



CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION
International Co-operative Programme
on
Effects on Materials, including Historic and Cultural Monuments

MINUTES OF THE SEVENTEENTH MEETING OF THE PROGRAMME TASK FORCE
June 11-12, 2001, Dübendorf, Switzerland

Prepared by the Main Research Centre,
Swedish Corrosion Institute, Sweden

- 1 The seventeenth meeting of the Programme Task Force of the International Co-operative Programme on the Effects on Materials including Historic and Cultural Monuments was held in Dübendorf, Switzerland from June 11 to 12, 2001. The Swiss Federal Laboratories for Materials Testing and Research (EMPA) and the Swiss Federal Office of Environment, Forests and Landscape hosted the meeting, which was held in the premises of EMPA, Dübendorf, Switzerland.

- 2 The meeting was attended by representatives from the following Parties to the Convention on Long-Range Transboundary Air Pollution: Austria, Canada, Czech Republic, Estonia, Finland, France, Germany, Israel, Italy, Norway, Poland, Portugal, Russian Federation, Spain, Sweden, Switzerland and the United Kingdom. In addition, representatives from the UN/ECE ICP on Mapping and the Working Group on Effects (WGE) were present.

- 3 The meeting was introduced by Mr Beat Achermann on behalf of the Swiss Agency for the Environment, Forests and Landscape and Mr Markus Faller, Swiss Federal Laboratories for Materials Testing and Research (EMPA). Mr V. Kucera chaired the meeting.

- 4 The main items discussed at the meeting were:
 - a) Results from the multipollutant exposure programme
 - b) Possibilities of extending the multipollutant exposure programme to include new materials and environmental parameters based on the research proposal to EU 5FP
 - c) Brochure showing the most important results of ICP Materials after 8 years of exposure and web site of ICP Materials.
 - d) Use of results for mapping and calculation of costs
 - e) Substantive report on Heavy Metals and discussion of need of further activities in this field
 - f) Reporting from ICP Materials to the Working Group on Effects

5 Discussion on results from the multipollutant exposure programme

a) Measurements and reporting of environmental data

The Environmental data report for the second year of the multipollutant programme, November 1998 to October 1999, was presented as a draft to the meeting. It will be finalised before the Working Group on Effects meeting in August 2001. This means that comments to the report and additional environmental data need to be sent to the environmental sub-centre by June 29, 2001. It is essential that the reporting of data improves compared to the present situation in order to prepare the database for evaluation after 4 years of exposure. This means that all available data up until December 1, 2001 should be sent to the environmental sub-centre by March 20, 2002. The new form for reporting data, 'ece-form.xls', should be followed. Only monthly data should be reported and it is the responsibility of the respective national contact persons to calculate monthly values based on the available data. It should be stressed that a month without precipitation should be reported with a '0' and not a missing value.

When comparing the last two years of exposure, 1997/98 to 1998/99, no overall trend was observed for SO₂, NO₂ or O₃. The distribution of data is good with values ranging up to 35 µg m⁻³ for SO₂ and up to 85 µg m⁻³ for NO₂. For O₃ the range is from 10 to 90 µg m⁻³ with most points between 30 and 60 µg m⁻³.

Discrepancies in the data set for sun radiation were reported at the last meeting. Therefore it was decided to distribute a form to all national contact persons requesting information on the type of sun measurements performed including used wavelength interval, calibration and calculation procedures. The results of the questionnaire revealed that the equipment in general was good and that the discrepancies could be attributed to differences in reporting habits. The data is now corrected but in order to avoid the same problem in the future it is essential that all report the monthly sun radiation data as total flux per month (MJ m⁻²).

At the last meeting problems in obtaining precipitation data was reported from Italy, Germany and the United Kingdom. The situation has improved for United Kingdom but not for the other two countries. Without precipitation data, especially pH and total amount, the other data obtained at a site will not be useful for all statistical analyses. It is therefore essential that precipitation data is reported and that all possibilities are explored. For Germany a strategy was presented in which the possibility of obtaining precipitation data from interpolation of data from nearby stations will be explored.

b) Presentation and discussion of results of corrosion attack after 1 and 2 years of exposure including trend exposures.

Each sub-centre gave during the meeting a short oral presentation of results obtained and the release of heavy metals to the environment received special attention in the discussion (see item 9 below). Drafts of reports (35-39) were presented to the meeting:

Report No 35. Results from the multipollutant programme: Corrosion attack on carbon steel after 1 and 2 years of exposure (1997-1999).

Report No 36. Results from the multipollutant programme: Corrosion attack on zinc after 1 and 2 years of exposure (1997-1999).

Report No 37. Results from the multipollutant programme: Corrosion attack on copper and bronze after 1 and 2 years of exposure (1997-1999).

Report No 38. Results from the multipollutant programme: Corrosion attack on limestone after 1 and 2 years of exposure (1997-1999).

Report No 39. Results from the multipollutant programme: Corrosion attack on painted steel after 1 and 2 years of exposure (1997-1999).

They will be finalised before the Working Group on Effects meeting in August 2001 and 30 copies of the final report should be sent, to arrive at the latest on August 22, 2002, to:

Mr Radovan Chrast
UN Economic Commission for Europe
Environment and Human Settlements Div.
Palais des Nation
CH-1211 Geneva 10, Switzerland

In some reports comparison of measured and calculated values, using the dose-response functions obtained after 8 years of exposure, was performed. It was stressed that the analysis is preliminary as it is based on an incomplete set of environmental data and should later be repeated when final environmental data will be available.

The evaluation of glass materials, withdrawn after 3 years of exposure, will be performed using the same methodology as was used in the original programme. It was decided that one report would be finalised describing the corrosion attack after 3 and 4 years of exposure and that a first draft of the report will be presented prior to the next meeting.

The completion of the trend report, originally scheduled as report 40, was postponed. A trend paper was presented at the ASTM symposium on indoor and outdoor atmospheric corrosion May 2001, Phoenix, Arizona. The paper only covered overall trends based on 1-year exposures from 1987/88 to 1997/98 and it was concluded that it could be worthwhile to perform an additional analysis of trend results focusing on individual sites.

The withdrawal of specimens after 4 years of exposure in the multipollutant programme and the withdrawal of specimens for the trend exposure will be performed starting in October 2001. The date of withdrawal is individual for each country and depends on the actual starting date. At this point, all exposed samples should be withdrawn. It should be noted that the panels for paint coatings should be put in separate plastic bags. Also, it should be stressed that it is essential to use the special covers for glass materials. Extra covers can be obtained from the glass sub-centre.

6 Possibilities of extending the multipollutant exposure programme to include new materials and environmental parameters based on the research proposal to EU 5FP

The main research centre informed about an application, "MULTI-ASSESS", within the 5th EU framework programme to the key action "City of tomorrow and cultural heritage", which was submitted in February 15, 2001. The proposal involved the development of HNO₃ and particulate passive samplers and their testing in the ICP Materials network. The proposal has been awarded financing and negotiations have started. It is anticipated that the project will start in the fall of 2001. All members of the Task Force will be formally invited to the project meetings as members of the users reference group. The project meetings of MULTI-ASSESS will be held twice a year and every second meeting will be held in connection with, but formally separated from, the ICP Materials Task Force meeting. However, to rationalise the procedure, the scientific discussion will be held in one block, common to ICP Materials and MULTI-ASSESS.

The scientific content of MULTI-ASSESS was discussed, particularly the difficulty and need of establishing a link between concentration and deposition of particles and the possibility of including Carrara marble as a stone material.

7 Brochure showing the most important results of ICP Materials after 8 years of exposure and web site of ICP Materials

The ICP Materials web page has now been established (www.corr-institute.se/ICP-Materials). The web page should not be regarded as final, instead all is encouraged to provide additional information. This includes i.a. illustrations (photos of test sites, corrosion attack and/or maps) and list of publications of each member presenting and using the ICP Materials data and/or dose-response functions. In addition, all participants should visit the page and check their respective link to make sure that it is updated.

The first draft of the brochure is not yet completed but will be available in the near future.

8 Discussion on the use of results for i.a. mapping and calculation of costs

In addition to the multipollutant exposure programme the use and dissemination of results is the main task of ICP Materials in the future. It is important to stress that ICP Materials is on-going beyond the end of year 2001 as is all other effect-oriented activities within the Convention. This is outlined i.a. in the official document EB.AIR/WG.1/2000/4 "Future development of the effect-oriented activities", which can be found at

<http://www.unece.org/env/documents/2000/eb/wg1/eb.air.wg.1.2000.4.e.pdf>

a) Proceedings from the Workshop on Mapping Air Pollution Effects on Materials including Stock at Risk, Stockholm 14-16 June 2000

Draft proceedings from the "UN ECE Workshop on Mapping air pollution effect on materials including stock at risk" held June 14-16, 2000, Stockholm, Sweden was presented. The proceedings will be finalised and presented to the Working Group on Effects meeting in August 2001. It will be available from the Swedish Corrosion Institute as a Bulletin (open publication). An important part of the workshop was devoted to the revision of the materials chapter in the Mapping Manual.

b) Revision of the Mapping Manual

Based on the conclusions from the workshop mentioned in 8a the Main Research Centre prepared a first draft of the revised chapter that was presented to the 17th meeting of the Task Force of ICP Mapping, May 6-9, 2001, Bratislava, Slovakia. A second draft was then approved by the Task Force on Mapping and was presented at the meeting. The draft was approved with minor changes. The final form and date of publication will be decided together with ICP Mapping.

c) Mapping activities, assessment of stock at risk and cost-benefit analysis in participating countries

The successful implementation of mapping activities in the individual countries, and their continued integration over the UN/ECE region, is one of the important steps in the process of incorporation the effects of materials including cultural heritage in the future Convention policy and EU Directives.

Mapping activities in Germany, Switzerland, France, Sweden, Norway and the Norwegian-Russian border were presented. The scale varied from 50 km x 50 km (new EMEP grid) down to 250 m x 250 m. A map of the release of heavy metals for Switzerland was also presented. All were encouraged to possibly produce regional maps on a smaller resolution than 50 km x 50 km. The more detailed information thus produced will be useful even for maps on a 50 km x 50 km resolution since it can be incorporated in calculations as distribution information.

The UK member informed that the work described in the workshop proceedings (8a) would continue to include variation of degradation rates across a single facade.

The Italy member informed on a recently established working group for further development of mapping activities. All members were invited for co-operation.

9 Substantive report on Heavy Metals and discussion of need of further activities in this field

The issue was discussed at length already at the 16th meeting of the Task Force. The release of heavy metals to the environment is an important field for the future and it was addressed in individual reports on zinc, copper and bronze from the sub-centres. For carbon steel, weight increase is now reported, which is a valuable addition in order to assess the metal release. In connection with zinc, the relative importance of 'blow-off' and 'run-off' was discussed and considered to be an interesting topic for the future.

The substantive report on the "occurrence, movement, and effects of selected heavy metals" will be less ambitious, compared to the original plan, due to lack of financing. The initiative originates from the Working Group on Effects (WGE) and the report will be prepared jointly by all ICP's of the WGE in the same manner as for the substantive report on trends. A draft version of the contribution from ICP Materials was presented to the meeting. It included a summary of the analysis made for zinc, copper and bronze and included a metal release dose-response function for copper.

ICP Materials is planning a UN/ECE Workshop on the release of heavy metals to the environment from materials in 2003 to be held in Germany (subject to confirmation). One of the tasks will be to identify the main metal flows from technical constructions including cultural heritage objects to the environment keeping in mind that not all of the released heavy metals are bioavailable.

10 Reporting from ICP Materials to the Working Group on Effects

Several reports have or will be completed for the WGE meeting in August 2001. This includes the official technical report "Results after 1 and 2 years of exposure in the multipollutant programme and mapping air pollution effects on materials". In addition there have been a contribution from ICP Materials to the mentioned substantive report on heavy metals as well as regular reporting including i.a. the joint report.

11 Rules for publication and data release

The rules have not changed since the fourteenth meeting of the programme task force may 27-29, 1998, Berlin, Germany, and the full list of rules are given in the minutes of that meeting. In practice this means that the results from the original programme are official but that the results from the multipollutant programme should first be evaluated and considered for publication by the respective sub-centres and then by the Task Force before releasing the data.

The rules of publication, especially electronic publication, will be addressed at the Working Group on Effects meeting in August 2001.

12 Next meeting

The eighteenth meeting of the Programme Task Force is planned to be held in Kjeller, Norway on May 13-15, 2002 (subject to confirmation).

13 Extension of time schedule (active partners underlined)

June 29, 2001

All: Final comments and data to be included in the environmental data report November 1998 to October 1999 to be sent to the environmental sub-centre.

August 22, 2001

Sub-centres: Final reports (30 copies) to be arrived at the UN/ECE secretariat (see 5b for address)

Varying dates (October 15, 2001 -)

All: Withdrawal of specimens after 4 years of exposure and withdrawal of 1-year trend specimens. The date of withdrawal is individual for each country and depends on the starting date. See also specific instructions given in 5b.

March 20, 2002

All: Available data up until December 1, 2001 to be sent to the environmental sub-centre.

April 30, 2002

Sub-centres: Draft reports to be distributed to all members prior to the meeting (evaluation of corrosion attack after 4 years of exposure, trend analysis, environmental data, etc.).

May 13-15, 2002

All: Eighteenth meeting of the Programme Task Force, Kjeller, Norway (subject to confirmation).

2003

All: UN/ECE Workshop on release of metals from materials to the environment, Germany (subject to confirmation).

14 Address list

The updated address list is shown in Annex 1

Annex 1 - Updated address list, Tuesday 26 June, 2001.

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