

Für Mensch & Umwelt

Umwelt 
Bundesamt

TRFN

29 – 30 April 2015 Lisbon

Critical Remarks on the revision of the EC IRPP BREF and its relationship to the UNECE ammonia guidance

Gabriele Wechsung
Helmut Döhler

Table of content

- **THE INDUSTRIAL EMISSION DIRECTIVE – SCOPE AND TASKS**
- **STRUCTURE OF THE BREF DOCUMENT**
- **TIME SCHEDULE OF THE CURRENT IRPP BREF REVISION**
- **CRITICAL REMARKS RELATED TO AMMONIA EMISSION ABATEMENT (EXAMPLE FATTENING PIGS)**
- **THE RELATION OF THE IRPP BREF TO THE UN-ECE AMMONIA GUIDANCE**
- **SUMMARY AND CONCLUSIONS**

The European Industrial Emission Directive (IED)

DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 24th NOVEMBER 2010 ON INDUSTRIAL EMISSIONS (INTEGRATED POLLUTION PREVENTION AND CONTROL)

targeting at: EU wide adoption of the implementation of best available techniques (BAT); same environmental standards, similar technical level;

entry into force of the IED: 07th January 2011

Implementation of the IED for EU member states: 07th January 2013,

also relevant for the „industrial“ livestock sector

The European Industrial Emissions Directive (IED)

KEY INSTRUMENT FOR MINIMISING EMISSIONS AND CONSUMPTIONS FROM MOST INDUSTRIAL ACTIVITIES

GENERAL FRAMEWORK:

- Installations must be operated according to an **integrated permit** issued by competent authorities, the IED stipulates on the application of the **Best Available Techniques (BAT)** containing emission limit values (AEL)
- To give **priority to intervention at source**, e.g. efficiency of processes, management improvement
- Provide a **playing field** in the European Union by aligning environmental performance requirements for industrial installations

THE PURPOSE IS:

- **to prevent** (minimise) pollution (**reduction** of pollution, if prevention is not possible)
- To achieve a high level of **protection for the environment in the sector as a whole**

Structure of a Best Available Technique Reference (BREF) document

IN GENERAL, THE STRUCTURE IS THE FOLLOWING:

- Chapter 1 – General Information on the sector: products, economics, main environmental issues
- Chapter 2 – Applied Processes and Techniques
- Chapter 3 – Current Emissions and Consumptions levels
- Chapter 4 – Techniques to consider in determination of BAT
- **Chapter 5 – Best Available Techniques (BAT) Conclusions**
- Chapter 6 – Emerging techniques

Basic structure of BAT in Chapters 4 and 5 of the IRPP BREF

- environmental management system
- management of good agricultural practice
- efficient use of energy, water
- reduction of noise, particle matter, odour, ammonia emissions
- emission reduction from storage
- emission reduction from spreading of manure
- monitoring
- feeding management
- emission reduction in housing of pig and poultry
 - a. Techniques to be used in housing (reduce emitting surface, increase frequency of manure removal)
 - b. Cooling of the slurry
 - c. Air cleaning
 - d. Acidification of the slurry

Schedule

Activity	Time periode
Kick-Off-Meeting of TWG in Seville	09 / 2009
First BREF Draft	06 / 2011
Comments and redrafting	05 / 2013
Negotiations on Assessment Methodology and BREF structure	06 / 2013
Second BREF Draft	08 / 2013
Comments on 2nd BREF Draft	10 / 2013
Final TWG-Meeting – discussion and decision on BAT	11 / 2014

Preliminary Schedule 2015 – 2016 within the scope

Activity	Time period
Split View – rationale by member states	12 / 2014
Assessment of split views by EIPPCB	02 / 2015
Article-13 Forum	2015
EU DG Environment, Agriculture, Business	2015
Artikel-75 Committee	11 / 2015
Translation of BAT Conclusions	Spring 2016
Publication of BAT Conclusions	Spring / 2016

Technique	Applicability
a Reduce the crude protein content by using a balanced diet based on net energy and digestible amino acids	Generally applicable.
b Multiphase feeding with a diet formulation adapted to the specific requirements of the production period	Generally applicable.
c Addition of controlled amounts of essential amino acids to a low crude protein diet	The applicability may be restricted when low-protein feedstuffs are not economically available. Synthetic amino acids are not applicable to organic livestock production.
d Use of authorised feed additives which reduce the total nitrogen excreted	Generally applicable.

(¹) A description of the techniques is given in Section 5.4.9.1. Information on the effectiveness of the techniques for ammonia emission reduction can be taken from recognised European or international guidance e.g. UNECE guidance document on 'Options for ammonia mitigation'.

Parameter	Animal category	BAT-associated total nitrogen excreted ⁽¹⁾ (kg N excreted/animal place/year)
Total nitrogen excreted, expressed as N	Weaners	1.5 – 4.0
	Fattening pigs	7.0 – 13.0
	Sows (including suckling piglets)	17.0 – 30.0

⁽¹⁾ The lower end of the range can be achieved when using a combination of techniques

The associated monitoring is described in BAT 11.

The BAT-associated total nitrogen excreted levels may not be applicable to organic livestock production.

NH₃ emissions from pig houses – BP 1.3.2.1 (/./2./3./4)

Technique

Applicability

Use of a housing system applying one or a combination of the following principles:
i) reduce the emitting surface; ii) increase the frequency of slurry (manure) removal to external storage iii) separation of urine and faeces; iv) keep bedding clean and dry.
For this purpose, one of the following housing systems may be used:

0. Fully or partly slatted floor with a deep pit	Mating and gestating sows	Not applicable to new plants, unless combined with an air cleaning system, slurry cooling and/or pH reduction of the slurry.
	Farrowing sows	Only applicable to existing plants if used in combination with an additional mitigation measure, e.g. a combination of nutritional techniques, air cleaning system, pH reduction of the slurry, slurry cooling.
	Weaners	For mating and gestating sows, fully slatted floor is only applicable when less than 15 % of the surface of the lying area is reserved for drainage openings.
	Fattening pigs	

NH₃ emissions from pig houses – BP 1.3.2.1 (/1.2/3/4)

Technique

Animal category

1. Fully or partly slatted floor with a vacuum system for frequent slurry removal

Mating and gestating sows,
Farrowing sows, Weaners,
Fattening pigs

2. Fully or partly slatted floor with slanted walls in the manure channel

Mating and gestating sows,
Farrowing sows, Weaners,
Fattening pigs

3. Fully or partly slatted floor with a scraper for frequent slurry removal

Mating and gestating sows,
Farrowing sows, Weaners,
Fattening pigs

4. Frequent slurry removal by flushing

Mating and gestating sows,
Farrowing sows, Weaners,
Fattening pigs

5. Partly slatted floor with reduced manure pit

Mating and gestating sows,
Fattening pigs

6. Solid concrete floor with full litter

Mating and gestating sows,
Weaners, Fattening pigs

NH₃ emissions from slurry storage in tanks – BP 1.3.4

BAT 8C. In order to reduce ammonia emissions to air from a slurry tank, BAT is to use a combination of the techniques given below.

Technique	Applicability
<p>^a Design and manage the slurry tank in an appropriate way. For this purpose, a combination of the following techniques may be used:</p>	
<p>1. Reduce the ratio between the emitting surface area and the volume of the slurry tank</p>	<p>May not be generally applicable to existing tanks. Excessively high slurry stores may not be applicable due to increased costs and safety risks.</p>
<p>2. Reduce wind velocity and air exchange on the slurry surface by operating the tank at a lower level of fill</p>	<p>May not be generally applicable to existing tanks.</p>
<p>3. Minimise stirring of slurry</p>	<p>Generally applicable.</p>

Technique

Applicability

b Cover slurry stores. For this purpose, one of the following techniques may be used:

1. Rigid cover	May not be applicable to existing plants due to economic considerations and structural limitations to withstand the extra load.
2. Flexible covers	Flexible covers are not applicable in areas where prevailing weather conditions can compromise their structure.
3. Floating covers	<p>The use of plastic pellets, light bulk materials and geometrical plastic tiles is not applicable for naturally crusting slurries.</p> <p>Agitation of the slurry during stirring, filling and emptying may preclude the use of some floating materials which may cause sedimentation or blockages in the pumps. Natural crust formation may not be applicable in cold climates and/or to slurry with a low dry matter content.</p> <p>Natural crust is not applicable for tanks where stirring, filling and/or discharging of slurry disturbs the surface.</p>
c Slurry acidification	Generally applicable.

Incorporation of slurry – BP 1.3.7.2

BAT 10C. In order to reduce ammonia emissions to air from the application of slurry to land, BAT is to incorporate the slurry into the soil as soon as possible.

Parameter	BAT-associated time delay between slurry landspreading and incorporation into the soil (hours)
Time	0 ⁽¹⁾ – 4 ⁽²⁾

⁽¹⁾ The lower end of the range corresponds to immediate incorporation.

⁽²⁾ The upper end of the range can be up to 12 hours when conditions are not favourable for a faster incorporation, e.g. when human and machinery resources are not economically available.

Exemplarily demonstration of the BREF 2015: Consequences for an existing Pig Fattening Enterprise

	current practice	minimum requirements after BREF	emission reduction	max. achievable reduction
Feeding	standard	Feed additive	3 %	30 %
Housing	fully slatted floor /deep pit		0	60 %
Storage	uncovered storage	Design and management measures	0	95 %
Application	broadcast without inc.	Inc. after 12 h	20 %	95 %

Information from UNECE Ammonia guidance document 2014

<u>Growers-finishers</u> NH3 emission (kg NH3/ place/year)		NH3 emission (kg NH3/ place/year) EF 3.0 →reference: fully or partly slatted floor with a deep pit	
Partially slatted floor with reduced pit	15–20	0	0
Frequent manure removal with vacuum system	25	0	0
Partially slatted floor with water and manure channel	40	2	2
Partially slatted floor with water channel and manure channel with slanted walls	60–65	3–5	2–3
Flushing gutters	40	10–15	10–15
Partially slatted floor and cooling manure surface	45	5–7	4–6
Floating balls on manure surface (cat. 2)	25	2	4
Partially slatted floors and separated removal of liquid and solid manure fraction by V-shaped belt (cat. 2)	70	0–5	0–3
Air scrubbing techniques	70–90	10–15	5–9

Information from IRPP BREF D2 after the final TWG meeting (Nov 2014)

NH3 emission (kg NH3/ place/year)	NH3 emission (kg NH3/ place/year)
BAT AEL 0.1 – 2.6	BAT AEL = 3.6 ¹⁾
No information available in D2 of the IRPP BREF, chapter 5	No information available in D2 of the IRPP BREF, chapter 5

Summary and Conclusions

THE WAY OF ASSESSING THE BAT CANDIDATES AND THE IDENTIFICATION OF BAT AND BAT AEL REMAINS UNCLEAR AND IS NOT TRANSPARENT.

THE IRPP BREF DOES NOT ACHIEVE A HIGH LEVEL OF PROTECTION FOR THE ENVIRONMENT.

IN SEVERAL CASES THE AMBITION FOR PREVENTING AND REDUCING POLLUTION IS NOW LOWER THAN IN THE FIRST IRPP BREF 2003.

THE IRPP BREF BAT CONCLUSIONS ON AMMONIA REDUCTION WILL NOT SIGNIFICANTLY CONTRIBUTE FOR ACHIEVING THE ENVIRONMENTAL TARGETS (E.G. NERC DIRECTIVE).

Thank you for your attention

Gabriele Wechsung

gabriele.wechsung@uba.de

www.uba.de