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**ECONOMIC COMMISSION FOR EUROPE**

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

Working Group on Strategies and Review

Thirty-eighth session  
Geneva, 19–22 September 2006  
Item 5 of the provisional agenda

**AMMONIA ABATEMENT**

Ammonia abatement techniques and the revision of the 1999 Gothenburg Protocol

Report by the Chair of the Expert Group on Ammonia Abatement prepared  
in consultation with the secretariat

**INTRODUCTION**

1. This report summarizes progress made by the Expert Group on Ammonia Abatement at its seventh meeting, held in Průhonice (Czech Republic) from 26 to 28 April 2006. Conclusions and recommendations are listed in section V. Results of the joint session of the Expert Group and the Expert Panel on Agriculture and Nature of the Task Force on Emission Inventories and Projections are reflected in the annex. Information on documents and meetings is available at <http://www.unece.org/env/aa/welcome.htm>. Presentations from the previous meeting are at <http://web.agrsci.dk/jpm/segovia/agenda.html>.

2. Experts from the following Parties to the Convention attended the meeting: Austria, Canada, the Czech Republic, Denmark, Finland, Germany, Ireland, Italy, the Netherlands,

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Norway, Poland, the Russian Federation, the Slovak Republic, Slovenia, Spain, Switzerland and the United Kingdom. Also present were representatives of the EMEP Centre for Integrated Assessment Modelling (CIAM), the European Commission and the European Fertilizer Manufacturers' Association (EFMA). The Chair of the Working Group on Strategies and Review and a member of the secretariat also attended.

3. Mr. J. Webb (United Kingdom) chaired the meeting, which was hosted by the Ministry of Environment and the Ministry of Agriculture of the Czech Republic.

## I. OBJECTIVES AND INTRODUCTORY REMARKS

4. Mr. Jan Kuzel, Director of the Department of Air Protection, Ministry of Environment of the Czech Republic, opened the meeting, stressing the importance of the work under the Convention for attaining environmental and air quality goals in the Czech Republic. He noted the entering into force of the Gothenburg Protocol in May 2005 and the importance of updating the Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia as well as the need for revision of annex IX of the Protocol (Measures for the Control of Emissions of Ammonia from Agricultural Sources).

5. Mr. R. Ballaman, Chair of the Working Group on Strategies and Review, introduced the mandate of the Expert Group in the context of the Convention and noted the entry into force of the Gothenburg Protocol. He indicated that the review of the Protocol would include a review of obligations regarding emission reductions (article 7, para. 5) and a review of progress made toward other objectives of the Protocol. The review would cover emissions, abatement costs, the development of a baseline scenario 2010/2020 and a review of guidance documents. The Guidance Document on Ammonia was to be updated by 2007, while other guidance documents would be updated later. Other contributions that might be expected from the Expert Group were the improvement of ammonia emission inventories and updates to the *EMEP/CORINAIR Atmospheric Emission Inventory Guidebook* (hereafter the *Guidebook*), including improved background information and emission factors for ammonia sources.

6. Mr. U. Dammgen (Germany) and Mr. N. Hutchings (Denmark) introduced the objectives of the Expert Panel on Agriculture and Nature of the Task Force on Emission Inventories and Projections. Priority work was focused on the updating of the *Guidebook*, in particular chapter 10 (Agriculture). Progress was being made on subchapters on cultures with fertilizers, manure management regarding carbon species and manure management regarding nitrogen species. A new chapter on particulate matter emissions from arable agriculture was presented. As the 2006 revision of the *Guidelines of the Intergovernmental Panel on Climate Change (hereafter the*

*IPCC Guidelines*) covered some of the same source categories, the updating of the *Guidebook* would depend in part on progress made on the *IPCC Guidelines*.

## **II. PROMOTION OF THE FRAMEWORK ADVISORY CODE OF GOOD AGRICULTURAL PRACTICE FOR REDUCING AMMONIA EMISSIONS**

7. Mr. J. Webb (United Kingdom) introduced the Framework Advisory Code of Good Agricultural Practice for Reducing Ammonia Emissions published in 2000 and proposed the updating of the document to incorporate new techniques and practices. He noted that at the time the Code was published, there had been no proven techniques for the storage of solid manure to reduce ammonia emissions. Low-emission animal housing systems were also well developed now, as were techniques for limiting ammonia emissions from mineral fertilizers. It was important that there be consistency between techniques in the Guidance Document and the Code. The Expert Group proposed considering the updating of the Code at its next meeting.

## **III. REVISION OF THE GUIDANCE DOCUMENT ON CONTROL TECHNIQUES FOR PREVENTING AND ABATING EMISSIONS OF AMMONIA**

8. Mr. Webb informed participants of progress in the revision of the Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia (EB.AIR/1999/2, chapter V). The Expert Group agreed that the document could be considered finalized. However, since the Gothenburg Protocol was only now being reviewed, the Expert Group agreed to submit the revised document to the Working Group on Strategies and Review as an informal document, in English only. If there was no need for additional changes, it could be issued as an official document in 2007.

## **IV. AMMONIA EMISSIONS**

9. Ms. B. Wachs of the secretariat presented the results of the 2006 emission reporting round, in particular regarding ammonia emissions. She noted that the Task Force on Emission Inventories and Projections had initiated an emission inventory review and improvement programme to improve the quality of reported emission data. She explained the process underway for the revision of the *Emission Reporting Guidelines (hereafter the Guidelines)*, noting that the *Guidelines* would identify explicit emission reporting obligations for Parties to specific Protocols, as well as the implicit needs for emission data considered useful for modelling or policy purposes. She underlined that the 1999 Gothenburg Protocol was the only Protocol that specifically required Parties to report their ammonia emissions. She informed on the UNECE project “Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia” (CAPACT), funded under the United Nations Development Account. The Expert Group expressed its intent to transmit the results of its work to the CAPACT

project, possibly by providing training or expertise to the upcoming CAPACT workshop on International Air Monitoring, Data and Reporting (17–19 October 2006, Almaty).

## V. CONCLUSIONS AND RECOMMENDATIONS

10. The Expert Group agreed to:

(a) Finalize the draft revision of the Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia and submit it to the Working Group on Strategies and Review at its thirty-eighth session as an informal document, in English only. The finalized document would be sent to the secretariat by 1 August 2006. Once it was agreed by the Executive Body that the guidance documents adopted with the Protocol should be updated, the Guidance Document on Ammonia could be submitted as an official document translated into French and Russian;

(b) Continue to seek ways to improve emission inventories of ammonia, recognizing the increasing importance of high-quality ammonia emission data in light of the entry into force of the 1999 Gothenburg Protocol, the only Protocol of the Convention to explicitly require reporting of ammonia emissions;

(c) Welcome the work of the Task Force on Emission Inventories and Projections on the updating of the *EMEP/CORINAIR Atmospheric Emission Inventory Guidebook* to incorporate new background information and emission factors for ammonia sources, the revision of the Emission Reporting Guidelines and the setting up of the emission inventory review and improvement programme;

(d) Take note of the European Commission's projects on integrated measures to reduce ammonia emissions from agriculture and its NitroEurope project;

(e) Welcome the offer of the United Kingdom to host a workshop on "Atmospheric ammonia: detecting emission changes and environmental impacts", to be held jointly with the Task Force on Measurements and Modelling on 4–6 December 2006 in Edinburgh;

(f) Welcome the plans of the Netherlands and Germany to organize the first International Conference on Ammonia in Agriculture, to be held on 19–21 March 2007 in Ede (Netherlands);

(g) Encourage experts to cooperate with the Convention's activities in Eastern Europe, Central Asia and Caucasus (EECCA) countries, in particular the CAPACT workshop on

International Air Monitoring, Data and Reporting (17–19 October 2006, Almaty) and asked the secretariat to outline the activities of the Expert Group at the workshop;

(h) Take note of the results of work carried out in Spain, in particular on storage and spreading techniques;

(i) Set up an informal network of experts under the Expert Group on cost calculations for ammonia abatement. The network would circulate a template on the calculation of costs to obtain consistent and up-to-date cost information;

(j) Welcome the offer of the Russian Federation to host the joint eighth meeting of the Expert Group and the expert panel on agriculture and nature of the Task Force on Emission Inventory and Projections in Saint Petersburg in 2007 or 2008. The meeting would cover, *inter alia*, current policies on ammonia and greenhouse gases in relation to overall pollution from agricultural sources;

(k) Hold a seminar in English and Russian on ammonia emission inventories and abatement, targeted toward EECCA countries, consecutively with the Expert Group meeting.

Annex

Results of the joint session of the Expert Group on Ammonia Abatement and the Expert Panel on Agriculture and Nature of the Task Force on Emission Inventories and Projections

1. The joint session of the Expert Group on Ammonia Abatement and the Expert Panel on Agriculture and Nature of the Task Force on Emission Inventories and Projections was chaired by Mr. U. Dämmgen (Germany) and Mr. N. Hutchings (Netherlands). The Chairs provided information on the revised 2006 *Guidelines of the Intergovernmental Panel on Climate Change* (hereafter the *IPCC Guidelines*) and their importance in the further development of ammonia-related chapters in the *EMEP/CORINAIR Atmospheric Emission Inventory Guidebook* (hereafter the *Guidebook*).

2. Draft chapters of the *Guidebook* related to ammonia emissions from agriculture were presented and the following points were agreed:

(a) There was a need for improved background information on the assumptions used to establish emission factors (EFs) for a simplified methodology for all chapters.

(b) There was a lack of EFs for Southern Europe (e.g. double-cropping systems). There was a need for a distinction between EFs for urea application, depending on incorporation.

(c) Mr. H. Denier van der Gon, Ms. S. Bittman and the representative of EFMA agreed to help Mr. M. Theobald improve chapter 10 01 (Cultures with fertilizers, fertilized agricultural land).

(d) Concerning the updating of chapter 10 03, in several countries special permits were issued for open burning and/or illegal stubble burning (on-field burning of stubble, straw) continued. It was therefore important to have estimates and a method for calculating them.

(e) There was a need to increase awareness about NMVOC emissions from agriculture in other groups under the Convention. Processes for controlling NMVOC emissions from manure were still largely unknown.

(f) Concerning chapter 10 05 (manure management regarding organic compounds), it might be possible to assess the ozone generation potential of the range of compounds involved in non-methane volatile organic compounds (NMVOCs) by using a compound (e.g. terpene) as a standard and relating all other compounds to this standard.

(g) Concerning the updating of chapter 10 09 (manure management regarding nitrogen compounds), Best Available Techniques Reference (BREF) documents should be cross-referenced in the *Guidebook* where appropriate. There were significant sources of ammonia emission in countries that had more recently acceded to the Convention that were not currently described in the *Guidebook* (e.g. rabbits).

(h) Concerning the preparation of a new chapter on particulate matter (PM) from plant production, there was a lack of knowledge regarding PM emissions from agriculture.

(i) The representative of CIAM confirmed that most Parties appeared to use the *Guidebook* when reporting emissions and he underlined the importance of accurate updating.