic differences in response to emission changes between regional and urban-scale models, based on the results of the City Delta project and on work by MSC-W to nest urban meso-scale models in the regional model. CIAM will investigate abatement measures to address urban pollution and report to the Task Force or to a special workshop on the topic;

(e) CCC, in cooperation with CIAM, will analyse emission trends for certain POPs and heavy metals as a starting point for the preparation of abatement scenarios covering the whole Northern hemisphere;

(f) CIAM, in cooperation with MSC-W, will use the set of emission projections

prepared for the whole Northern hemisphere to examine the effects of hemispheric background pollution on source-receptor relationships in Europe. It will evaluate the cost-effectiveness of measures to reduce regional air pollutants taking into account their impacts on climate change. CIAM will also prepare for an evaluation of sectoral trends and discussion of scenarios of maximum feasible emission reductions taking into account the potential of non-technical measures and new emerging technologies.

## 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. 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 (see also items 2.1-2.3 above):

- (a) MSC-W will calculate the transport of sulphur and nitrogen compounds for 2002. It will analyse the effect of improvements in the spatial distribution of emissions and calculate ecosystem-allocated deposition fields. Together with the other centres, it will present a status report (also covering photo-oxidants) to the Steering Body at its twenty-eighth session;
- (b) MSC-W will estimate trends in sulphur and nitrogen air concentrations since 1980 and study the influence of co-deposition of ammonia and sulphur dioxide. It will evaluate the need for refining ammonia emission estimates in the EMEP unified Eulerian model by comparing model results with observations, including flux measurements. The results will be presented to the Task Force for Measurements and Modelling in spring 2004;
- (c) 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 continue 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;
- (d) Sweden will host a workshop on the emissions, transport, deposition and effects of base cations in relation to acidification on 26-28 November 2003;
- (e) MSC-W, in cooperation with CCE, will prepare, on a European scale, ecosystem-specific acidity and nitrogen depositions maps and preliminary maps for base cation deposition.

## 2.5 PHOTO-OXIDANTS

Description/objectives: Provide monitoring and modelling data on concentrations and transboundary transport of ozone, NO<sub>x</sub> 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 (see also items 2.1-2.3 above):

- (a) MSC-W will calculate the short- and long-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, in cooperation with CIAM, evaluate the influence of refined emission data;

(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 monitoring strategy (item 2.2 (d) above). In collaboration with participating laboratories, it will arrange for campaigns with parallel sampling and analyses of VOCs. CCC and MSC-W, as well as other national and international modelling teams, will report on measurements and modelling of VOCs for discussion by the Task Force on Measurements and Modelling at its fifth meeting;

(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. They will, following the decision by the Working Group on Effects on the level II and revised level I approach, develop methods to evaluate exceedances of critical levels. CIAM will work on a revised approach to include effects of ozone on human health in integrated assessment modelling, taking into account recent recommendations of the Task Force on the Health Aspects of Air Pollution;

(d) MSC-W, in cooperation with CCC, will study the vertical distribution of ozone across Europe validating estimates against radiosonde information and research campaign data. The analysis will support the study of ozone trends and the evaluation of the effects of free tropospheric ozone.

## 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, in particular the work of the Expert Group on Heavy Metals.

Main activities and time schedule (see also items 2.1-2.3 above):

(a) MSC-E will prepare information for 2002 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 compare model results for concentrations in air and precipitation and deposition fluxes with measurements, and study model sensitivity and uncertainty. It will, furthermore, present 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 prepare a report on new model developments and model evaluation for discussion by the Task Force on Measurements and Modelling at its fifth meeting in April 2004 and present a status report to the Steering Body at its twenty-eighth session;

(b) MSC-E will further develop its models and its input databases. It will, in particular, improve the parameterization of ocean and soil modules for the hemispheric multi-compartment modelling of Hg transport. It will also initiate work for the modelling of other metals (arsenic, copper, chromium, nickel, selenium and zinc). Work on data will include: meteorological data (including sea currents and ice dynamics) and, together with CCC, emission data (including on

gridded and natural emissions) and measurement data (including concentrations in different media);

(c) 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. A fifth expert meeting will be organized in Moscow;

(d) In cooperation with Parties, CCC will enhance the establishment of new sites to meet the requirements of the draft monitoring strategy. Together with MSC-E, it will complement EMEP data with data from other international programmes. CCC will report on the intercomparison for analytical techniques for seven heavy metals measured in precipitation.

## **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 physico-chemical processes of POPs in different environmental compartments, taking into account their transboundary transport within the EMEP region and on the hemispheric 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, in particular the work of the proposed Task Force on POPs.

Main activities and time schedule (see also items 2.1-2.3 above):

(a) MSC-E will prepare information for 2001 on: source-receptor relationships for benzo[a]pyrene (BaP), deposition and concentration fields for benzo[b]fluoranthene (BbF) and benzo[k]fluoranthene (BkF); transboundary transport and accumulation of all toxic congeners of PCDD/Fs (back to 1970), the spatial variability, including hemispheric transport, and pollution levels of PCBs and HCB; and transport of selected POPs to the regional seas. It will contribute to work to explore a possible effects-based approach under the Working Group on Effects;

(b) MSC-E will further develop its models with respect to: the redistribution between different phases and sedimentation in the marine environment; the gas/aerosol partitioning process in the atmosphere; and the distribution in the atmosphere taking into account spatial and temporal variations of OH radical concentrations. It will complete the first stage of the model intercomparisons and prepare the second phase;

(c) In cooperation with Parties, CCC will enhance the establishment of new sites to meet the requirements of the draft monitoring strategy. In cooperation with MSC-E, it will complement EMEP monitoring data with data from other international and national programmes for comparison with model results. Both centres will cooperate with UNEP to harmonize the global monitoring strategy with the one of EMEP;

(d) CCC and MSC-E, in consultation with the Task Force on Emission Inventories and Projections and with Parties, will improve the POPs emission data quality with specific emphasis on PAHs, PCDD/Fs, PCBs and HCB. 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 (see also items 2.1-2.3 above):

(a) MSC-W and CCC will investigate further the chemical composition of particulate matter in Europe. MSC-W will analyse the contribution of organic aerosol to total particulate mass, carry out sensitivity tests on the influence of different assumptions on the chemical composition of emission data, and study the effect of wind-blown PM sources and natural dust in total particulate matter mass. It will study methods to include the effects of re-suspension in urban areas in regional simulations. MSC-W will continue the evaluation of the research aerosol model and report to the Task Force on Measurements and Modelling on the comparison of the aerosol model results against observations;

(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 report the results of its elemental carbon/organic carbon (EC/OC) measurement campaign to the Task Force on Measurements and Modelling. CCC will strengthen cooperation with other research projects for level 2 and 3 monitoring as defined in the PM monitoring programme;

(c) 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. Based on decisions by the Task Force on the Health Aspects of Air Pollution, the centres will prepare integrated assessment modelling scenarios using different health indicators. The centres will present a status report to the Steering Body at its twenty-eighth session.

## **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 (April/May 2004);

(b) Submission of the 2004 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 2004.

### 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. The timely finalization 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 2003 - February 2004);
- (b) Draft of the 2004 substantive report to the Extended Bureau of the Working Group on Effects (March 2004);
- (c) Finalization of the 2004 substantive report to the Working Group on Effects (September 2004).

## **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 activities and plans of the newly established sub-centre for cultural heritage and stock at risk;
- (b) Report on the further development of new dose-response functions based on the multi-pollutant exposure programme and the one-year extension programme (MULTI-ASSESS);
- (c) Report on trend analysis of corrosion and pollution based on the extension of data obtained earlier with results obtained during the 2003 exposure;
- (d) Use the results obtained for mapping areas with exceedances of threshold levels on different geographical scales in Europe and for calculating the costs of damage;
- (e) Coordinate the release of information from the activities of ICP Materials and the MULTI-ASSESS project of the European Commission through workshops, linked web pages and publications;
- (f) Workshop on the cost of damage caused by air pollution on materials including cultural heritage in collaboration with the Centre for Integrated Assessment Modelling (CIAM);

(g) Twentieth meeting of the Programme Task Force, 9-10 June 2004, Watford, United Kingdom.

### **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 of the fifteen-year report (including progress reports on trends in chemistry and biology of surface waters, dynamic modelling and heavy metals);
- (b) Continue maintaining the ICP Waters database;
- (c) Carry out an in-depth review of biological recovery of surface waters;
- (d) Organization of the 2003 chemical (including heavy metals) and biological intercalibrations;
- (e) Update of the ICP Waters manual for acidification and heavy metals;
- (f) Twentieth meeting of the Programme Task Force, October 2004, Sweden (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) Continuation of level I crown condition assessment and level II intensive monitoring, and preparation of level I soil survey;
- (b) Participation in developing updated critical levels of ozone for trees (with ICP Vegetation);
- (c) Assessment of forest biodiversity on level II plots (test phase);
- (d) Further improvement of data quality assurance;
- (e) Update of the ICP Forests manual;
- (f) Twentieth meeting of the Programme Task Force, 22-26 May 2004, Sweden (tentatively).

### **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) Continue to monitor the extent of ozone damage to vegetation in the ECE region;
- (b) Further development of the ozone flux-effect model for clover;
- (c) Analysis of trends in clover biomass and ozone injury development (1993-2003);
- (d) Development of procedures for mapping the semi-natural vegetation communities at risk from ozone;
- (e) Development of maps showing exceedance of the revised critical levels of ozone, in cooperation with ICP Modelling and Mapping;
- (f) Initiation of a study of the spatial and temporal trends in the N content in mosses (1980-2000), including, if possible, herbarium samples for selected sites;
- (g) Consideration of trends in the heavy metals in mosses database and the causes of sub-grid variation in heavy metal concentrations;
- (h) Seventeenth meeting of the Programme Task Force, February 2004, Kalamata (Greece) (tentatively).

### **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) Continue maintaining the ICP Integrated Monitoring network, harmonizing and updating the international database;
- (b) Compilation of the ICP Integrated Monitoring Thirteenth Annual Report 2004;
- (c) Preparation of a draft scientific paper on the calculation of cumulative nitrogen deposition and its effects;

- (d) Finalization of a scientific paper on pools and fluxes of heavy metals at ICP Integrated Monitoring sites;
- (e) Finalization of a scientific paper on the long-distance nitrogen air pollution effects on lichens in Europe;
- (f) Twelfth meeting of the Programme Task Force, 13-15 May 2004, Molln, Austria.

### **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) Revision of the structure and content of the Mapping Manual;
- (b) Updating of the methodologies and final data requirements for the support of a future review and possible revision of the 1999 Gothenburg Protocol;
- (c) Preparation of a call for critical loads data for acidification and eutrophication, dynamic modelling inputs and outputs for use in integrated assessment modelling;
- (d) Contribution to the further development of methodologies for deriving and mapping critical loads for heavy metals in support of a future review and possible revision of the 1998 Aarhus Protocol on Heavy Metals;
- (e) Contribution to the development of methodologies and definition of data requirements in support of the modelling and mapping of critical ozone levels/fluxes;
- (f) Contribution to the development of an effect-based frame of reference to assist in modelling and mapping activities in support of policies which link climate change and air pollution;
- (g) Twentieth meeting of the Programme Task Force, 27-28 May 2004, Vienna (tentatively), and fourteenth CCE workshop, 24-26 May 2004, Vienna (tentatively).

### **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 knowledge acquired by 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) Analysis of the health impacts of particulate matter and ozone using newly developed models for the long-range transport of air pollutants and applying the most recent concentration-response functions;

(b) Continued updating of the review of health effects of heavy metals and persistent organic pollutants from long-range transboundary air pollution;

(c) Seventh meeting of the Task Force on the Health Aspects of Air Pollution, April/May 2004, Bonn, Germany (tentatively).

Annex**Table. The EMEP Emission Reporting Programme for 2003/2004**

Emissions data should be submitted to the secretariat by 15 February 2004. Gridded data should reach the secretariat no later than 1 March 2004. 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 <sup>1</sup>
<b>YEARLY: MINIMUM (and ADDITIONAL)</b>		
<b>A. National totals:</b>		
1. Main pollutants	SO <sub>x</sub> , NO <sub>x</sub> , NH <sub>3</sub> , NMVOC, CO	From 1980 to 2002
2. Particulate matter	PM <sub>2.5</sub> , PM <sub>10</sub> , TSP	From 2000 to 2002
3. Heavy metals	Pb, Cd, Hg / (As, Cr, Cu, Ni, Se, Zn)	From 1990 to 2002
4. POPs	(See note 2)	From 1990 to 2002
<b>B. Sector emissions:</b>		
1. Main pollutants	SO <sub>x</sub> , NO <sub>x</sub> , NH <sub>3</sub> , NMVOC, CO	From 1980 to 2002
2. Particulate matter	PM <sub>2.5</sub> , PM <sub>10</sub> , TSP	From 2000 to 2002
3. Heavy metals	Pb, Cd, Hg / (As, Cr, Cu, Ni, Se, Zn)	From 1990 to 2002
4. POPs	(See note 2)	From 1990 to 2002
<b>5-YEARLY: MINIMUM REPORTING</b>		
<b>C. Gridded data in the EMEP 50x50 km<sup>2</sup> grid</b>		
1. National totals	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	For 1990, 1995 and 2000 (PM for 2000)
2. Sector emissions	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	For 1990, 1995 and 2000 (PM for 2000)
<b>D. Emissions from large point sources</b>	Main pollutants, HM, PCDD/F, PAH, HCB, PM	For 2000
<b>E. Historical and projected activity data and projected national total emissions</b>		
1. National total emissions	See table IV 2A in EB.AIR/GE.1/2002/7	For 2010, 2015 and 2020
2. Energy consumption	See tables IV 2B, 2C in EB.AIR/GE.1/2002/7	For 1990, 1995, 2000, 2010, 2015 and 2020
3. Energy consumption for transport sector	See table IV 2D in EB.AIR/GE.1/2002/7	For 1990, 1995, 2000, 2010, 2015 and 2020
4. Agricultural activity	See table IV 2E in EB.AIR/GE.1/2002/7	For 1990, 1995, 2000, 2010, 2015, 2020
<b>5-YEARLY: ADDITIONAL REPORTING/FOR REVIEW AND ASSESSMENT PURPOSES</b>		
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 <a href="http://webdab.emep.int/">http://webdab.emep.int/</a> and <a href="http://www.emep.int/index_data.html">http://www.emep.int/index_data.html</a>	
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		

<sup>1/</sup> 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.

<sup>2/</sup> 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-chain chlorinated paraffins (SCCP), pentachlorophenol (PCP). (See EB.AIR/GE.1/2002/7 and Corr.1).