

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

MINUTES OF THE TWENTY-FOURTH MEETING
OF THE PROGRAMME TASK FORCE
April 2-4, 2008, Tallinn, Estonia

Prepared by the Main Research Centre,
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- 1 The twenty-fourth 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 Tallinn, Estonia on April 2-4, 2008. The meeting was hosted by the Ministry of Environment, Environmental Management and Technology Department and the Estonian Environmental Research Centre, Tallinn, Estonia and the meeting was held in the Estonian Environmental Research Centre.
- 2 The meeting was attended by representatives from the following Parties to the Convention on Long-Range Transboundary Air Pollution: Czech Republic, Estonia, France, Germany, Italy, Norway, Spain, Sweden, Switzerland, and the Chairman of the Working Group on Effects (WGE) and a member of the Secretariat.
- 3 *Mr Margus Kört* introduced the meeting on behalf of the Estonian Environmental Research Centre. *Mr Johan Tidblad* chaired the meeting.
- 4 The main items discussed at the meeting were:
 - a) Information from the Working Group on Effects (WGE)
 - b) Final planning of the next ICP Materials trend exposure 2008-2009
 - c) Updated version of ICP Materials contribution to Mapping Manual Chapter 4
 - d) Discussion of 2008 work plan
 - e) Discussion of the 2009 work plan
 - f) Financing of the programme
- 5 A presentation of the Estonian Environmental Research Center and the activities in the network of monitoring sites in Estonia was given by *Mr Erik Teinmaa*, head of the Air department.
- 6 Information on the activities within the WGE of LRTAP was given by its chairman *Mr Tor Johannessen* stressing the most urgent remaining areas within the Convention. For the effects on materials the O₃, PM and N could be mentioned primarily. Further measures are needed especially on crosscutting issues: dose-response (exposure) relationships and stock at risk and links between observations and critical thresholds, levels and loads. Also the effects-oriented activities in, and co-operation with EECCA countries were stressed. He presented a new brochure describing the WGE and asked the participants for comments.

- 7 *Mr Matti Johansson* representing the secretariat in Geneva gave an overview of the organisation and recent and planned work of the LRTAP Convention. At present, the Gothenburg protocol is revised. A new Task force on reactive nitrogen has been formed within the Working Group on Strategies and Review, where ICP Materials should participate, taking into account the corrosive effect of HNO₃. There is a need to incorporate materials into the integrated assessment modelling. He mentioned the draft “Guidelines on Convention’s effects monitoring [and research]” and the collaboration with European Commission including indicators to demonstrate emission reduction effectiveness. He distributed a copy of the new brochure on the WGE to the participants.
- 8 Regarding the plan for the next trend exposure 2008, it was decided that all specimens and passive samplers should arrive to the individual countries at the latest on 15 September 2008. The start date of the new trend exposure should be as close as possible to 1 October 2008. A following round table discussion revealed:

a) *Network of test sites*

Czech Republic:	The Prague and Kopisty sites will continue and SVUOM can supply the C-steel specimens as a subcenter for carbon steel
Germany:	Both the Berlin and Bottrop site will be able to continue
Italy:	The four stations will continue supported by the the Italian Agency for Environmental Protection and for Technical Services
Norway:	The three sites will continue
Sweden:	The two sites will continue
UK:	Hopefully it will be possible to restart the Lincoln site
Spain:	Both stations will continue, in Toledo a new environmental monitoring station will be used directly on the site
Estonia:	It will be possible to continue to expose at the Lahemaa station
Canada:	Difficulties with financing the site, efforts are being made to assure financing
France:	The site in Paris is expected to continue
Switzerland:	Chamount will continue with a new rack replacing the rotten old one and EMPA will continue as subcenter for zinc
Poland:	Katowice – subject to confirmation
Greece:	Athens – so far no financing
Latvia:	Riga – so far no financing
Austria:	A site in Vienna will be included in the network
Bulgaria:	Sofia –exposure is expected to continue
Russia:	Moscow – efforts are being made to restart the site

b) *Collection and sampling of environmental data*

The possibility of using passive samplers from IVL was presented including the prices. The samplers for PM and HNO₃ should be used as there are no active instruments available. *Terje Grontoft* reported on the experience with reporting data from the last trend exposure. The main problem has been collection/reporting of the precipitation data. For the next trend exposure, it is necessary to stress the importance of collection of environmental data and to include clear instructions in the manual/reporting sheet.

c) *Exposure of carbon steel*

SVUOM is prepared to produce specimens for the new exposure as sub-centre for carbon steel. There is a need of confirmation of the final amounts of participating sites at the latest 6 weeks before the start of exposure.

d) *Exposure of zinc*

EMPA, working as a sub-centre for zinc, will be able to produce specimens for the new exposure. Need confirmation of number of sites one month before start of exposure.

e) *Exposure of limestone*

If BRE will find a financing source, they will be able to continue to act as sub-centre for stone materials and prepare specimens of Portland limestone. It was stressed that this is of crucial importance for the trend exposure programme.

f) *Exposure of materials for soiling*

Tiziana Lombardo reported on the results obtained both in the last trend exposure and from other exposure programmes. Preliminary DRF for haze were developed using both the Gaussian and Hill models including SO₂, PM₁₀, RH, T and t. A discussion on further work on verification of the DRF:s revealed the need of additional exposure periods both shorter and longer. LISA, the sub-centre for soiling, will be responsible for preparation of glass sensors for the trend exposure and they will consider the possibility to expose also specimens for 6-month and 4-years exposure. The possibility to evaluate the PM from the IVL samplers was discussed and considered as interesting.

- 9 *Johan Tidblad* introduced the proposal for an updated version of chapter 4, the corrosion chapter, of the Mapping Manual. The main difference from the earlier version is the inclusion of the multipollutant DRF:s simultaneously with the DRF:s for the SO₂ dominating situation. There is also a supporting function for calculation of HNO₃. The O₃ equation has been excluded. A new section on recommended intervals for use in legends is included facilitating that maps produced in different places are comparable. In the section on calculations and mapping of costs resulting from corrosion, time dependence for C-steel is included. The question of recommended colours was discussed. The conclusion was that it is impractical to recommend a uniform system of colours for the deterioration of different materials. The term “scenarios”, can mean several things and an explanation should be included. Stock at risk should be mentioned and treated more extensively. The Main Centre will take into account these comments before presenting the revised version to ICP Modelling and Mapping.

10 Discussion of 2008 work plan

a) *Map of zinc runoff due to corrosion in Europe*

The work will be performed by KIMAB, EMPA and the Royal Institute of Technology in Stockholm. A similar methodology as earlier used for Cu will be adopted. For Zn, however, the same analyses of corrosion products as for Cu are not available. *Johan Tidblad* presented the previous work performed on Cu, which has been published in I. Odnevall Wallinder, B. Bahar, C. Leygraf, and J. Tidblad, Modelling and mapping of copper runoff for Europe. J. Environmental Monitoring, 2007, 9, 66-73.

b) *Case-study on stock at risk in Madrid*

The plan is to publish the results in the ICP Materials report series. *Daniel da la Fuente* made a presentation of the main results obtained. The database from the inventory contains

260 immovable and 1618 movable objects of cultural heritage in Madrid. A new approach was tried using DRF including TOW instead of RH developed after 4 years exposure in the 1987-1995 programme. Prognosis maps for years 2010 and 2020 have been developed. After a discussion it was decided to recommend to use dose-response functions for the SO₂ dominating situation given in the mapping manual or the new multipollutant DRF:s, not the intermediate DRFs obtained after 4 years of exposure in the original exposure programme.

c) Progress report on corrosion and air pollutant trends in the period 1987-2006

A summary ICP Materials report nr 56 will be produced given the values and their analyses. A deeper analysis should be performed investigating the effects of primarily the meteorological parameters especially T and rain. For Portland limestone there was in the last trend exposure the problem that the samples came from a different "batch". BRE has promised to try to investigate how that could have affected the results. A smaller group of representatives of the material subcentres and NILU as environmental subcentre coordinated by KIMAB will look on the problem closer. The report produced in the final form by KIMAB should be available at the latest in December 2008. A draft should be available before the WGE meeting in September 2008. Need of further data: Italian sites, Swedish data, Canadian data, Paris at present not available, Berlin from nearby station, Katowice, Athens, Sofia. A reminding e-mail will be sent to the concerned participants by NILU and followed, if necessary, later by a reminder from KIMAB. Also, information about the existence of other official monitoring activities at or close to the ICP Material sites should be reported by the national contact persons.

d) Report on combined corrosive effects of climate change and air pollution on cultural heritage

Johan Tidblad presented the draft of the 2008 technical report from ICP Materials to the WGE meeting to be held in September 2008. The report is based on results obtained within the 6FP project NOAH'S ARK using the DRF:s developed by ICP Materials. It was decided that the Main centre would try to develop a new version of the regional model of the multiple risk map for metals showing differences in corrosivity in the individual grid squares instead of corrosion risk.

11 Discussion of 2009 work plan

a) Technical manual for the 2008-2009 trend exposure

Johan Tidblad presented plans to issue a technical manual in 2009 similar in structure to the technical manual for the 2005-2006 trend exposure.

b) Activities on mapping stock of materials at risk

Augusto Screpanti presented the ongoing and planned activities within ENEA on inventories and mapping of stock at risk in urban polluted areas in Italy including the use of DRF:s for illustrating the corrosion risk for CH objects of calcareous stone and metals. A work item "mapping and stock at risk in selected urban areas of Italy" will be included in the work plan.

c) Other activities

Vladimir Kucera presented the structure of the Management Manual, which is the final product from 6FP project CULT-STRAT summarising the main results of exposure

programmes performed during the years within ICP Materials and the EU projects REACH (4FP) and MULTI-ASSESS (5FP). The manual will be published as a book by Springer in the end of 2008. It was decided to use the results from the book as a basis for summarising activities on stock at risk performed within ICP Materials and to have this presented in the annual technical report from ICP Materials.

Tiziana Lombardo agreed to prepare a publication on soiling summarising the main work being performed within ICP Materials and MULTI-ASSESS in this field. The intention is to publish it as an ICP Materials report.

Matti Johansson reminded that the WGE will ask all ICP:s for material to the revision of the Gothenburg protocol.

12 Financing of the programme

Sweden, funding through the Environmental Protection Agency has been reduced to 50%

Switzerland has so far funding for participation and for the sub-centre activity.

Czech Republic, at present no major problems

Norway, at present the financing is secured, though on a reduced level

Spain, financing from the Ministry of Environment is secured for next year

Germany, financing on a very low level seems to be secured from UBA for both the Bottrop and Berlin sites

France, hope that the support will continue

Estonia, no problems for financing the EMEP station, corrosion is unclear

Secretariat, The Trust Fund has shown an increased support in the last years, the cause may be the informative deliverables spread by the secretariat convincing the signatories to support the activities.

13 Information on 17th International Corrosion Congress

Johan Tidblad and Vladimir Kucera informed on the congress which will be held October 6-10, 2008, in Las Vegas, Nevada, USA and on a paper which will summarise the development of the research on effects of pollutants and climate in the last decades. *Johan Tidblad* informed that *Vladimir Kucera* will receive the Marcel Pourbaix Award for International Cooperation, recognising unselfish contributions to international collaboration in the field of corrosion. The award winner, Vladimir, have made an exceptional contribution in promoting the objectives stated in the ICC constitution, in stimulating activity on an international level and in developing cooperation, friendship and support.

14 Any other business

a) Collaboration with Male declaration

Tord Johannessen explained the initiatives taken from the Male declaration and the Convention and outcomes of the discussion in connection with the last meeting of the Executive Body in December 2007. He mentioned the activities performed already e.g. RAPIDC and potential co-operation in the future. *Johan Tidblad* presented the Male declaration and its work on corrosion within the RAPIDC project financed by SIDA. Within the RAPIDC the corrosion activity is performed in CORNET, a network of sites including also the African countries within the air pollution information network for Africa (APINA). In this network, the same methodology is used as in ICP Materials. He described further the study of corrosivity in the Kathmandu valley using the kits for rapid assessment of corrosivity.

b) Guidelines for monitoring

Matti Johansson introduced briefly a document prepared by the Coordination Centre for Effects and issued by the secretariat and asked for comments. *Johan Tidblad* went through the draft from the point of view of ICP Materials. At present only one material, carbon steel, is included as indicator for corrosion. For soiling the only indicator so far is PM. The discussion revealed that apart of C-steel also Portland limestone should be included as indicator representative for calcareous stone materials. A supporting indicator for C-steel could be zinc. The participants entrusted the ICP Materials to submit necessary information to the Executive Body.

c) Brochure on WGE

The brochure was distributed for immediate comments.

15 The next meeting will be held in Madrid, Spain on 1-3 April 2009 (subject to confirmation)

16 Closure of the meeting

Johan Tidblad closed the meeting and thanked all participants for their valuable contributions and Ott Roots and the Estonian Environmental Research Centre for excellent arrangements and hospitality.

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