

**European Union / United Nations Economic Commission for Europe International Co-operative
Programme on Assessment and Monitoring of Air Pollution Effects on Forests**

12th Meeting of the Expert Panel on Deposition

(15 – 16 January 2009, Hamburg, Germany)

Minutes of the meeting

1. The minutes of the 11th Meeting of the EPD in Madrid (29 September – 1 October 2008) were read and approved.

2. Planning of the deposition-related activities in the FutMon project was done. Deposition-related activities will be carried out in Actions IM1/C1-DEP-22(SI), and deposition monitoring will also contribute to Actions D2 and D3. The main discussions concerned the standardised sampler comparison in Actions IM1 and C1-DEP-22(SI), which will be carried out at one plot per country. Three options were discussed:

- a) Each country assesses 30-40 standard throughfall collectors, analysing each sample individually (to obtain information on the spatial variability and find out how many samplers are needed)
- b) As (1) but bulking samples. Comparison of standardised set-up with national sample set-ups.
- c) Standardised throughfall samplers set up alongside national samplers.

Option (b) was selected and the following conclusions were made:

- i. The comparison will be done using both bulk and throughfall rain samplers, but not snow samplers.
- ii. The number of samplers will be 30 for throughfall and 3 for bulk deposition.
- iii. Plot size should be according to the manual, but plot structure varies between countries. A combined systematic/random distribution of standard samplers should be used (see Fig. 4 in the proposed revision of the manual). It is recommended to set up the harmonised

samplers in the buffer zone of the plot if this is possible; however, this will depend on the national plot setup.

- iv. Sampling frequency will be according to the national system.
- v. Pooling of samples will unfortunately be necessary because of the costs of analysing individual samples. This will give one throughfall sample and one bulk sample per sampling occasion for both the national and the harmonised samplers (N.B. the Manual also permits pooling to at least 2 collective samples to avoid loss of data caused by contamination). Volume-weighted pooling (if this should be necessary) can be carried out in either the field or the lab, using either weights or volumes. More detailed instructions for pooling will be sent out.
- vi. The harmonised sampler should be constructed according to what is written in the Manual (“The sampling equipment should consist of a funnel and a receiving vessel. The material used for the collector should be high density polyethylene. The sampling area should be horizontal and the upper part of the sampler vertical. The surface of the collector must be smooth. An inert sieve with a mesh size of 1 mm should be placed loosely at the top of the neck of the sampler. Sample containers should be kept cool and in the dark”). It should have a bird ring. The diameter will be 16 cm, not 20 cm. The storage container will be 4 l, and placed in the ground if this is possible. Tubing used to connect the funnel with the collecting bottle should be made of dark polyethylene. The height of the samplers above ground level will be 1 m for both throughfall and bulk samplers. Fencing (if any) will be according to the national system.
- vii. Cleaning of the sampler and storage container will be according to the national system.
- viii. Timetable: equipment should be ordered by 1 March and installed by 31 May.

Deadlines, and those responsible:

- Date for asking for production: Beginning March 2009 (responsible: Daniel Zlindra)
- Date for manufacture: Mid-April 2009 (responsible: Daniel Zlindra)
- Date for installation: 31st May 2009 (responsible: FutMon beneficiaries)
- Date for start of sampling: 1st June 2009 (responsible: FutMon beneficiaries)
- Date for end of sampling: 1st June 2010 (responsible: FutMon beneficiaries)

3. A report on the meeting of the Working Group on QA/QC in Laboratories on 13 January 2009 was given by Nils König, including information on the next Working Ring Test for deposition samples to be held in the spring of 2009.

4. The proposed revisions to the deposition sub-manual were discussed. The parts dealing with laboratory QA/QC parts have been removed because they will be included in a new sub-manual on this topic. Also, details of the analytical methods have been put into an Annex. Some changes were suggested, mostly to Section 6 (data handling and reports). The list of ISO and CEN methods in Annex 6 (now Annex 4) will be updated. A new version will be prepared and sent out for comment.

5. Updating of the Annex on canopy budget models is necessary, and will be done later this year. It was suggested to contact Jeroen Staelens, who has done a lot of work on this.

6. A presentation of results on water quality measurements on the permanent observation plot in Chojnow forest district, Poland, in the years 2004-2007 was given by Anna Kowalska.

7. Anna Kowalska presented Polish data on between-sampler variation in chemical composition, for both concentrations and fluxes.

8. Revision of the data quality indicators of the EPD was discussed.

The EPD has currently 10 QA/QC indicators (1 (i) about the number of the labs in the Working Ring Tests (WRTs), 6 (ii-vii) about lab quality, 2 (viii-ix) about field quality, 1 (x) about evaluation). The following changes are proposed:

- i. *Number of participants at the WRTs and the discussion meeting of the WRT results.* This is quantifiable. Participation in WRTs is mandatory in FutMon, but not for laboratories not participating in FutMon, so this is still relevant.
- ii. *Number of countries helped on how many parameters by the working group on QA/QC in labs.* This indicator is ambiguous and may be omitted.
- iii. *Number of labs (in % of total) getting better/worse in WRTs.* Omit.
- iv. *WRT results: % of laboratories which perform all the mandatory measurements.* This is quantifiable, although there may be changes in mandatory parameters. Replace with ‘% of laboratories that have met the benchmark criteria’.
- v. *% of outlier results for mandatory parameters.* This indicator is quantifiable, but write ‘% of results within the tolerable limits’.
- vi. *% of labs using mean control charts for all parameters.* This indicator is quantifiable and will be retained unchanged.

vii. *% of results at the Working Ring Tests within the target of the Data Quality Objectives.*

This is in principle similar to (v), so it can be omitted as a separate indicator.

viii. *Number of plots for which studies on spatial arrangement combined with calculations of the needed number of samplers exist.* This indicator is not relevant for FutMon, although still relevant for ICP Forests.

ix. *Number of plots with the necessary number of samplers installed for throughfall measurements to reach the target level.* This indicator is not relevant for FutMon, although relevant for ICP Forests.

x. *Number (%) of plots for which regular total deposition estimates + indication of which methods are used are done annually for all measured ions.* This indicator is relevant, but replace ‘all measured ions’ with ‘components relevant for acidification and nutrient fluxes’.

Conclusion: indicators (i), (iv), (v), (vi) and (x) will be used in both FutMon and ICP Forests, and indicators (viii) and (ix) in ICP Forests.

9. Changes in the reporting forms were discussed. It was suggested that the start and end dates of each sampling period should be reported, rather than the start and end dates of periods containing several sampling intervals with identical lengths (=same number of days). It would be possible to change the method of reporting start and end dates in the PLD form, if this is retained. It was also suggested to combine the DEM and DEO forms. The form on data quality control was approved

10. It should be possible to include information on the completeness of the submitted data in the reporting. Simplest would be to use a system of codes giving the various reasons for missing/adjusted/estimated data in the database (e.g. contamination, no precipitation, not enough precipitation to make all the analyses, destruction of the sampler, sampling not performed, overflow). If an estimated value is reported, this should be noted, together with information on how the estimate was made.

11. Ion Barbu informed the Expert Panel about Romanian web sites with information on litter in throughfall samples and their influence on the chemistry: www.icassv.ro and www.bucovina-forestiera.ro.