Economic Commission for Europe
Executive Body for the Convention on Long-range
Transboundary Air Pollution

Thirtieth session
Geneva, 30 April–4 May 2012
Item 5 (i) of the provisional agenda
Revision of the annexes to the 1999 Gothenburg Protocol
to Abate Acidification, Eutrophication and Ground-level
Ozone: draft revised annex IX

Draft revised annex IX

Note by the secretariat

Summary

This document presents proposals for amendments to annex IX to the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone for consideration by the Executive Body for the Convention on Long-range Transboundary Air Pollution at its thirtieth session. It is based on a conference room paper provided by the European Union at the twenty-ninth session of the Executive Body in December 2011 and reflects the discussion during that session.
Measures for the control of emissions of ammonia from agricultural sources

1. This annex applies to Parties that are subject to obligations in article 3, paragraphs 8 (a) and (b), in accordance with the timescales established in annex VII.

Part A

2. This part of this annex describes the minimum measures for the control of ammonia emissions. These minimum measures can be reached by using the techniques for preventing and reducing ammonia emissions, according to the specifications listed in guidance adopted by the Executive Body.

3. When taking the minimum measures for the control of ammonia emissions, due account shall be taken of the need to reduce losses from the whole nitrogen cycle. Efforts shall be made to develop strategies for increasing nitrogen-use efficiency in crop and animal production. A high nitrogen-use efficiency is indicative for low nitrogen losses, low risk of pollution swapping and a high economic return on farm expenditure on nitrogen.

4. The provisions set out in paragraphs 10 to 18 apply to farms with more than 2,000 places for fattening pigs or 750 places for sows or 40,000 places for poultry.

5. All available on-farm nitrogen sources shall be assessed with the aim of ensuring the effective use of those sources in order to reduce emissions.

Advisory code of good agricultural practice

6. An advisory code of good agricultural practice to control ammonia emissions shall be established, published and disseminated, based on the Framework Code for Good Agricultural Practice for Reducing Ammonia Emissions, adopted by the Executive Body at its nineteenth session (EB.AIR/WG.5/2001/7) and any amendment thereto. The advisory code shall take into account the specific conditions within the territory of the Party and shall include provisions on the following items:

(a) Nitrogen management, taking into account the full nitrogen cycle;
(b) Livestock feeding strategies;
(c) Low-emission manure spreading approaches;
(d) Low-emission manure storage systems;
(e) Low-emission manure processing and composting systems;
(f) Low-emission animal housing systems;
(g) Possibilities for limiting ammonia emissions from the use of mineral fertilizers.

7. The advisory code shall be reviewed and, where necessary, updated at least every eight years and whenever the framework code is revised; it shall take into account the most recent insights and developments related to ammonia emissions abatement. The code should be as far as feasible linked to or integrated within other codes of good agricultural practices describing good management of the overall nitrogen cycle.

Urea and ammonium carbonate fertilizers

8. The use of ammonium carbonate fertilizers shall be prohibited.
9. Steps shall be taken to limit ammonia emissions from the use of solid fertilizers based on urea as far as the Party in question considers them feasible. For field application of fertilizers based on urea, approaches should be used as listed in the guidance that have been shown to reduce ammonia emissions compared with the reference specified in the guidance, as far as the Party in question considers them applicable.

Livestock feeding strategies

10. Low-protein feeding strategies shall be used on all farms where animals are housed and where the diet is largely based on concentrate feed, as specified in the Guidance Document.

Animal housing

11. For animal housing, systems shall be used (as listed in the Guidance Document) that have been shown to reduce emissions as specified in table 1 below.

Table 1
Ammonia emission reduction requirements for animal housing

<table>
<thead>
<tr>
<th>Category</th>
<th>Minimum emission reduction compared with the reference</th>
<th>Exemptions/conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing pig and poultry housing</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>New or largely rebuilt pig housing</td>
<td>20% for mating/gestating sows</td>
<td>Includes chicken, turkeys, geese and other poultry</td>
</tr>
<tr>
<td></td>
<td>25% for growers/finishers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50% for farrowing sows</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25% for weaners</td>
<td></td>
</tr>
<tr>
<td>New and largely rebuilt broiler housing</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>New and largely rebuilt layer housing</td>
<td>40%</td>
<td>30% for areas with a Mediterranean climate</td>
</tr>
</tbody>
</table>

* The reference specified is that listed in the guidance.
* Where the housing on a farm installation covers more than one stage of pig rearing then the lowest emission reduction figure shall apply to the installation as a whole.
* A type of climate characterized by hot, dry, sunny summers and a winter rainy season.

Manure storage outside of animal houses

12. For new slurry stores outside of animal houses, low-emission storage systems or techniques shall be used that have been shown to reduce ammonia emissions by 40 per cent or more compared with the reference, as listed in the guidance.

13. For existing slurry stores on farms, low-emission storage systems or techniques shall be used that have been shown to reduce ammonia emissions by 40 per cent as compared with the reference described in the guidance. For existing very large lagoons, ammonia emission reductions of 40 per cent should be achieved, as far as the Party considers it technically and economically feasible.

14. For existing and new stores for solid manure, low-emission storage systems such as described in the guidance should be used, so far as the Party considers them technically and economically feasible.
15. As far as technically and economically feasible, all livestock farms should have sufficient manure storage capacity to allow manure to be applied at times most suitable for crop growth.

**Manure processing and composting**

16. Whenever manure-processing and composting systems are used, these should be low-emission systems, as far as a Party considers it feasible.

**Manure application**

17. For slurry and solid manure application, approaches shall be used as listed in the guidance that have been shown to reduce emissions as specified in table 2 below. This provision applies to the land application of slurry and solid manure from the farms described in paragraph 4 to both arable land and grassland as far as a Party considers them applicable, taking account of local soil and geomorphological conditions and farm structure.

18. Solid manure applied to land to be ploughed shall be incorporated within 12 hours of spreading as far as a Party considers this measure applicable, taking account of local soil and geomorphological conditions and farm structure.

**Table 2**

*Ammonia emission reduction requirements for slurry and solid manure application to arable land and grassland*

<table>
<thead>
<tr>
<th>Category</th>
<th>Minimum emission reduction compared with the reference</th>
<th>Exemptions/conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>For slurry application to arable land and grassland and for solid manure application to bare soil</td>
<td>To use methods that reduce emissions by at least 30% compared with the reference method</td>
<td>Use of small spreaders †</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A relaxation applies for application to grassland where the grass height is greater than 10 cm</td>
</tr>
<tr>
<td>For solid manure application only to arable crops before sowing</td>
<td>To use methods that reduce emissions by at least 30% compared with the reference method</td>
<td></td>
</tr>
</tbody>
</table>

a The reference specified is that listed in the guidance.

b When using existing mobile slurry tankers and solid manure spreaders having less than 3 m³ capacity, this requirement applies only as far as the Party considers it feasible.

19. For farm installations not covered by paragraph 4, low-emission slurry application techniques (as listed in the guidance) that have been shown to reduce emissions by at least 30 per cent compared with the reference specified in that guidance shall be used as far as the Party in question considers them applicable, taking account of local soil and geomorphological conditions, slurry type and farm structure.

**Part B (recommendatory)**

20. The provisions laid out in this part of this annex describe the minimum measures that can be undertaken as far as the Party in question considers them applicable for the control of ammonia emissions.
National nitrogen budgets and farm-level balances

21. National nitrogen budgets for agriculture should be established as far as is technically feasible, based on available statistics every five years in order to monitor the changes in overall losses of reactive nitrogen from agriculture, including emissions of ammonia and nitrous oxide to air and the leaching of N to groundwater and surface water.

22. Farm-level input-output balances can be established on all farms. These input-output balances can be used to show a relative improvement until a level of high efficiency is achieved, as specified in the guidance.

Ammonium sulphate and ammonium phosphate based fertilizers

23. For fertilizers based predominantly on ammonium sulphate or ammonium phosphate, when applied to calcareous soils approaches can be used as listed in the guidance that have been shown to reduce mean ammonia emissions as compared with the reference specified in the guidance.

Measures for the control of ammonia emissions from cattle farms

24. Recognizing that cattle farms [with greater than 50 animals] are a significant source of ammonia emissions, Parties are recommended to take the following priority measures, as listed in paragraphs 25 to 31, on such farms on the basis of the measures identified in the guidance.

Livestock feeding strategies

25. Low-protein feeding strategies should be used on all farms where animals are housed and where the diet is largely based on concentrate feed as specified in the guidance.

Animal housing

26. For animal housing, systems can be used as listed in the guidance that have been shown to reduce emissions compared with the reference specified in the guidance. Measures should be targeted in particular towards new or largely rebuilt housing.

Manure storage outside of animal houses

27. For slurry stores and very large lagoons outside of animal houses, low-emission storage systems or techniques should be used that have been shown to reduce ammonia emissions compared with the reference specified in the guidance.

28. For existing and new stores for solid manure, low-emission storage systems such as described in the guidance should be used, so far as the Party considers them technically and economically feasible.

29. As far as technically and economically feasible, all livestock farms should have sufficient manure storage capacity to allow manure to be applied at times most suitable for crop growth.

Manure processing and composting

30. Whenever manure-processing and composting systems are used, these should be low-emission systems, as far as it is considered feasible.
Manure application

31. Solid manure applied to land to be ploughed should be incorporated within 12 hours of spreading, as far as a Party considers this measure applicable, taking account of local soil and geomorphological conditions and farm structure.