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**ECONOMIC COMMISSION FOR EUROPE**

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

Working Group on Effects  
(Twenty-fourth session, Geneva, 31 August–2 September 2005)  
Item 4 of the provisional agenda

**2005 JOINT REPORT OF THE INTERNATIONAL COOPERATIVE PROGRAMMES  
AND THE TASK FORCE ON THE HEALTH ASPECTS OF AIR POLLUTION**

**Addendum**

**REVIEW OF RECENT EFFECT-ORIENTED ACTIVITIES**

Report compiled by the secretariat in collaboration with the Extended Bureau  
of the Working Group on Effects

1. Pursuant to the decision taken by the Executive Body at its twenty-second session (ECE/EB.AIR/83/Add.2, item 3.1), the secretariat compiled the annual review of the achievements in 2005 of the International Cooperative Programmes (ICPs) and the Task Force on the Health Aspects of Air Pollution, based on the information provided by the lead countries and the programme coordinating centres (EB.AIR/WG.1/2005/3). Information on the general activities carried out by ICPs and the Task Force since the twenty-third session of the Working Group on Effects and the most important recent publications of their results are summarized in annexes I to VII below.

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.
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## Annex I

### INTERNATIONAL COOPERATIVE PROGRAMME ON ASSESSMENT AND MONITORING OF AIR POLLUTION EFFECTS ON FORESTS (ICP FORESTS)

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The twenty-first Task Force meeting took place in Rome on 25 and 26 May 2005 and was organized back to back with the twentieth anniversary of ICP Forests and the tenth anniversary of the Italian CONECOFOR programme. The celebration event was attended by about 200 experts, policy makers and national representatives and offered a concise overview on the main achievements of the programme during the past 20 years. The Task Force meeting was attended by about 100 experts and delegates and addressed the following main topics:

- (a) Implementation and evaluation of the intensive monitoring (level II);
- (b) Evaluations of large-scale data (level I);
- (c) Assessment of ozone (O<sub>3</sub>) concentrations in forests;
- (d) Assessment of forest biodiversity in relation to air pollution and other environmental stress factors;
- (e) Data management and quality assurance.

2. The Task Force elected Mr. Michael Köhl as its new chairman and thanked Mr. Thomas Haußmann for his excellent chairmanship during the past years.

3. Evaluations of level II data focused on deposition trends in 1996–2001. A decrease in sulphur deposition was confirmed whereas nitrogen deposition fluctuated rather than decreased on 169 plots. It was emphasized that depositions and their effects depended on local conditions. Specific case studies were therefore presented in more detail in the programme reports.

4. Data from 121 level II plots and additional monitoring sites were evaluated within the European Union (EU) projects DYNAMIC and CNTER. Nitrogen (N) deposition was shown to be positively correlated with nitrogen leaching, especially in nitrogen-enriched soils. At sites with a lower nitrogen status, mean annual temperature was an additional important factor.

5. The suitability of level II data for dynamic modelling was checked. Model calculations were made for a limited number of plots in Spain, Germany and Sweden. Emission reductions based on international agreements resulted in some soil recovery at most plots. Optional parameters on level II plots needed to be assessed and close contacts with national data centres were necessary to prepare a sound data basis for more complex dynamic model calculations.

6. A clear deterioration of crown condition was again registered for most of the main tree species at level I. Specifically in central Europe this was attributed to delayed effects of the heat and drought waves in 2003. Level II plots provided a basis to follow up these effects. In 2004, data quality was assured by test assessment of tree crown defoliation with 144 sets of 20-26 crown photos compiled for the most common tree species in Europe.
7. The O<sub>3</sub> test phase was again carried out in 2004 and transnational data for 2003 became available. Passive sampler results showed higher mean concentrations compared to 2002 on many plots. Specific training was carried out to enable people to assess visible O<sub>3</sub> injuries. The increased O<sub>3</sub> concentrations did not always lead to higher injury because the summer drought reduced the gas exchange and consequently the O<sub>3</sub> uptake by leaves.
8. A private "Consortium Forest Focus" will set up a new Internet-based level II database in collaboration with the programme coordination centre with funds from the European Commission. This will enable the storage of level I data in a central database as well.
9. Methods for the survey of epiphytic lichens, for an extended ground vegetation survey, for stand structural and deadwood assessments and for a forest type classification were developed in the ForestBIOTA project. Field manuals were made available from the project website ([www.forestbiota.org](http://www.forestbiota.org)). Assessments on 100 level II plots were foreseen for 2005. An Internet-based database was set up enabling online submission of the field data.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

Fischer, R., Bastrup-Birk, A., Becker, R., Catalayud V., Dietrich, H.-P., Dise, N., Dobbertin, M., Graf-Pannatier, E., Gundersen, P., Haußmann, T., Hildingsson, A., Lorenz, M., Müller, J., Mues, V., Pavlenda, P., Petriccione, B., Raspe, S., Sanchez-Pena, G., Sanz, M., Ulrich, E., Volz, R., Wijk, S. (2005) The Condition of Forests in Europe. Executive Report 2005. UNECE, Geneva, 32 pp.

Lorenz, M., Becher, G., Mues, V., Becker, R., Dise, N., Ulrich, E., Sanz, M. (2005) Forest Condition in Europe. Technical Report 2005. UNECE, Geneva. 101 pp.

Fischer, R. (ed, 2005). Europe's Forests in a Changing Environment. Twenty years of Monitoring Forest Condition by ICP Forests. UNECE, Geneva. 60 pp.

Note: The references have been reproduced as received by the secretariat.

## Annex II

### INTERNATIONAL COOPERATIVE PROGRAMME ON ASSESSMENT AND MONITORING OF ACIDIFICATION OF RIVERS AND LAKES (ICP WATERS)

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The twentieth Task Force meeting was held in Falun, Sweden, from 18 to 20 October 2004. It was attended by 33 experts from 16 Parties to the Convention. At present 20 countries actively participate in the activities of ICP Waters.
2. The Task Force considered reports on the activities of ICP Waters since the last meeting and on results from intercalibration and intercomparison exercises, including a workshop on alkalinity.
3. The Task Force also considered progress reports from the programme centre and the focal centres concerning trends in water chemistry, biological response, heavy metals, persistent organic pollutants (POPs) and dynamic modelling.
4. The Task Force discussed the EU Water Framework Directive and how it might influence national monitoring activities whose results were submitted to ICP Waters.
5. The Task Force considered the following reports: (i) report on recovery from acidification of invertebrate fauna at ICP Waters sites in Europe and North America, (ii) draft report on POPs in freshwater environment and effects of long-range transboundary air pollution, (iii) report on the seventeenth chemical intercomparison, and (iv) report on the ninth biological intercalibration.
6. The report on biological recovery gave an in-depth summary of all findings related to trends in aquatic biota (in particular invertebrates) in relation to trends (reduced acidification) in surface waters.
7. The report on POPs focused on the aquatic environment and long-range transboundary atmospheric transport. The major goal was to review data relevant for ICP Waters, evaluate the quantity of existing data, and identify challenges and needs for mapping long-range transported POPs in surface waters.
8. The 2005 chemical intercomparison included determination of major ions and heavy metals. Sixty-three laboratories in twenty-seven countries participated in the intercomparison exercise.

9. The workshop on alkalinity recommended that (i) results from the intercomparison should be followed up; (ii) ICP Waters manual be revised and include a chapter on quality control; (iii) a more thorough discussion on the alkalinity concept was needed; and (iv) the use of alkalinity as a chemical criterion was to be further discussed.

10. The 2005 biological intercalibration included invertebrates from four countries. Altogether 13 countries participated on a regular basis.

11. Representatives of the ICP Waters programme centre actively participated in the meetings of the Task Forces on ICP Integrated Monitoring, ICP Modelling and Mapping and ICP Forests.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

ICP Waters report 77/2004. Raddum, G.G. Intercalibration 0307: Invertebrate fauna. NIVA-report

ICP Waters report 78/2004. Hovind, H. 2004. Intercomparison 0317. pH, K<sub>25</sub>, HCO<sub>3</sub>, NO<sub>3</sub>+NO<sub>2</sub>, Cl, SO<sub>4</sub>, Ca, Mg, Na, K, total aluminium, aluminium - reactive and nonlabile, TOC, COD-Mn. Fe, Mn, Cd, Pb, Cu, Ni and Zn.

ICP Waters report 79/2005. Fjeld et al. 2005. An assessment of POPs related to long-range air pollution in the aquatic environment.

ICP Waters report 80/2005. deWit et al. 2005. Proceedings of the 20th meeting of the ICP Waters Programme Task Force in Lugano, Switzerland.

Skjelkvåle et al. 2005. Regional scale evidence for improvements in surface water chemistry 1990-2001. Environmental Pollution.

Note: The references have been reproduced as received by the secretariat.

### **Annex III**

## INTERNATIONAL COOPERATIVE PROGRAMME ON EFFECTS OF AIR POLLUTION ON MATERIALS, INCLUDING HISTORIC AND CULTURAL MONUMENTS (ICP MATERIALS)

### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The statistical evaluation of the results of the multi-pollutant exposure programme provided possible candidates for models describing the corrosion due to environmental pollutants.
2. Dose-response functions based on the multi-pollutant exposure programme and the one-year extension programme were further developed. Final dose-response functions were selected for carbon steel, zinc, copper, bronze, limestone and glass materials representative of medieval stained glass windows. The functions contained sulphur dioxide (SO<sub>2</sub>), O<sub>3</sub>, nitric acid (HNO<sub>3</sub>), particulate matter (PM) and wet acid deposition.
3. Threshold levels for effects of SO<sub>2</sub> on materials in the multi-pollutant situation were identified for corrosion of materials based on developed dose-response functions.
4. Threshold levels for effects of particulate matter (PM<sub>10</sub>) on materials were identified for soiling of materials based on developed dose-response functions.
5. The twenty-first Task Force meeting was held in Krakow, Poland, from 4 to 6 April 2005 (back to back with a MULTI-ASSESS project workshop).
6. Maps of UNESCO's World Heritage sites classifying risk of corrosion were produced for limestone and sandstone.
7. Planning and implementation for subdivision of activities was made between Italy (sub-centre on cultural heritage and stock at risk) and Sweden (programme centre), who provide Co-Chairs for the programme.
8. Initial plans were made for the workshop on material damage to cultural heritage to be held on 26 and 27 January 2006, in cooperation with the Network of Experts on Benefits and Economic Instruments (NEBEI) and the CULT-STRAT project.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

Report No 49. Results from the multipollutant programme: Evaluation of the decay to glass samples after 3, 4, 5 and 6 years of exposure. Part B: Results of the unsheltered exposure, 2004

Report No 50. Environmental data report November 2002-December 2003, 2004

V. Kucera, J. Tidblad, K. Kreislova, D. Knotkova, M. Faller, D. Reiss, R. Snethlage, T. Yates, J. Henriksen, M. Schreiner, M. Ferm, R.-A. Lefevre, J. Kobus, "The UN/ECE ICP Materials multi-pollutant exposure on effects on materials including historic and cultural monuments", Acid Rain 2005, Prague, June 2005

A. Ionescu, O. Favez, R.-A. Lefevre, A. Chabas, T. Lombardo, H. Cachier, P. Ausset, "Modelling of the soiling of Si-Ca-Na modern glass exposed at 6 European urban and rural sites in the EC-Multi-Assess Project", Acid Rain 2005, Prague, June 2005

M. Melcher, M. Schreiner, "Artificial and natural weathering of potash-lime-silica glasses in polluted atmospheres within the UN/ECE and MULTI-ASSESS projects", Acid Rain 2005, Prague, June 2005

K. Kreislova, D. Knotkova, J. Tidblad, J. Henriksen, "Trends in corrosivity of atmosphere and material deterioration in Europe region in period 1987 - 2001", Acid Rain 2005, Prague, June 2005

Note: The references have been reproduced as received by the secretariat.

## Annex IV

### INTERNATIONAL COOPERATIVE PROGRAMME ON EFFECTS OF AIR POLLUTION ON NATURAL VEGETATION AND CROPS (ICP VEGETATION)

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The eighteenth Task Force meeting was held in Almería, Spain, from 1 to 4 February 2005. The main results presented at the meeting were reported in EB.AIR/WG.1/2005/3 and additional results of activities are described below.
2. The summer of 2004 was generally cooler and wetter than in 2003, therefore lower ozone concentrations were measured across much of Europe. The concentration-based critical level of ozone for crops and (semi-) natural vegetation was exceeded at 80% of the ozone biomonitoring sites, as in 2003. Leaf injury on white clover was observed at most sites. The new short-term critical level for visible injury in crops was not validated as most sites providing adequate quality ozone and vapour pressure deficit data had less than 10% ozone injury at any individual assessment. Only three occurrences of 10% or more injury were reported, one was showing less ozone injury than theoretically expected.
3. In 2004 a biomonitoring experiment was conducted with Centaurea jacea (brown knapweed, a species of semi-natural vegetation) at ten sites in eight countries, after the pilot study carried out in 2003. Little or no visible injury was observed in United Kingdom and Ireland whilst extensive injury was observed in Austria, Italy, Slovenia, Spain and Sweden. Rosette and stem leaves were equally sensitive to ozone at these sites.
4. Comparisons of photosynthesis and multiplicative algorithm-based stomatal flux modelling methods showed that they predicted stomatal conductance equally well. The photosynthesis-based model might be difficult to apply on a European scale because of its high data-input requirement.
5. The single leaf flux model for white clover was up-scaled to a whole canopy flux model based on an estimation of average canopy stomatal conductance. This was achieved by considering the penetration of irradiance into the canopy estimated using canopy extinction algorithm, the leaf area index of the canopy and the fraction of leaf age populations present in the canopy throughout the harvest period and their respective stomatal conductance.
6. The ICP Vegetation database contained dose-response functions for over 80 species of (semi-)natural vegetation in the EUNIS (European Nature Information System) classification. In

pastures, some of the most sensitive plant species were often found low in the canopy where ozone concentrations could be less than half of the above-canopy concentrations. It was important to consider ozone profiles within canopies when identifying ozone-sensitive plant communities.

7. The programme centre assisted in organizing the workshop “Critical levels of ozone: further applying and developing the flux-based concept” to be held in Obergurgl, Austria from 15 to 19 November 2005. Keynote papers and discussion themes were identified and three working groups were to be established: (i) forest trees, (ii) semi-natural vegetation, and (iii) applications of the flux-based concept for crops (including land cover mapping, scaling issues, uncertainty analysis).

8. A new monitoring manual was approved for the 2005/2006 European survey on heavy metals in mosses. The Task Force recommended to distribute certified moss standards for quality assurance and determine nitrogen concentration in mosses to study the suitability of mosses as biomonitors of atmospheric nitrogen deposition.

9. For the 2000/2001 moss survey both regression analysis and artificial neural networks showed a weak correlation between the heavy metal concentrations in mosses and climatic and geographical parameters, analytical techniques and moss species. The regression analysis highlighted the strong correlation between, in particular, Cu and As, Cd and Pb, Cd and Zn, Cr and Ni and Fe and V.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

Harmens, H., Buse, A., Büker, P., Norris, D., Mills, G., Williams, B., Reynolds, B., Ashenden, T.W., Rühling, Å., Steinnes, E. 2004. Heavy metal concentration in European mosses: 2000/2001 survey. *Journal of Atmospheric Chemistry* 49: 425-436.

Harmens, H., Mills, G., Hayes, F., Williams, P.D. and the participants of the ICP Vegetation. 2005. Air Pollution and Vegetation: the ICP Vegetation Annual Report 2004/5. Prepared for the 24th Session on the Working Group on Effects, September, 2005.

Harmens, H., Mills, G. 2004. An overview of the impacts of ambient ozone on white clover at ICP Vegetation sites (1996 – 2003). Technical Report prepared for the 24th Session of the Working Group on Effects, September 2005. (EB.AIR/WG.1/2004/8).

Mills, G., Hayes, F., Williams, P.D., Harmens, H. 2005. ICP Vegetation experimental protocol for monitoring the incidences of ozone injury on vegetation. ICP Vegetation Coordination Centre, Centre for Ecology and Hydrology, Bangor, UK. <http://icpvegetation.ceh.ac.uk>

Harmens, H. and the participants of the ICP Vegetation. 2005. Monitoring manual for the 'Heavy metals in European mosses: 2005/2006 survey'. ICP Vegetation Coordination Centre, Centre for Ecology and Hydrology, Bangor, UK. <http://icpvegetation.ceh.ac.uk>

Contributions were also made to the following reports:

2005 Joint Report of the International Cooperative Programmes and the Task Force on Health Aspects of Air Pollution (EB.AIR/WG.1/2005/3 and Add.1).

Working Group on Effects (2004) Review and assessment of air pollution effects and their recorded trends. Working Group on Effects, Convention on Long-range Transboundary Air Pollution. Natural Environment Research Council, UK, pp. 68. ISBN 1 870393 77 5.

Sliggers, J., Kakebeeke, W. (2004) Clearing the air: 25 years of the Convention on Long-range Transboundary Air Pollution. United Nations, Geneva. ISBN 92 1 116910 0.

Note: The references have been reproduced as received by the secretariat.

## **Annex V**

### INTERNATIONAL COOPERATIVE PROGRAMME ON INTEGRATED MONITORING OF AIR POLLUTION EFFECTS ON ECOSYSTEMS (ICP INTEGRATED MONITORING)

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The programme was represented at the Task Force meetings of ICP Modelling and Mapping, ICP Forests, ICP Waters and at the meeting of the Joint Expert Group on Dynamic Modelling.
2. The thirteenth Task Force meeting was held in Reykjavik, from 12 to 14 May 2005. The programme included a one-day scientific workshop.
3. The programme presented a poster at the seventh International Conference on Mercury as a Global Pollutant held in Ljubljana, Slovenia, from 27 June to 2 July 2004.
4. The programme prepared a contribution for the substantive report on the review and assessment of air pollution effects and their recorded trends.
5. Data from both ICP Integrated Monitoring and ICP Forests level II were used in the EU CNTER project (Carbon and nitrogen interactions in forest ecosystems). The final reporting was carried out during 2005. The impacts and processes of nitrogen deposition were key topics of the project. The project was also of strategic importance because it allowed the use of data in relation to global change issues (carbon sequestration). Project results were presented in the 2005 executive report of ICP Forests.
6. Data from ICP Integrated Monitoring and ICP Waters were used in the EU EURO-LIMPACS project (Integrated project to evaluate impacts of global change on European freshwater ecosystems). A report was produced together with ICP Waters on the impacts of climate change on acidification recovery.
7. Representatives from several national focal points (NFPs) of the programme were involved in developing "A long-term biodiversity, ecosystem and awareness research network" (ALTER-Net).
8. The NFPs reported their 2003 results after 1 December 2004. The programme centre carried out a standard check of the results and incorporated them into the programme database.

9. Laboratories participating in ICP Integrated Monitoring took part in the intercomparison test 0418 organized by ICP Waters and in an intercalibration exercise organized by EMEP.

10. Scientific work in four priority areas continued:

(a) Calculation of pools and fluxes of heavy metals and their relations to critical limits/loads and risk assessment. A scientific paper would be finalized in 2005;

(b) Dynamic modelling. This work had strong links with the EU EURO-LIMPACS project. The programme also participated in the work of the Joint Expert Group on Dynamic Modelling where priority was given to site-specific modelling activities. A scientific paper based on the first results from site-specific dynamic modelling of climate change on the effects of acidification recovery was prepared in collaboration with ICP Waters; it would be finalized in 2005 (based on EURO-LIMPACS project results);

(c) Calculation of fluxes and trends of Sulphur (S) and Nitrogen (N) compounds, base cations and acidity. A scientific paper on proton budgets at programme sites (assessing the relative importance of the different acidification processes) was accepted for publication. An assessment report on trend calculations (assessing long-term impacts of S and N deposition) would be presented in 2006.

(d) Assessment of N processes and interactions of carbon and N. This work had strong links with the CENTER project financed by the EU. Scientific papers from the CENTER project, integrating the main results of the project, are being prepared. Project results were presented in the 2005 executive report of ICP Forests.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

Forsius, M., Kleemola, S., and Starr, M. 2005. Proton budgets for a monitoring network of European forested catchments: impacts of nitrogen and sulphur deposition. *Ecological Indicators*, Articles in press. 11 p. ISSN 1470-160X.

Johansson, M., Gregor, H., Achermann, B., Conway, F., Farrett, R., Forsius, M., Harmens, H., Haußman, T., Hettelingh, J-P., Jenkins, A., Johannessen, T., Krzyzanowski, M., Kucera, V., Kvaeven, B., Lorenz, M., Lundin, L., Mill, W., Mills, G., Posch, M., Skjelkvåle, B. L., Spranger, T., Ulstein, M. J. and Bull, K. 2004. Twenty-five years of effects research for the Convention on Long-range Transboundary Air Pollution. In: *Proceedings of the 13th World Clean Air and Environmental Protection Congress and Exhibition, 22-27 August 2004, London, United Kingdom, International Union of Air Pollution Prevention and Environment Protection Association - IUAPPA [CD-ROM Abstracts and full papers]*, 7 pp.

Kleemola, S. and Forsius, M. (eds) 13th Annual Report 2004. UNECE ICP Integrated Monitoring. The Finnish Environment 710. Finnish Environment Institute, Helsinki, Finland. ISBN 952-11-1761-3. 65 pp.

International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP Integrated Monitoring) (Lundin, L., Forsius, M). In: Sliggers, Johan & Kakebeeke, William (eds.) 2004. Clearing the Air : 25 years of the Convention on Long-range Transboundary Air Pollution. Geneva, United Nations Economic Commission for Europe. P. 70. ISBN 92-1-116910-0.

Working Group on Effects 2004. Review and assessment of air pollution effects and their recorded trends. Working Group on Effects, Convention on Long-range Transboundary Air Pollution. National Environment Research Council, United Kingdom. xiv+99, pp. 68. ISBN 1-870393-77-5.

Wright, R. F., Larssen, T., Camarero, L., Cosby, B. J., Ferrier, R. C., Helliwell, R., Forsius, M., Jenkins, A., Kopáček, J., Majer, V., Moldan, F., Posch, M., Rogora, M., Schöpp, W. 2005. Recovery of acidified European surface waters. *Environmental Science & Technology* 39(3): 64A-72A. ISSN 0013-936X.

Note: The references have been reproduced as received by the secretariat.

## Annex VI

### INTERNATIONAL COOPERATIVE PROGRAMME ON MODELLING AND MAPPING OF CRITICAL LOADS AND LEVELS AND AIR POLLUTION EFFECTS, RISKS AND TRENDS (ICP MODELLING AND MAPPING)

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The Coordination Center for Effects (CCE) issued a call for data on critical loads of heavy metals on 4 October 2004, setting the deadline for 31 December 2005.
2. CCE issued a call for data on critical loads of sulphur and nitrogen and dynamic modelling parameters (including target loads) on 24 November 2004, with a deadline for 28 February 2005, after consultation at the fifth meeting of the Joint Expert Group on Dynamic Modelling.
3. The twenty-first Task Force meeting was held in Berlin on 28 and 29 April 2005, back to back with the fifteenth CCE workshop (25–27 April). The Task Force meeting was attended by experts from 24 countries, as well as representatives of EMEP and other ICPs.
4. The Task Force evaluated and adopted the results of the calls for data issued by CCE. Seventeen countries delivered data on critical loads of heavy metals. Fourteen countries delivered revised data for critical loads of sulphur and nitrogen. Thirteen countries provided additional dynamic modelling parameters, including target load functions. The results were described and assessed in EB.AIR/WG.1/2005/10 and EB.AIR/WG.1/2005/10/Add.1. The Task Force decided that the data were suitable for supporting the reviews of the Århus and Gothenburg Protocols of the Convention, and that a new CCE call for data was not necessary at present.
5. CCE assisted EMEP Meteorological Synthesizing Centre - West in producing European maps of base cation deposition. Several national focal centres (NFCs) compared these to their national estimates. EMEP was invited to refine and extend its modelling activities, which were valuable for the mapping of critical loads for acidification.
6. The merging of land cover information from the databases of the Stockholm Environment Institute (SEI) and the CORINE (Coordination of Information on the Environment) programme of the European Commission progressed. Further collaboration between CCE, SEI and EMEP (see EB.AIR/WG.1/2004/10/Add.1) was expected to result in a harmonized land cover map to be used for Convention activities in autumn 2005.

7. The Task Force agreed on work elements for an expert panel on critical loads of heavy metals, in particular for assessing the results of calls for data and further developing timescales of damage due to the effects of heavy metals, or of recovery from those effects, in collaboration with the Joint Expert Group on Dynamic Modelling.

8. The assessment of links between the effects of air pollution and biodiversity and climate change would be the main focus of ICP Modelling and Mapping work in the near future. In particular, attention should be given to the further development of models of nitrogen dynamics and effects on terrestrial ecosystems, as noted by the Joint Expert Group on Dynamic Modelling. After a two-day session at the CCE workshop and intensive Task Force meeting discussions, the Task Force:

(a) Encouraged NFCs to continue and/or undertake studies on the interaction between the effects of climate change and acidification and eutrophication processes, including sensitivity studies of potential scenarios, also in cooperation with NFCs of other ICPs;

(b) Recommended to use material presented at the CCE workshop, including an Alterra-CCE background document, as a starting point to update knowledge for estimates on critical loads of N, which should be commented on by participants and be considered in the nitrogen workshop to be held in Brighton, United Kingdom, from 26 to 28 October 2005;

(c) Suggested that changes in plant communities were a suitable indicator for nitrogen effects on biodiversity in terrestrial ecosystems;

(d) Recommended to further investigate risk indicators for changes in plant communities, for example, N deposition, C/N ratio in topsoil, N availability, base saturation and pH;

(e) Strongly encouraged continuing and increased cooperation with other ICPs and with external programmes (NitroEurope, COST Action 729, International Nitrogen Initiative, Convention on Biodiversity (CBD), etc.) at national and international levels;

(f) Invited delegates from relevant external programmes to report at future Task Force meetings on collaboration, and decided on the programme representation at coordinating meetings of the external programmes;

(g) Decided to send out to NFCs a questionnaire on the suitability and further development of data and methods for use in the framework of the activities of the Streamlining European biodiversity indicators (SEBI2010) process that supports the Convention on Biodiversity.

## II. LIST OF PUBLISHED DOCUMENTS AND REPORTS

Aherne J, Posch M, Dillon PJ, Henriksen A (2004) Critical loads of acidity for surface waters in south-central Ontario, Canada: Regional application of the First-order Acidity Balance (FAB) model. *Water, Air and Soil Pollution: Focus* 4: 25-36

Hettelingh J-P, Posch M, Slootweg J (eds) (2004) Critical loads and dynamic modelling results. CCE Progress Report 2004, Coordination Center for Effects, RIVM Report 259101014, Bilthoven, Netherlands, 134 pp [www.rivm.nl/cce](http://www.rivm.nl/cce)

Tarrasón L, Posch M, Spranger T, Wind P (2004) Changes in risk calculation for ecosystem damage from 1990 to 2020. Chapter 7 in: *Transboundary acidification, eutrophication and ground level ozone in Europe*. EMEP Status Report 1/2004, Norwegian Meteorological Institute, Oslo, Norway, pp. 139-154

Wright RF, Larssen T, Camarero L, Cosby BJ, Ferrier RC, Helliwell R, Forsius M, Jenkins A, Kopáček J, Majer V, Moldan F, Posch M, Rogora M, Schöpp W (2005) Recovery of acidified European surface waters. *Environmental Science & Technology* 39: 64-72

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## Annex VII

### TASK FORCE ON THE HEALTH ASPECTS OF AIR POLLUTION

#### **I. ACTIVITIES SINCE THE TWENTY-THIRD SESSION OF THE WORKING GROUP ON EFFECTS**

1. The activities focused on the preparation of two comprehensive reports on health risks of particulate matter and ozone from long-range transboundary air pollution (LRTAP). The Task Force invited experts to draft selected chapters according to the initial outline of the reports proposed by the seventh Task Force meeting and approved by the twenty-third session of the Working Group on Effects. The draft report on particulate matter (PM) was reviewed and discussed by the editorial meeting on 4–5 November 2005 in Vienna. The updated contributions were collected in the first quarter of 2005. At the same time, the contributions to the first draft of the ozone report were collected. Both drafts were subject to Task Force review.
2. The eighth meeting of the Task Force was held in Bonn, Germany, on 11 and 12 April 2005 gathering 26 participants from 13 Parties, one observer from industry and WHO staff. WHO secretariat invited participants from all countries in the Eastern Europe, Caucasus and Central Asia (EECCA) region; representatives of Georgia, Russian Federation and Ukraine participated in the meeting. Their travel costs were covered by a special grant received from the German Ministry of the Environment. The meeting focused on the contents and conclusions of the reviews on health risks of PM and ozone from LRTAP. In order to prepare an input for the European Commission's Clean Air for Europe (CAFE) programme, both reviews used the most recent information generated by various projects, including the WHO "Systematic review of health aspects of air quality in Europe", the EMEP modelling results, the health impact analysis conducted by the Centre for Integrated Assessment Modelling as well as information provided by the cost benefit analysis team. The methodology for assessing the effects of air pollution on health, agreed by the sixth and the seventh Task Force meetings, was followed in those activities, contributing to the consistent advice given to CAFE and allowing preparation of the Task Force reports. At the same time, the workload related to the very intensive and timely activities for the CAFE input delayed the work of the Task Force.
3. The preliminary assessment of health risks of heavy metals from LRTAP was reviewed by an expert to evaluate the feasibility of updating the assessment completed in 2002. The review, supported by the discussion at the eighth Task Force meeting, concluded that new scientific evidence was available and should be included in the assessment.
4. Collaboration with other programmes was mainly related to the further development of the modelling of PM and ozone, to better assess the health effects of pollution. Furthermore, the

Task Force on Health contributed to the first meeting of the newly established Expert Group on Particulate Matter under the Working Group on Strategies and Review.

## **II. LIST OF PUBLISHED DOCUMENTS AND REPORTS**

WHO (2004) Health aspects of air pollution – results from the WHO project “Systematic review of health aspects of air pollution in Europe”. World Health Organization, Regional Office for Europe, Copenhagen, 24 pp. E83080 (<http://www.euro.who.int/document/e83080.pdf>)

WHO (2005). Effects of air pollution on children’s health and development: A review of evidence. World Health Organization, Regional Office for Europe, Copenhagen, 185 pp. (in press)

Note: The references have been reproduced as received by the secretariat.