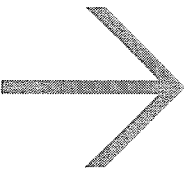


## Dutch Legislation on Ammonia and Odour

Presentation of the Dutch legislation on Ammonia and Odour in Denmark

23 January 2008




VRM • Environment and Spatial Planning 2-3-2008

## Livestock Housing Decree

Livestock Housing (ammonia emissions) Decree

- generic maximal emission values
- Emission factors per animal housing unit for different animal categories per stable system in regulation (binding)
- Enters into force beginning 2008
- Transitional period for existing stables until 2010 (NEC)

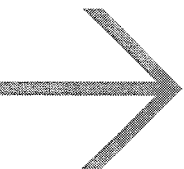


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## Livestock Housing Decree

Particulars of the decree

- specific emission values for welfare and IPPC
- Internal balancing
- Municipalities and Central government

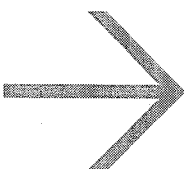


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## Ammonia and Livestock Farming Act

Ammonia and Livestock Farming Act

- Buffer zone around vulnerable Nature areas
- Municipalities cannot license a new farm or an expansion in this zone
- Exceptions
- In force since 2002

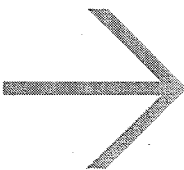


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## Ammonia and Livestock Farming Act

Particulars of the act

- Provinces decide on which area is vulnerable
- Exceptions for biological animal husbandry
- Separate regulation for dairy farming extension to 200 cows is allowed

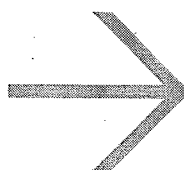


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## Ammonia and Livestock Farming Act

Background of the act

- Other act demanded environmental judgment
- Not clear on when and what
- New rules in this act

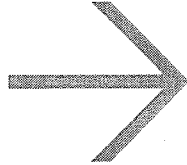


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## Natura 2000 and Ammonia

### Natura 2000 and ammonia

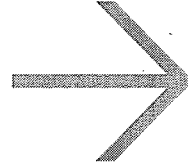
- significant effect on the Natura 2000 area → separate permit
- Settlement or expansion may cause a deposition
- regime will be replaced management plans



## Natura 2000 and Ammonia

### Particulars

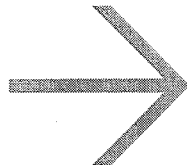
- Natura 2000 areas are mainly located in the EMS
- If Natura 2000 is a ALFA
  - Within the 250 meters ALFA regime
  - Outside always a permit and the 5% test



## Odour Nuisance and Livestock Farming Act

### Odour Nuisance and Livestock Farming Act

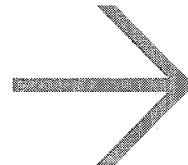
- Immission standards on sensitive objects
- Emission factors
- Dispersion model
- Existing overload
- In force since January 2007



## Odour Nuisance and Livestock Farming Act

### Particulars

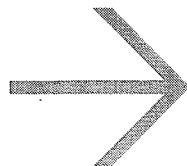
- Only for animal housing system
- Not for all animal categories are emission factors available
- large diverging in measured emissions
- Municipalities cannot deny a permit if complied to immission standards



## Odour Nuisance and Livestock Farming Act

### Particulars

- Typical Dutch problem? Animal husbandries are because of the odour circle a limit for settlements of new houses



# Odournet

Table 9: Correlation between odour i mmission and odour nuisance for *single-source situations*

Odour immission calculated using V- Stacks [ou <sub>E</sub> /m <sup>3</sup> as 98 percentile value]	Odour nuisance ('annoyance sometimes or often') <sup>1</sup>	
	Concentration area	Non-concentration area
1	4%	7%
1.5	5%	9%
2	6%	11%
3	8%	15%
4	11%	19%
5	12%	21%
6	14%	24%
7	16%	26%
8	17%	29%
9	19%	31%
10	20%	33%
12	23%	36%
14	25%	39%
16	27%	42%
18	29%	44%
20	31%	46%
22	32%	48%
24	(34%)	50%
26	(36%)	52%
28	(37%)	(53%)
30	(38%)	(54%)
32	(40%)	(56%)
34	(41%)	(57%)
35	(41%)	(58%)
36	(42%)	(58%)
38	(43%)	(59%)
40	(44%)	(60%)

1) The percentages given in parentheses are extrapolated to yield higher immissions than were studied for this group in PRA 2001. They are therefore less reliable than the other percentages.

Table 10: Correlation between odour immission and odour nuisance for *multiple source situations*

Odour immission (accumulative) calculated using V-Stacks [ou <sub>E</sub> /m <sup>3</sup> as 98 percentile value]	Odour nuisance ('annoyance sometimes or often') <sup>1</sup>	
	Concentration area	Non-concentration area
1	2%	4%
1.5	3%	5%
2	4%	6%
3	5%	9%
4	6%	11%
5	7%	12%
6	8%	14%
7	10%	16%
8	10%	17%
9	11%	19%
10	12%	20%
12	14%	23%
14	16%	25%
16	17%	27%
18	19%	29%
20	20%	31%
22	21%	32%
24	22%	34%
26	24%	36%
28	25%	37%
30	26%	38%
32	27%	40%
34	28%	41%
35	28%	41%
36	29%	42%
38	30%	43%
40	31%	44%
42	32%	45%
44	32%	46%
46	33%	47%
48	34%	48%
50	35%	49%
55	37%	(51%)
60	38%	(52%)
65	40%	(54%)
70	41%	(56%)
75	43%	(57%)
80	44%	(58%)

85	45%	(59%)
90	(46%)	(61%)
95	(47%)	(62%)
100	(49%)	(63%)

1) The percentages given in parentheses are extrapolated to yield higher immissions than were studied for this group in PRA 2001. They are therefore less reliable than the other percentages.

## General information on the Odour Nuisance and Livestock Farming Act

The Odour Nuisance and Livestock Farming Act prescribes how the competent authority (usually the municipality, sometimes the province) should assess the aspect of 'odour nuisance caused by animal accommodation' when granting environmental permits.

The law contains two frameworks for assessment:

1. If the 'odour emission per animal' is already known, the odour intensity is calculated as follows:

- *Odour emission per animal multiplied by the number of animals equals odour emission from animal accommodation.*

The odour emission factors from annex 1 of the Regulation on odour nuisance and livestock farming are a reflection of the odour emission of a single animal of a particular animal category. The factors are largely based on scientific research carried out by the Animal Sciences Group at Wageningen University ([www.asg.wur.nl](http://www.asg.wur.nl))

- *Odour emission from the total of animal accommodations (totalled up) equals odour emission from livestock farming.*

The term 'odour emission from livestock farming' does not exclude that other sources of odours may exist in livestock farming. The Odour Nuisance and Livestock Farming Act however only outlines a framework for assessing the odour intensity resulting from animal accommodation.

- *Odour emission from livestock farming entered into the dispersal model leads to odour intensity on odour sensitive objects.*

The dispersal model 'V-Stacks vergunning' (V-Stacks permit; set up by KEMA, [www.kema.com](http://www.kema.com)) calculates the spread of the odour from the geometric average of the emission points to the closest outer surface of the odour sensitive object.

The calculated odour intensity on odour sensitive objects is tested against the standards ('values'):

<i>odour intensity <math>ou_e/m^3</math> (<math>P_{98}</math>)</i>	non-concentration area	concentration area
Built-up area	$0.1 \geq 2.0 \leq 8.0$	$0.1 \geq 3.0 \leq 14.0$
Outside built-up area	$2.0 \geq 8.0 \leq 20.0$	$3.0 \geq 14.0 \leq 35.0$

Exceptions to the rule: see article 3, second paragraph and article 14.

If the calculated odour intensity exceeds the prescribed value, the environmental permit is not granted.

2. If the 'odour emission per animal' is not known, regardless of the number of animals kept: the distance between the nearest emission point of the livestock farm and the odour sensitive object must be:

	object in built-up area	outside built-up area
<i>Minimum distance (in metres)</i>	$50 \geq 100 \geq \text{no max.}$	$25 \geq 50 \geq \text{no max.}$
exception:	Fur-bearing animals – see Regulation on odour nuisance and livestock farming	

If the distance is shorter than the prescribed distance, the environmental permit is not granted.

Note: Article 5 must be taken into account in both assessment frameworks.

Odour nuisance is a local problem. The municipal council may set different standards and distances, which must fall within the bounds set out by both tables (article 6).

The proposed bill has been presented to Parliament with an explanatory document. Since Parliament has amended the bill on a few points, the definitive law does not correspond precisely

to the explanatory document. The differences are evident in articles 1 (definition of 'odour sensitive object') and 3, second and fourth paragraphs.

The law stipulates values that are linked to the *odour intensity*. It is relevant to know how much *odour nuisance* results from a particular odour intensity. In implementing article 6, the municipal council is after all primarily interested in odour nuisance and not in odour intensity. The PRA Odournet company ([www.odournet.com](http://www.odournet.com)) has determined the relationship between odour intensity and odour nuisance on the basis of a large-scale study.

Directorate General Environmental Management  
Directorate for Soil, Water and Rural Areas  
Agriculture Department

Regulation from the State Secretary for Housing, Spatial Planning, and the Environment of 12 December 2006, no. BWL/2006333382, containing the determination of odour emission factors, minimum distances for fur-bearing animals, the method of calculating odour intensity and of the method of determining distance (Regulation on odour nuisance and livestock farming).

The State Secretary for Housing, Spatial Planning and the Environment;

Acting in agreement with the Minister of Agriculture, Nature and Food Quality;

Having regard to the articles 1.4 second paragraph and 10 of the Odour Nuisance and Livestock Farming Act;

Orders:

#### **Article 1**

In this regulation:

*Annex* means the annex accompanying this regulation;

*Act* means the Odour Nuisance and Livestock Farming Act;

*Emission point* means the point where a relevant quantity of odour:

- a. occurs or is given off outside the whole of covered animal accommodation; or
- b. occurs or is given off outside the covered part of the partially covered animal accommodation.

#### **Article 2**

1. The odour intensity caused by livestock farming is calculated taking into account the dispersal model 'V-Stacks vergunning'.
2. The geometric average of the emission points is designated as the point where the odour from the animal accommodation occurs or is given off.
3. The odour intensity is determined on the closest outside surface of an odour sensitive object, calculated from the geometric average of the emission points.
4. If the animal accommodation is not covered, the odour intensity is determined at the nearest outer surface of an odour sensitive object, calculated from the point of the enclosure that is situated closest to the odour sensitive object in question.
5. The odour emission from a livestock farm is the sum of the calculated number of odour units per second per animal for the various animal categories, held in the separate animal accommodations.
6. The number of odour units per second per animal of an animal category is the number of animals of a particular category multiplied by the odour emission factor listed for that particular animal category in annex 1.
7. If no odour emission factor has been determined for a particular animal category, the animal category is not taken into account in the calculation of the odour intensity.

#### **Article 3**

The distance, provided for in article 4, paragraph 2, of the act is included in annex 2.

#### **Article 4**

1. The distance, provided for in articles 3, second and third paragraph, and 4, first paragraph, of the act are measured from the outer surface of the odour sensitive object to the nearest emission point.



2. If the animal accommodation is not covered, the distance is measured from the outer surface of an odour sensitive object to the point of the enclosure of the animal accommodation that is situated nearest to the odour sensitive object in question.

#### **Article 5**

This regulation comes into effect at the same time as the act.

#### **Article 6**

This regulation is referred to as: Regulation on odour nuisance and livestock farming.

This regulation will be placed accompanied by explanatory information in the Government Gazette.

The Hague,  
State Secretary for Housing, Spatial Planning, and the Environment,

P.L.B.A. van Geel

#### **Annex 1**, as provided for in article 2, paragraph 6 (odour emission factors)

##### **Cattle**

RAV no.	Animal category	Odour emission factor
A 1	Dairy and calving cows older than 2 years	not determined
A 2	Suckler cows older than 2 years	not determined
A 3	Female calves up to 2 years	not determined
A 4	Veal calves up to 8 months	35.6
	- chemical air scrubber (30% reduction)	24.9
A 5	Young bull calves up to 6 months	35.6
A 6	Young bull calves and other beef cattle aged 6 to 24 months (red meat production)	35.6
A 7	Stock bulls and other cattle older than 2 years	not determined

##### **Sheep**

RAV no.	Animal category	Odour emission factor
B 1	Sheep older than one year, including lambs weighing up to 45 kilos (see endnotes 1 and 2)	7.8

##### **Goats**

RAV no.	Animal category	Odour emission factor
C 1	Goats older than one year.	18.8
C 2	Rearing goats aged 61 days to one year	11.3
C 3	Rearing goats and lambs fattened as heavy carcasses up to 60 days	5.7

##### **Pigs** (see endnote 3)

RAV no.	Animal category	Odour emission factor
---------	-----------------	-----------------------

D 1	Breeding sows, including piglets up to 25 kilos	
D 1.1	Pig rearing (weaned piglets)	
	Low emission accommodations ( <i>a.e</i> $\leq 0.3$ kg/animal place) (see endnote 4)	5.4
	- chemical air scrubber (30% reduction)	3.8
	- biological air scrubber (45% reduction)	3.0
	other accommodations	7.8
	- chemical air scrubber (30% reduction)	5.5
	- biological air scrubber (45% reduction)	4.3
	- combined air scrubbing system BWL 2006.14 (70% reduction)	2.3
	- combined air scrubbing system BWL 2006.15 (80% reduction)	1.6
	- combined air scrubbing system BWL 2007.01 (75% reduction)	2.0
	- combined air scrubbing system BWL 2007.02 (75% reduction)	2.0
D 1.2	Sows (including piglets until weaning)	
	Low emission and other accommodations	27.9
	- chemical air scrubber (30% reduction)	19.5
	- biological air scrubber (45% reduction)	15.3
	- combined air scrubbing system BWL 2006.14 (70% reduction)	8.4
	- combined air scrubbing system BWL 2006.15 (80% reduction)	5.6
	- combined air scrubbing system BWL 2007.01 (75% reduction)	7.0
	- combined air scrubbing system BWL 2007.02 (75% reduction)	7.0
D 1.3	Barren and pregnant sows	
	Low emission and other accommodations	18.7
	- chemical air scrubber (30% reduction)	13.1
	- biological air scrubber (45% reduction)	10.3
	- combined air scrubbing system BWL 2006.14 (70% reduction)	5.6
	- combined air scrubbing system BWL 2006.15 (80% reduction)	3.7
	- combined air scrubbing system BWL 2007.01 (75% reduction)	4.7
	- combined air scrubbing system BWL 2007.02 (75% reduction)	4.7
D 2	Stock boars, 7 months and older	
	Low emission and other accommodations	18.7
	- chemical air scrubber (30% reduction)	16.1
	- biological air scrubber (45% reduction)	12.7
	- combined air scrubbing system BWL 2006.14 (70% reduction)	5.6
	- combined air scrubbing system BWL 2006.15 (80% reduction)	3.7
	- combined air scrubbing system BWL 2007.01 (75% reduction)	4.7
	- combined air scrubbing system BWL 2007.02 (75% reduction)	4.7
D 3	Meat-type pigs, raising boars, of 25 kilos up to 7 months, raising sows of 25 kilos until first breeding (See endnote 5)	

Low emission ( <i>a.e.</i> $\leq 1,5$ kg/ animal place)	17.9
- chemical air scrubber (30% reduction)	12.5
- biological air scrubber (45% reduction)	9.8
other accommodations	23.0
- chemical air scrubber (30% reduction)	16.1
- biological air scrubber (45% reduction)	12.7
- combined air scrubbing system BWL 2006.14 (70% reduction)	6.9
- combined air scrubbing system BWL 2006.15 (80% reduction)	4.6
- combined air scrubbing system BWL 2007.01 (75% reduction)	5.8
- combined air scrubbing system BWL 2007.02 (75% reduction)	5.8

### Chickens

RAV no.	Animal category	Odour emission factor
E 1	Raising hens and cocks of laying breeds; younger than 18 weeks <u>Battery accommodation</u> Low emission and other accommodations	0.18
	- chemical air scrubber (30% reduction)	0.13
	<u>Non-battery accommodation</u> Low emission and other accommodations	0.18
	- chemical air scrubber (30% reduction)	0.13
E 2	Laying chickens and (grand) parent animals of laying breeds <u>Battery accommodation</u> Manure storage under the battery	0.69
	Low emission and other accommodations	0.35
	- chemical air scrubber (30% reduction)	0.25
	<u>Non-battery accommodation</u> Low emission and other accommodations	0.34
	- chemical air scrubber (30% reduction)	0.23
E 3	(Grand) parent animals of broilers in breeding, younger than 19 weeks Low emission and other accommodations	0.18
	- chemical air scrubber (30% reduction)	0.13
E 4	(Grand) parent animals of broilers Low emission and other accommodations	0.93
	- chemical air scrubber (30% reduction)	0.65
E 5	Broilers Low emission and other accommodations	0.24
	- chemical air scrubber (30% reduction)	0.17

### Turkeys

RAV no.	Animal category	Odour emission factor
F 1	parent animals of meat-type turkeys in breeding up to 6 weeks	0.29
	- chemical air scrubber (30% reduction)	0.20
F 2, F 3	parent animals of meat-type turkeys in breeding from 6 weeks	1.55
	- chemical air scrubber (30% reduction)	1.09
F 4	Meat-type turkeys	1.55

	- chemical air scrubber (30% reduction)	1.09
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### Ducks

RAV no.	Animal category	Odour emission factor
G 1	parent animals of meat-type ducks	0.49
G 2	Meat-type ducks	0.49

### Guinea fowl

RAV no.	Animal category	Odour emission factor
J 1	Guinea fowl for meat production	0.24
	- chemical air scrubber (30% reduction)	0.17

### Other

	Animal category	Odour emission factor
M 1	Agricultural domestic animals kept at livestock farms	not determined

### Endnotes:

1. The odour emission is related to a stalling period of maximum three months in the winter.
2. The odour emission factor applies to breeding as well, so that this breeding does not count for the calculating of the odour emission.
3. A stalling system with drainage is not regarded as low-emission accommodation but as other accommodation.
4. a.e. is the abbreviation for ammonia emission.
5. For raising sows after first breeding, the odour emission factor for breeding sows is used.

### Annex 2, as provided for in article 3 (distances for fur-bearing animals)

The distances for fur-bearing animals (mink and fox) are defined accordingly.

### Fur-bearing animals

RAV no.	Animal category	Number of breeding sows				
H 1	mink	1-1000	1001-1500	1501-3000	3001-6000	6001-9000
	Within built-up area	175 metres	200	225	250	275
	Outside built-up area	100	125	150	175	200

Animal young and males are not included in the calculation.

If both mink and fox, or only fox, are being kept, in determining the distance 10 fox (breeding vixens) are equivalent to 15 mink (breeding sows). If (after any foxes present have been converted into minks in the calculations) more than 9,000 breeding sows are kept, the distance for every extra 3,000 breeding sows is increased by an extra 25 metres.

If the fur-bearing animals are kept in low-emission accommodations (*a.e.*  $\leq 0.25$  kg/animal place), the distances listed in the second row of the table ('outside built-up area') are lowered by 25 metres.

## Explanation

### 1. General

The Odour Nuisance and Livestock Farming Act sets out an assessment framework for odour nuisance stemming from animal accommodation at livestock farms. Articles 1, 4, second paragraph and article 10 of the act stipulate that four topics are worked out by ministerial decree. This concerns the:

- a. odour emission factors, in which the odour emission per animal according to animal category is determined, taking into account relevant parameters such as the accommodation system used (article 2, paragraph six of the regulation);
- b. the manner of determining the odour intensity on an odour sensitive object (article 2);
- c. the manner of determining the distance between an odour sensitive object and a livestock farm that keeps animals of a category for which no odour emission factor has been fixed (article 4); and
- d. the minimum distance that must be maintained between a livestock farm where fur-bearing animals are kept and an odour sensitive object (article 3).

The four sections below devote attention to each of these topics.

### 2. Odour emission factors

The odour emission factors are almost all based on results from odour measurements in practical situations. In the past years a measuring programme has been carried out at stalling systems. The results up to 2003 – the year in which the predecessor of this regulation was drawn up – are set down in the reports 'Geuremissies uit de veehouderij' (Odour emissions from livestock farming), IMAG report 2001-14 and 'Geuremissies uit de veehouderij II', (Odour emissions from livestock farming II), IMAG, report 2002-09. Because of the importance of the odour emission factors for the implementation practice, a second opinion was commissioned at the time into the (determination of the) odour emission factors.<sup>1</sup> Since 2003 new measurements have been carried out. The results of measurements from until 1 December 2006 have been incorporated in this regulation.

Results of measurements do not necessarily coincide with the actual emissions from a randomly chosen animal accommodation. The actual emission from a particular stalling system will vary above and below the emission ascertained during the measuring programme. That is the result of a great many factors that affect odour emission from a stalling system, including the inside temperature and the composition of the animal feed. The law is not based on this actual emission but on the emission that is set down in annex 1. The odour emission factors are expressed as odour emission: as numbers of European odour units that are given off per animal per second ( $ou_E/\text{sec}/\text{animal}$ ). The legal values are on the other hand expressed as odour concentration: as numbers of European odour units present per cubic metre of air.

The number structure of the animal categories and the distinction between low-emission and other accommodations correspond to the structure and distinction in the Regulation on ammonia and livestock farming. Unlike in the Regulation on ammonia and livestock farming, however, a separate odour emission factor is not, in principle, assigned to each stalling system, but rather to a cluster of stalling systems.

The reason for this difference is that the range of measurement results for the aspect odour is greater than for the aspect ammonia. The measurements show a wide variation in odour emission, both between comparable stalling systems and between comparable farms. The information available does not give rise to conclusions that are sufficiently statistically reliable with regard to the magnitude of the odour emission from an individual stalling system.

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<sup>1</sup> Letter of 29 April 2004, Parliamentary documents II 2003/04, 29 200 XIV, no. 87

Conclusions are possible – on the basis of a statistical analysis of the measurement results – if stalling systems are clustered.

Wherever possible the various types of accommodation (stalling systems) were divided into two clusters, low-emission accommodation and other accommodation. If it is assumed that a accommodation system that reduces ammonia emissions also reduces odour emission, statistical analysis of the whole data set of measurements shows that stalling systems that are designated as 'low emission accommodations' produce on average lower odour emission than 'other accommodations.' According to the analysis, the performance of low-emission accommodations is in general adequately distinguished with regard to other accommodations. The cluster low-emission accommodations therefore contains the stalling systems in which principles aimed at reducing ammonia emissions are applied.

In connection with the aforementioned, annex 1 indicates that accommodations are low-emission if a particular ammonia emission (a.e.) is not exceeded. These limits are the threshold values that were previously maintained by the 'Stichting Groen Label' (Green Label Foundation). The threshold values set down what extent of ammonia reduction was feasible in case of application of the most recent insights into the area of accommodation systems. The cluster 'other accommodations' consists mainly of the stalling systems that are referred to in practice as conventional stalling systems.

The odour emission factors from annex 1 are almost all based on results of measurements. A few odour emission factors have been derived from emissions measured from other animal categories, if this was reliable taking into account the measurement results. The most important example is the odour emission factor for guinea fowl, which is derived from that for broilers. The motivation for this is that for a limited part of the year guinea fowl are in general kept in the same accommodations that broilers are kept for the rest of the year. The animal management and the composition of the feed are entirely or largely the same. Weight and other relevant species characteristics are predominantly in agreement as well.

### 3. Determining odour intensity

Calculating odour intensity (from 'odour emission per animal' to 'odour intensity on an odour sensitive object') consists of the following parts.

- a. *Odour emission per animal multiplied by the number of animals equals odour emission stemming from animal accommodation.*

The odour emission factors from annex 1 are a reflection of the odour emission from a single animal in a certain animal category, taking into account the stalling system in use and air treatment techniques (air scrubbers).

- b. *Odour emission from animal accommodation multiplied by number of animal accommodations equals odour emission from livestock farming.*

The term 'odour emission from livestock farming' does not exclude that there may be other sources of odour at the livestock farm, such as the slop feed kitchen or the manure silo. The Odour Nuisance and Livestock Farming Act however exclusively sets an assessment framework for the odour intensity stemming from animal accommodation.

- c. *Entering the odour emission from livestock farming into the dispersal model results in the odour intensity on the odour sensitive object.*

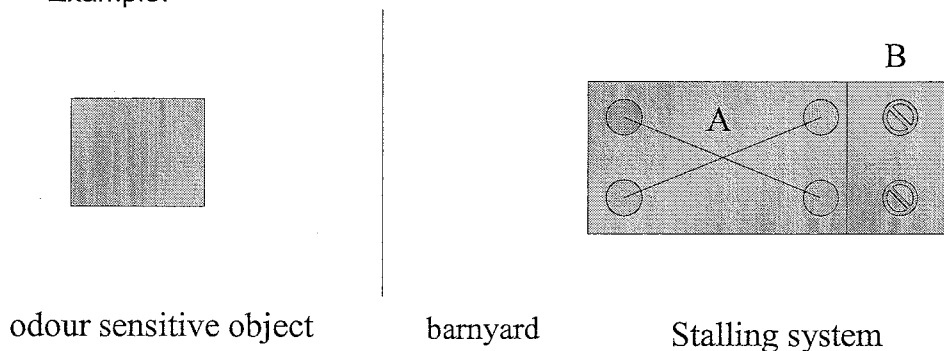
The dispersal model calculates the dispersal of the odour between the emission point (animal accommodation) and the immission point (odour sensitive object). The dispersal model used is the computer programme 'V-Stacks vergunning', which was developed at the instructions of the ministry of Housing, Spatial Planning and the Environment and is available from Infomil in The Hague.

The following applies with regard to the 'emission point.'

The use of a dispersal model implies a more precise, more detailed assessment of the odour intensity. In calculations in the past, the entire odour emission was attributed to the ventilator or ventilation opening (natural ventilation) that is situated closest to the odour sensitive object. Nowadays the calculation is based on the geometric average emission point of the stalling system. This can mean that a point where no actual emissions are given off may be designated as the emission point, as in the case that four ventilators are set up in a line in a stalling system, or in the -somewhat theoretical – case that the ventilation openings are situated on the four corners of the stalling system.

The relative contribution of the ventilators or ventilation openings does not need to be determined: all ventilators and ventilation openings are regarded as contributing in an equal quantity to odour emission. The so-called 'building effect' leads namely to the odour spreading from the stalling system as a diffuse cloud, in which the contributions of the various ventilators and ventilation openings cannot be distinguished. If however it emerges that no odour emission whatsoever stems from a particular ventilator or ventilation opening (for instance because a screened off part of the stalling system is regularly used as a storage place for agricultural vehicles) then this ventilator or ventilation opening may be left out of consideration, in line with jurisprudence.

Example:



A = emission point

B = ventilators out of use

For the sake of completeness, it is stressed that an emission point is by definition a point in a stalling system. In determining the emission point the barnyard belonging to the stalling system is left out of consideration. This is only otherwise in the rare occurrence that an animal accommodation exclusively consists of an open space, without stalling system or overhead cover. In the calculations the odour intensity is then determined from the point of the boundary of the animal accommodation (usually an enclosure or waterway) that is situated closest to an odour sensitive object.

A municipal council can, on grounds of article 6 of the Odour Nuisance and Livestock Farming Act, set a different value that departs from the value listed in article 3 of the law. Calculations for this purpose must be carried out with information on a number of livestock farms and odour sensitive objects. These calculations cannot be carried out with the dispersal model 'V-Stacks vergunning'; another model, called 'V-Stacks gebied' (V-Stack area), has been developed for this purpose. The use of the latter model is not legally required, because the use of an alternative dispersal model is not inconvenient. It should be noted here however that the correlations between odour intensity and odour nuisance are determined using both models; in other words: if an alternative dispersal model is used, the correlations cannot simply be applied.

For the rest, the correlations will have to be listed in a separate publication, they are not essential to proper implementation of the law.

Both 'V-Stacks vergunning' and 'V-Stacks gebied' are simplifications of the New National Model that is the standard in industrial odour policy, but both models are focused on the specific circumstances in agriculture.

#### 4. Determining distance

Pursuant to article 4, first paragraph of the act, the distance between a livestock farm and an odour sensitive object must be at least 100 metres (if the odour sensitive object is situated in the built-up area) or 50 metres (outside the built-up area). This distance is measured according to the same manner as the distance had to be measured under the old stench regulation (Regulation on livestock farming and stench nuisance 1996). The distance between animal accommodation and odour sensitive object is measured from the emission point that is situated closest to an odour sensitive object. In naturally ventilated stalling systems this point is usually the ventilation outlet or other opening from which relevant odour emissions (called 'relevant ventilation losses' in jurisprudence) occur. In mechanically ventilated stalling systems this point is usually the ventilator outlet nearest to an odour sensitive object, to the extent that relevant odour emissions do not occur at any shorter distance from the object.

For the sake of completeness it is noted that by definition the measurement is carried out from a point in the stalling system. In determining the emission point the extension belonging to the stalling system is not taken into consideration. This is only otherwise in the rare occurrence that an animal accommodation exclusively consists of an open space, without stalling system or overhead cover. In the calculations the odour intensity is then determined from the point of the boundary of the animal accommodation (usually an enclosure or waterway) that is situated closest to an odour sensitive object.

If a livestock farm keeps animals of a category for which an odour emission factor is fixed as well as animals of a category for which a minimum distance must be observed, the environmental aspect odour nuisance is assessed using two methods. The odour intensity stemming from animal accommodation is calculated by applying article 3 of the Odour Nuisance and Livestock Farming Act. If animals are also kept of an animal category for which no odour emission factor is determined, a distance of at least 100 or 50 metres must also be observed from the animal accommodations in which these animals are kept (article 4, first paragraph of the act).

#### 5. Distances for fur-bearing animals

For the animal categories mentioned above, an odour emission factor is less opportune in connection with the size of the animal category in the Netherlands. Partly also because at present no measurement results, or only inadequate ones, are available, or the measurement results are such that they prevent an adequately motivated odour emission factor from being fixed. For these animal categories a minimum distance has been prescribed, differentiated according to type of environment (distinction between inside and outside the built-up area) but regardless of the number of animals kept and the type of animal accommodation. An exception to this general rule is the animal category fur-bearing animals.

For fur-bearing animals, minimum distances linked to the size of the livestock population do apply. In connection with the significant odour emission by fur-bearing animals, a minimum distance of 50 or 100 metres does not suffice. This regulation in essence includes the table that has been used since the Brochure on livestock farming and nuisance act from 1985.



Since a representative spot check in eight municipalities has shown that most odour sensitive objects had to be placed in 'category I' or 'category III', in the past, the distances corresponding to each category have been adopted.

#### 6. Explanatory notes to annex 1, list of odour emission factors

The various accommodation systems have been, where possible, divided up into the clusters low-emission accommodation or other accommodation. The odour emission factor is assigned to the cluster, and not to a specific type of accommodation system. An exception to this principle is found in animal category E 2 Laying chickens and (grand)parent animals of laying breeds: a separate odour emission factor has been assigned the manure storage system under the battery, a type of battery accommodation for laying chickens. It concerns a system that is now in limited use and that consequently falls so far outside the bandwidths of the cluster 'other accommodations' when it comes to the aspect odour emission that a separate odour emission factor is reasonable.

Odour emission factors have also been included for situations in which the most common techniques for reducing emissions – a chemical or biological air scrubber – are applied. A biological air scrubber performs better than a chemical one in reducing odour, according to measurements. One reason for this is that the acids in a chemical air scrubber used to remove ammonia do relatively little to reduce odour.

At present, biological air scrubbers are hardly used, if at all, in accommodation systems for chickens, turkeys, and guinea fowl. The presence of dust in these accommodation systems complicates the odour emission reducing effect of a biological air scrubber. That is why this regulation does not (yet) give an odour emission factor for these air scrubbers.

The 'RAV no.' in annex 1 refers to the corresponding category in the Regulation on ammonia and livestock farming. A stalling system is considered low-emission for the aspect odour if it is so for the aspect ammonia. An exception to this general rule is in the case of a stalling system with drainage used in pig farming. The emission reducing principle of the stalling system is based on the regular rinsing away of the manure to the central manure storage area. In this system peak emissions occur with a factor 3 to 3.5 higher than the average emission. In connection with these inherent peak emissions, the system cannot be regarded as low-emission, although it is designated as low-ammonia.

The State Secretary of Housing, Spatial Planning and the Environment,

P.L.B.A. van Geel

# EXPLANATORY MEMORANDUM

## I General

### 1. Introduction

In giving a decision on an application for an environmental permit, the competent authority will in any event take into account the consequences for the environment which the establishment may cause (article 8.8, first paragraph, under b, of the Environmental Management Act). The consequences are determined by, among other things, the type of establishment, size of the establishment and the nature of the surroundings. One effect on the environment, if the establishment involves livestock farming, is odour nuisance (stink) caused by emission of compounds that cause odour offensiveness from animal accommodations. This bill sets regulations regarding this odour nuisance.

### 2. History

#### 2.1 Effects of odour on the environment

Odour is the characteristic of (a combination of) organic substances to be perceived in the nose with the aid of senses. Odour nuisance occurs if the repeatedly perceived odour is considered unpleasant, welfare is therefore negatively affected and if removal of this perception is not simply possible. Odour nuisance leads to changed or adapted behaviour and therefore results in a limiting of possibilities for those experiencing the nuisance.

A direct relationship between odour perception and illness has not been demonstrated, but odour nuisance can put bodily processes in motion that lead to illness. Odour nuisance causes different reactions and effects in people, which in the case of increasing exposure can lead to physical complaints (headache, nausea, respiratory problems and problems with heartbeat) and/or psychological problems (tension, regular unhappiness with the living climate, less activity outdoors). The degree of odour nuisance is partly determined by aspects like the hedonic character of the odour ('odour perception') and the characteristics and features of those experiencing the nuisance (like character and physical health).

#### 2.2 Odour regulations to date

The growth of more intensive forms of livestock farming has led to the increase of odour nuisance. To support the competent authority and make the process of permit granting more uniform, guidelines were therefore published, for the first time in 1971, for assessing the odour from livestock farms. This regulation was revised in 1976, in 1984 (Brochure on livestock farming and nuisance act 1985) and in 1996 (Regulation on livestock farming and stench nuisance 1996). A report was also published in 1985 aimed at assessing the effects of odour emissions of other livestock farms on the minimum distances that should be prescribed between the livestock farm and an odour sensitive object ('accumulation of odour nuisance').

Pursuant to the current assessment framework, the permit granted does not usually prescribe any measures or provisions with the help of which the livestock farm must prevent or limit as much as possible odour nuisance stemming from animal accommodations. The permit usually only provides for a spatial division between the livestock farm and the odour sensitive object.

This spatial division consists of a minimum distance, which is given graphic form as an 'odour circle.'; For some animal categories like pigs and chickens the minimum distance is

the result of a calculation using variables like the size of the livestock population and the stalling system in place. For other animal categories, on the other hand, a 'fixed distance' is set. The radius of the odour circle determines in principle the expansion possibilities of the livestock farm: for the environmental aspect of odour nuisance, expansion is permitted as long as no odour sensitive objects are located in the odour circle.

The current assessment framework is set down in a number of documents. The basis is the Regulation on livestock farming and stench nuisance 1996. To the extent that parts of this regulation were found by the courts to be insufficiently supported, the implementation in practice falls back on the Brochure on livestock farming and nuisance act 1985. The so-called 'accumulation assessment' is carried out on the basis of the report 'Assessment of the accumulation of stench nuisance stemming from intensive livestock farming' from 1985. Since both the Regulation and the Brochure provide little details on a number of points, the assessment framework has been further worked out and detailed by jurisprudence.

For livestock farms that are located in areas that have been designated in an announced reconstruction plan as agricultural development areas, mixed areas, or extension areas where the primacy of nature must be observed, an assessment framework deviating with respect to contents applies, which is set down in the Act on stench emission from livestock farming in agricultural development and mixed areas <sup>1</sup> (hereafter referred to as Act on stench emission from livestock farming).

### 2.3 Realisation of new odour regulations

The Regulation on livestock farming and stench nuisance 1996 announces a revision to odour policy. To bring about this revision research was conducted into the odour emission from stalling systems and into the degree of odour nuisance created by intensive livestock farming. On 1 August 2001 Parliament was presented with a proposal for revision to the assessment framework<sup>2</sup>.

At the same time agreements were made deviating from the proposal on a number of points in order to facilitate the smooth passage of the reconstruction process in livestock concentration areas. For the aspect odour nuisance it was agreed to set the starting points of the Regulation on livestock farming and stench nuisance 1996 down in a law, namely in the aforementioned Act on stench emission from livestock farming. An important starting point of the law is that the spatial layout to be changed in reconstruction areas, combined with the restrictions stemming from application of the legal assessment framework, provides, in theory, an adequate guarantee against unacceptable odour nuisance. The law came into effect on 1 May 2003.

Even after the law took effect the odour regulations for livestock farms continued to be a topic of parliamentary interest. Parliament has requested the government to set up a new national assessment framework, among other things, and set this down in law. This bill aims to satisfy this wish.

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<sup>1</sup> Act of 16 May 2003, Bulletin of Acts and Decrees 2003, 319 and 320

<sup>2</sup> Letter of 1 August 2001 (Parliamentary documents II 2000/2001, 24 445, no. 64)

The content of the bill is based on the results of the exchange of ideas with Parliament<sup>3</sup>. Because of shortcomings in the current regulations it was concluded that a different structure would be best for odour regulation. The following was considered with regard to the shortcomings.

- a. Odour nuisance is a local environmental problem. The current assessment framework, which sets nationally uniform values and in which the competent authority may not take into account the local facts and circumstances, does not do this enough justice. Such an assessment framework is also at odds with the Coalition Agreement 'Meedoen, meer werk, minder regels' (Participation, more work, less regulations), in which is stated that 'within the basic conditions of the protection of the natural environment and the state responsibility in this matter, more latitude and responsibility is given to provinces and municipalities.'
- b. The vitality of rural areas must be developed and improved. That means, among other things, more latitude for sustainable, vital agriculture, an increase to tourist-recreational possibilities, and re-use of agricultural buildings and newly constructed buildings in the rural area. These developments demand an integrated approach, partly for the development of residences and activities in the rural area in relation to the (intensive) livestock farming. Coordination of odour regulation with desired developments in the spatial policy is necessary. The current odour regulation is not set up adequately for this.
- c. Important parts of the assessment framework, especially the 'distance graphic' and the 'category division,' contain inaccuracies. Better, more scientifically supported insights are now available. The inaccuracies make it on the one hand possible that an unacceptable level of nuisance is regularly experienced outside the odour circle, and on the other hand that within the odour circle only limited nuisance takes place. This implies a less than optimal allocation of the expansion possibilities of the livestock farm. It also leads to undesired effects for the realisation of odour sensitive objects in the rural area, since the assessment framework yields an inaccurate result regarding the odour nuisance feared.

#### 2.4 Objectives of new odour regulations

The bill contains three objectives, partly based on the basic conditions that emerged from the exchange of ideas with Parliament and in view of the shortcomings listed above:

- a. Policy freedom and customisation.

The competent authority is given the latitude to take into account the spatial and environmental-hygienic conditions and circumstances in a concrete area and the desired (future) spatial layout of that area. The aim was to come with low-threshold use of this authority, without unnecessary vulnerability to judicial review.

- b. Effectiveness of regulation.

The contents of a regulation should be suitable to achieve the end to which it has been drawn up, without unwanted side effects. To this end use was made of the most recent

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<sup>3</sup> letter of 14 November 2003 (Parliamentary documents II 2003/04, 24 445, no. 67), letter of 2 April 2004 (Parliamentary documents II 2003/04, 27 835, no. 21), letter of 18 May 2004 (Parliamentary documents II 2003/04, 27 835, no. 25) and letter of 16 September 2004 (Parliamentary documents II 2003/04, 27 835, no. 26)

environmental – technical insights and the competent authority has been given the possibility to apply the regulations in a manner customised to the particular situation.

c. Robustness and accessibility.

The objective involves the form of the regulation. The standards should be recognisable and clear to all. In order to avoid ambiguities and unnecessary (costly) studies into alternative calculation methods, the method to be used is set by law. A livestock farm must be able to trust that its application will be granted if it is in accordance with the legal or other value (legal security); an odour sensitive object may demand that it will not in principle be exposed to unacceptable odour nuisance. The aim was to come with a clear, simple and unequivocal assessment framework. To make this easier, the competent authority is provided with a guidebook containing information and suggestions for a municipal odour policy for livestock farms.

### **3. Main points of the bill**

The bill sets up a single national assessment framework with two types of values. For animal categories for which the odour emission per animal is determined, the value is expressed as a maximum permitted odour intensity on an odour sensitive object. For the other animal categories the value is a legally prescribed distance which must be observed at the very least. This distance is in principle independent of the size of the livestock population; the calculation method from section 3.2 is not applicable.

The municipal council is qualified to take the local situation into consideration regarding the acceptable odour intensity and may set another value or distance departing from the maximum permitted odour intensity.

#### **3.1 Scope of the bill**

During the production process on a livestock farm, odours are released. Distinctions can be made among different sources of odour. Odour is released (can be released), in any event, in storing animal feed, preparing animal feed, keeping the animals in the animal accommodations, the storage of manure, the processing of manure and the discharge of manure (including the spreading of manure). The bill does not set regulations on all these sources of odour but is limited to the odour that is released as a result of keeping animals in animal accommodations. The intensity of this odour emission is determined by factors like the number of animals kept, the animal category, the stalling system in use, the animal management and the animal feed used.

The assessment of the other sources of odour mentioned above does not fall within the scope of this law, but continues to take place on the basis of chapter 8 of the Environmental Management Act. In general the odour emission from these odour sources can be prevented or reduced to an acceptable level by taking reasonably simple measures or provisions.

Other legislation and regulations contain prescriptions that also regulate sources of odour. The Decree on the use of fertilisers for instance sets out general regulations regarding the time and manner of spreading manure. Guidelines for the granting of permits to manure processing installations are provided in the Regulation on manure treatment installations (Infomil, February 2001) and the Guidebook on manure (co)fermentation (Infomil, January 2005). The Decree on the environmental management of manure basins sets down regulations for the storage of slurry, which also lead to the reduction of odour emission.

### 3.2 Calculation method

The first step is determining the odour emission from the animal accommodation. This odour emission is calculated by multiplying the number of animals to be kept by their odour emission factor. An odour emission factor is a number that reflects the odour emission per animal, taking into account aspects like animal category and stalling system in use. The various odour emission factors are set down in a ministerial regulation.

The second step is determining the odour intensity on an odour sensitive object. To this end the odour emission from the animal accommodations is entered into a dispersal model, together with other variables like the distance to the closest odour sensitive object, and the dispersal of odour in the surroundings is calculated. The dispersal model has been checked against the New National Model that is applied in the odour policy for industrial establishments, but is focused on the technical characteristics of the livestock farm. The outcome of this calculation is the odour intensity caused by a livestock farm's animal accommodations on a nearby odour sensitive object. The dispersal model to be used is set down in a ministerial regulation.

### 3.3 Standard

The value yields the protection level for the environment of a livestock farm; it gives the maximum odour intensity that odour sensitive objects should accept from animal accommodations on a livestock farm. The expansion possibilities of the livestock farm can be calculated using this value.

The bill sets four values, according to four sorts of area. The distinction between concentration areas and non-concentration areas refers to the classification from annex I to the Fertilisers Act. It concerns the areas that, according to the reasoning of the Concentration Areas Reconstruction Act in particular face problems with regard to, among other things, agriculture and environment. The value differs for the non-concentration areas since according to research the relationship between odour intensity and odour nuisance differs significantly for certain concentration areas in any event. Within this classification a distinction is made between areas inside the built-up area and outside the built-up area. The presence of, on average, a large number of odour sensitive objects, which lend an area a predominantly residential function, justifies a relatively high protection level.

The odour intensity is expressed as odour concentration: as a number of European odour units in a unit of volume of air ( $\text{ou}_E/\text{m}^3$ ). Odour concentrations are measured in laboratories according to the NEN-EN 13725:2003 'Lucht – bepaling van de geurconcentratie door dynamische olfactometrie' (Air – determination of the odour concentration through dynamic olfactometry). The odour emission factors, provided for in article 1, are determined in accordance with the (predecessor of) this standard. The calculation of the odour intensity is based on the customary 98 percentile odour concentration. That means that the odour concentration – calculated using a dispersal model – during 98 percent of the time unit is not exceeded ( $\text{ou}_E/\text{m}^3$ ;  $P_{98}$ ). In the past odour concentrations in the Netherlands were expressed in odour units ( $\text{ge}/\text{m}^3$ ). There is a fixed correlation between these two quantities:  $1 \text{ ou}_E/\text{m}^3 = 2 \text{ ge}/\text{m}^3$ .

The standard (the values from article 3, and the distances from article 4, first paragraph) is chosen in such a way that the expansion possibilities for the livestock farming sector do

not change with regard to the Act on stench emission from livestock farming (concentration areas) or the implementation practice with respect to the Regulation on livestock farming and stench nuisance 1996 (non-concentration areas). In the calculations, the background level present in an 'average area' is concerned, whereby the four areas distinguished in article three are taken into consideration. The expansion possibilities remain unchanged, but the values for the built-up area are set up relatively less flexibly in favour of the 'concentration areas, outside built-up area' and compared with the mutual correlation between the standards in the Act on stench emission from livestock farming and the Regulation on livestock farming and stench nuisance 1996, respectively. For the areas it was concluded that odour sensitive objects may be reasonably required to accept the odour nuisance that is the result of the maximum permitted odour intensity.

In an 'average area', livestock farms and odour sensitive objects are situated at a reasonable distance from each other. The fact that the values are set on the basis of an average area does not mean that a municipal council, if the area in question is clearly not an 'average area', is required to set a different value. The municipal council is authorised to do so; it can, because of the dominant odour intensity and desired spatial planning of that area, adjust the protection level against odour nuisance higher or lower. Pursuant to article 8 the municipal council is obliged to include the current odour intensity and that which can reasonably be expected in future in its motivation for a different value.

#### 3.4 Customised regulations: a different value

Depending on the character of the area and its desired spatial planning however there may be a need to set a different value than that described in the preceding section. The same may be the case for situations as provided for in article 4, for which a minimum distance is included in the law. Depending on the character and desired spatial planning of the area and the future size of the livestock population a need may arise to set a different minimum distance.

The municipal council is authorised to pass a bye-law for (parts of) its territory to set a different value or distance to be observed by the competent authority when granting permits. In general a municipal vision on the development of the outside area will lie at the basis of the bye-law. The other value or distance must remain within the bandwidth given in article 6 and is motivated on the basis of one or both of the criteria 'desired spatial layout of the area' and 'divergent correlation between odour intensity and odour nuisance'. Both criteria are detailed in the article-by-article explanation (article 8).

The municipal vision can, with due regard for the applicable procedures, be set down in a reconstruction plan, zoning plan, structure vision or other document in which input from the community was possible. If desired the municipal vision and the bye-law may be drawn up at the same time, but there are no objections to realising the bye-law some time after the vision has been drawn up.

The municipal vision leads to another value or another distance that is anchored in a bye-law. The bill does not set any special procedural regulation with regard to drawing up the bye-law. Article 8 does however sum up the criteria that must be involved in the decision making at the very least.

#### **4. Comparison with current implementation practice and the Act on stench emission from livestock farming**

Following suit from the current implementation practice and the Act on stench emission from livestock farming, the bill offers the competent authorities an assessment framework for odour nuisance, on the basis of which the competent authority may or may not grant a permit to the expansion or establishment of a livestock farm. Characteristic differences arise in any event on the following topics:

##### **a. Policy freedom and possibilities for customised regulation**

The Regulation on livestock farming and stench nuisance 1996 advises that the protection level of an odour sensitive object be determined by the character of the surroundings. This possibility for an area-focused approach was hardly brought into operation in practice.

The Act on stench emission from livestock farming does not give the competent authority any policy freedom or possibilities for an approach specifically focused on the area. The law itself defines the objects for which a lower protection level is attributed in deviation from the general value, and also determines that protection level.

In contrast to this the bill gives the municipal council the authority to deem a certain odour intensity as acceptable or unacceptable, on the basis of spatial considerations and deviating from a generally applicable value (article 6). In this manner the municipality is given policy freedom and can within certain bounds provide customised decisions in granting permits to livestock farms.

##### **b. Use of environmental–technical insights**

Both the current implementation practice and the Act on stench emission from livestock farming are based on insights from the early 1970s. Research has shown that important parts of the assessment framework like the ‘distance graphic’ and the ‘category division’ only partly reflect reality. These inaccuracies press all the more now that the implementation practice and the law are based on ‘odour emission’ and an important aspect like ‘odour perception’ (odour nuisance) is not taken into consideration.

The bill on the other hand does make use of recent research results.

##### **c. Simplicity of the regulation**

The Regulation on livestock farming and stench nuisance 1996, the Brochure on livestock farming and nuisance act and the Act on stench emission from livestock farming all describe an assessment system in which the components ‘magnitude of the odour emission,’ ‘dispersal of the odour in the surroundings,’ ‘odour intensity on an odour sensitive object’ and ‘acceptability of this odour intensity’ are not distinguished separately but are combined. A curve from annex 3 of the Regulation on livestock farming and stench nuisance 1996 (‘the distance graphic’) does not for instance provide a visual rendering of a dispersal model, but shows the relationship between the odour emission from animal accommodations and the minimum distance to be observed between a livestock farm and an object sensitive to odours. Within that, the concept ‘manure pig unit’ is a measure and calculation unit for the odour emission, the height of which is partly determined by the odour perception that is presumed to be different for the animal categories distinguished.



The accessibility of the regulation is negatively influenced by ambiguities and omissions in the regulation. To apply the regulation properly a thorough knowledge of the jurisprudence is therefore required.

The bill presents a simpler method to calculate the magnitude of the odour intensity. The regulation is more clearly distinguished and defined than in the past.

## **5. Relation to other national legislation**

### **5.1 Environmental Management Act**

The Environmental Management Act determines – among other things – that establishing or changing certain categories of establishments is not permitted without a permit. The Environmental Management Act (Establishments and Licences) Decree gives an exhaustive account of these categories. Livestock farms are included in annex 1, category 8.1, under a, of that decision.

This bill gives binding indications to the competent authority with regard to the granting of this permit. Only in the cases in which the law so determines can a permit be refused because of the negative effects of the odour emission from the livestock farm. With that the bill contains an exclusive assessment framework which, to the extent that it concerns the effects of odour emission from animal accommodations, takes the place of the review that otherwise would have to be carried out in the case of permit granting on grounds of the Environmental Management Act. Only article 2, second paragraph, of the bill makes an exception to this exclusivity.

The current odour regulation has led to a large body of jurisprudence. Parts of the Regulation on livestock farming and stench nuisance 1996 were found by the courts to be insufficiently supported; other parts have been further developed. As a result, the regulation is not very accessible. A livestock farm does not have enough security about the result of the decision making when applying for the permit.

However, in connection with the influence of odour regulation on the (expansion) possibilities of livestock farms, a livestock farm must have clarity in advance about the applicable regulations, so that it can take these into account in its operations and investment rhythm. That is why it was decided to set the new assessment framework down in law. Parliament also expressed its preference for a legal regulation, rather than a guideline or guidebook.

### **5.2 Netherlands emission guideline for air**

The Netherlands emission guideline for air (InfoMil, April 2003; hereafter referred to as “NeR”) is intended to harmonise the environmental permit granting for the compartment air and has at the moment no legal status. The NeR is established by the joint governments – the ministry of housing, spatial planning and the environment, the Association of Provincial Authorities (“Interprovinciaal Overleg”), the Association of Netherlands Municipalities (“VNG”), and the Association of Water Boards – on the basis of proposals prepared by representatives from government agencies and umbrella organisations in the business sector.

The NeR’s system is based on general requirements for emission concentrations that correspond to the State of the Art of emission reduction. ‘Special regulations’ have been set up for specific activities and business branches. The approach to odour nuisance

diverges from this general system. In sections 2.9 and 3.6 the NeR describes an alternative system which can be used to determine the 'acceptable nuisance level.' The NeR also outlines methods which can be used to get a picture of the nuisance level. The NeR's alternative system has been taken into account – when possible and where necessary – in developing the assessment framework in this bill.

### 5.3 Draft Decree on agriculture for environmental management

As the occasion rises, the municipal executive will apply article 2, second paragraph, of the bill (in connection with the articles 8.10, second paragraph, and 8.11 of the Environmental Management Act). That means for example that they can set additional instructions relating to the stalling system or, in overburdened situations, may refuse to grant a permit. Before that decision can be made, insight is required into the existing odour situation stemming from animal accommodations at the applicant livestock farm and at other livestock farms situated nearby. The question arises of how much latitude municipalities will actually have for customised local decisions if more categories of livestock farms are brought under the general rules (8.40 decisions).

At this moment general rules only apply for dairy cattle farms. Soon the so-called 'small-scale livestock farms', that is, livestock farms with a relatively minor impact on the environment, will also be subject to general rules. During a general consultation on 26 January 2005 it was indicated that also more intensive livestock farms of up to a certain size will fall under the scope of the (future) Decree on agriculture for environmental management (Parliamentary documents II 2004/05, 29 800 XI, no. 100). This is expected to be concluded in 2007. For the application of customised local decisions it is in any event necessary that the municipal executive:

- a. can gain insight into the odour intensity created by nearby livestock farms in a reasonably simple manner, and
- b. is authorised, pursuant to the 8.40 decision already mentioned, to set additional instructions or refuse the permit if necessary.

Both aspects will be taken into account at the time that the intensive livestock farms are brought under the scope of the Decree on agriculture for environmental management.

The odour intensity caused by dairy cattle livestock farms can now be easily determined. No odour emission factor has been set for this animal category, so the determination is based on the distances mentioned in article 5, first paragraph. Since for the rest a limited number of establishments now fall under general rules, general rules do not form at the moment any curtailment on the latitude for decisions customised for the local situation.

### 5.4 Relation to spatial planning legislation

The different value that is set down in the municipal bye-law is motivated on the basis of the municipal vision on the desired spatial layout of the area. Applying the odour regulation results in a minimum distance that must be maintained between a livestock farm and odour sensitive objects. The distance not only governs the establishment and expansion possibilities of a livestock farm, but also has consequences for the odour sensitive object. On the one hand an increase to the odour intensity on an odour sensitive object is not given a permit if the value that has been set is exceeded. On the other hand the establishment of an odour sensitive object within that distance is avoided, if the necessary zoning changes were to conflict with good spatial planning as provided for in article 10 of the current Spatial Planning Act.

In practice the competent authority fails to assess both aspects adequately, if at all, in relation to each other. Nor does the regulation require this in principle. In the letter to Parliament of 18 May 2004<sup>4</sup> however it was pointed out that an integrated approach to objectives is necessary in order to be able to promote the vitality of the rural area. For this reason the bill aims to encourage the competent authority to attune the environmental burden it permits to its spatial vision. This attuning – not a requirement to integrate municipal regulation – means that the competent authority must at least assess whether the effects to be expected from the different value or distance logically fit in with the spatial objectives for the area in question. These objectives must be set down in a document into which input was possible, so as to guarantee well-considered decision making by the competent authority.

Concerning the relation to the Concentration Areas Reconstruction Act and the existing and future spatial planning legislation, the starting point is that the municipal council in fact sets down regulations in the bye-law to which the municipality itself must adhere in the context of granting permits that could also have consequences for decisions that the municipal executive must take within the spatial track. In the context of the current Spatial Planning Act (“WRO”) this will not differ greatly from in the context of the new Spatial Planning Act.

In the explanatory memorandum to the bill for the new Spatial Planning Act this point is specifically worked out (Parliamentary documents II 2002/03, 28 916, no. 3, page 45). A connection is primarily made here with the Environmental Management Act on the basis of which environmental quality requirements can be set. The envisioned environmental quality can be reached both by measures at the source as well as measures on the side of the receiving environment, or through measures with regard to the transfer area. An example of this last category of measures is zoning: the spatial separation of activities that impact the environment and activities or functions that are not harmonious with that. The zoning plan is the designated legal instrument whereby an area is created around activities that pose a danger or burden on the environment, within which restrictions are in effect for new activities or the expansion of existing activities. The regulation set down in the new WRO makes it possible to bundle quality requirements that have both a spatial component and an environmental component in a single order in council or bye-law, which is based on both the Environmental Management Act and the new WRO.

## **6. Relation to European regulations**

Directive 96/61/EC of the Council of the European Union of 24 September 1996 concerning integrated pollution prevention and control OJ L 257 (hereafter: IPPC directive) aims for integrated prevention and control of pollution by the activities referred to in the directive. The following are included in the activities mentioned: ‘installations’ for intensive poultry or pig farming with more than 40,000 places for poultry, 2,000 places for manure pigs (of more than 30 kilograms) or 750 places for sows.

A permit is mandatory for activities that fall under the directive. The contents of a permit that has been granted must satisfy certain conditions. A permit must contain *inter alia* emission limits for polluting substances, whereby account is taken of the nature of the substances and their effects on the environment. The emission limits – or the equivalent parameters or equivalent technical measures – must be based on the best techniques available (hereafter referred to as “BBT”), with due regard for the technical characteristics, the geographical location of the installation in question

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<sup>4</sup> Parliamentary documents II 2004/04, 27 835, no. 25

and the local environmental conditions. Besides the relation to the bill under consideration, both points mentioned are also connected with the law of 16 July 2005, which came into effect on 1 December 2005, amending the Environmental Management Act and the Pollution of Surface Waters Act (Bulletin of Acts and Decrees 432; clarification in connection with the EC directive regarding integrated pollution prevention and control; permit on essentials/permit to measure), which implements the directive (even more clearly) in the Environmental Management Act.

Article 9, eighth paragraph, of the IPPC directive allows further that the requirements be set down in general instructions rather than individual permit requirements. In that case an 'integrated approach and an equally high level of protection of the environment as a whole should be guaranteed to the same extent as on the individual permit level.'

#### a. Emission limits

Applying BBT is an important instrument in the IPPC directive for preventing and controlling pollution. In every permit granting it must be looked into whether the installation involved is in fact BBT. The European Commission has since drawn up a so-called BREF document (BBT reference document) for intensive livestock farming and other activities. A BREF describes techniques that, on the basis of an integrated environmental consideration, have been designated as BBT for the particular branch of industry. The BREF for instance indicates for intensive livestock farming what housing systems are BBT for the livestock farm involved.

With regard to ammonia, the Decree on ammonia emissions from accommodations in livestock farming sets emission limits (called maximum emission values) which housing systems must satisfy. The BREF for intensive livestock farming is taken into account in setting these limits. With regard to the emission of odour, no emission limits have (yet) been set. That is why in every instance of permit granting it will have to be looked into whether the housing system in place is BBT with regard to the odour emission and the local odour nuisance situation. If necessary the competent authority will have to advise application of another technique or include additional instructions in the permit. Article 2, second paragraph, of the bill provides for this. On the basis of these provisions any instructions that may be necessary may be included in the permit – or the situation can be reviewed for compliance with any general regulations that contain instructions regarding BBT. If it is impossible for the establishment to apply the best available techniques in the particular situation, the permit must be refused.

#### b. Geographic location, local environmental circumstances

In determining what the BBT is in a concrete situation, consideration must also be given to the geographical location of the livestock farm and the local environmental circumstances. Application of BBT will however in practice not always be able to prevent an overburdened situation from resulting specifically from the location of the livestock farm or the odour nuisance already present (caused by other livestock farms). In the terminology of the IPPC directive that would create 'a significant pollution.' In light of the aim of article 3 of the directive – general principles which must be taken into account in granting a permit – this should be avoided as much as possible. The bill under consideration is partly aimed at preventing overburdened situations from arising. The immission standards (level of odour intensity permitted on odour sensitive objects) and the fixed distances to odour sensitive objects guarantee that (articles 3 through 7). These standards apply in addition to the mandatory application of BBT.

#### c. Equal level of protection

The bill sets values that are based on an average area, where sources of odour (animal accommodations) and odour sensitive objects are located at a reasonable distance from each other. The municipal council may set another value for an area designated by it. To this end it determines its spatial objectives, together with among other things the existing odour situation in the area, on the basis of aspects like the size of the different sources of odour and the positions of sources of odour and odour sensitive objects in relation to each other.

The municipal consideration results in a different value, which nonetheless is generic with regard to the odour intensity that an individual livestock farm may emit on an individual odour sensitive object, but which stems from a customised approach with respect to all the different livestock farms in the area.

The combination of the customised approach described above, the different values and distances which may not exceed a certain upper and lower limit, the application of the best available techniques and the possibility of applying article 2, second paragraph, guarantee that the environment as a whole receives an equal level of protection compared to the situation in which all IPPC businesses were to be individually assessed.

d. Integrated approach

The IPPC directive aims for an integrated approach (prevention and control) of pollution. Shift of pollution must be avoided, with the aim of promoting a high level of protection for 'the environment as a whole' (considerations 7 and 9 of the directive). The situation may arise that application of a technique is acceptable for the environmental aspect 'odour nuisance', but that permit must still be refused nonetheless in connection with other environmental aspects (noise, energy, etc.). The different value, that is the maximum permitted odour intensity on an odour sensitive object, and the different distance are set down in a bye-law that is maintained by the competent authority when assessing the environmental aspect 'odour nuisance' in the case of a permit application.

The bill does not stand in the way of an integrated approach on the permit level.

The construction sketched above offers the municipal council sufficient latitude to avoid a non-integrated approach, in the situation that a bye-law is drawn up. Needless to say, it is also noted that when drawing up a bye-law it must be monitored that the bye-law will not lead to a shift of the pollution to another environmental compartment, which would frustrate the control of other contaminations and hence the 'sustainable development' (consideration 9 of the directive).

## **7. Review of the bill**

### **7.1 Odour policy and the bill**

The national odour policy (National Environmental Policy Plan from 1989) aimed to reduce the number of objects suffering from odour nuisance and prevent new nuisance. The target was to have a maximum of 12% of residences subject to nuisance from traffic, industry and agriculture by the year 2000. Serious stench nuisance should be prevented altogether by 2010.

The three developments below will lead to autonomous decline in odour nuisance stemming from animal accommodation:

a. The contribution by agriculture is showing a downward trend. This trend can – partially – be explained by the decrease in the number of livestock farms and the total livestock population in the Netherlands. This decline of odour nuisance outweighs a converse development, namely the increase in average livestock population per livestock farm, which in principle would lead to more odour nuisance.

For the rest, agriculture's contribution to the odour nuisance experienced in the Netherlands is not inordinately high, in comparison with traffic and industry (source: "Permanent Onderzoek Leefsituatie" (Integrated system of surveys on living conditions); Statistics Netherlands).

b. Further decrease to odour nuisance is expected in the near future as a result of the implementation of the Decree on ammonia emissions from animal accommodations in livestock farming. Pursuant to that decree, livestock farms must, in the long term, apply techniques that reduce the emission of ammonia from stalls. For a number of animal categories (like meat pigs) it has been demonstrated that a housing system can be deemed low emission with respect to odour if it is low emission with respect to ammonia.

c. For the reconstruction areas, it also is the case that the implementation of the reconstruction plan should lead to a reduction in the number of residences that suffer from odour nuisance, account being taken of the national starting points as part of the Concentration Areas Reconstruction Act. Expansion or new establishment of livestock farms will largely (have to) take place at locations that were used for livestock farming activities in the past, and which are also suitable for these activities. The proper attention to odour regulation in choosing locations will then also lead to a reduction in the number of residences that experience odour nuisance.

In light of the three developments mentioned above, taking into account the general odour objective in the National Environmental Policy Plan and the restricted investment scope of the

livestock farming sector at the moment, it has been decided not to put the accent of the bill on an active reduction of the number of residences subject to nuisance from odour, but rather on the objectives mentioned in section 2.4.

## 7.2 Effects for the competent authority

The permit following from the Environmental Management Act regulates the effects that the livestock farm may cause on the environment. The bill sets regulations with respect to one of these effects; it contains a framework which must be used to assess the 'odour nuisance stemming from animal accommodations'. Implementation and enforcement of the bill will take place in the context of this environmental permit.

Application of article 6 (setting up a vision and bye-law) will lead to higher administrative costs than in the past. It was noted in chapter 4 that the current implementation practice does not give the competent authority any policy freedom or possibilities for an approach customised for the particular area. Conversely, the bill gives the municipal council the authority to set a different value, on the basis of spatial considerations (article 6). The motivation for the bye-law setting down this different value must at the very least include a vision on the development of the area.

The following is noted with respect to enforcement and feasibility. The bill does not require the competent authority to adopt other enforcement priorities or enforcement efforts. The bill does not prescribe any provisions or measures, but contains an assessment framework for odour nuisance. The assessment results in the conclusion that the permit may either be granted or not, in light of the odour nuisance that is to be expected.

Partly taking into consideration experiences with the current implementation practice, sound feasibility of the regulation has been explicitly formulated as an objective of the bill (section 2.4). For that reason, efforts were aimed at devising a clear, simple and unambiguous assessment framework and a dispersal model (a computer program for calculating odour intensity) will be made available to aid correct implementation of the calculation method. A guidebook with information on odour regulation has also been provided to inform the competent authority.

## 7.3 Effects for livestock farms and odour sensitive objects

Pursuant to the Environmental Management Act (Establishments and Licences) Decree, the application for an environmental permit must be accompanied by information that facilitates evaluation of the environmental impact. The bill does not result in a livestock farm being required to provide more or different information than is already the case. In many cases communication will be provided on the bye-law, provided for in article 6, and the municipal vision that accompanies it. The inspection and involvement costs in connection with the municipal vision and the bye-law are estimated at 135,000 euros a year. Probable savings resulting from the simplification of the regulations and from the expected decrease in the number of appeals against granted environmental permits have been left out of consideration. In light of this fact, the bill will therefore lead to a limited increase in administrative costs.

Diagram: Administrative costs of the Odour Nuisance and Livestock Farming Act, euros per year:

Article	Requirement	Internal costs	External costs	Number of businesses	Costs per year
	Submit application for environmental permit	Substantiated in the Environmental Management Act (Establishments and Licences) Decree			
6	Involvement and inspection <sup>1)</sup>	275.00	-	500	135,000
Increase in administrative costs					135,000

<sup>1)</sup> Based on five hundred businesses that make their opinion known and for whom the costs estimated per livestock farm are based on six hours of internal efforts at 45 euros an hour.

The starting point of the bill is that the expansion possibilities for the livestock farming sector remain unchanged, with respect to the Act on stench emission from livestock farming and the Regulation on livestock farming and stench nuisance 1996, respectively. To this end the research institute Alterra has carried out calculations on the basis of the actual situation within eight representative municipalities. The possible standards set for the areas differentiated in article 3 are derived from these calculations, and all of the standards set result in the satisfaction of the abovementioned starting point. Subsequently it was decided to opt for the standard that leads to the lowest possible number of potentially overburdened odour sensitive objects. This resulted in relatively less flexible values for the built-up area (few livestock farms, many odour sensitive objects) in favour of the 'concentration areas, outside the built-up areas' (many livestock farms, few odour sensitive objects) and compared with the mutual correlation between the standards in the Act on stench emission from livestock farming and the Regulation on livestock farming and stench nuisance 1996, respectively.

It was concluded on the basis of the calculations from research institute Alterra that the expansion possibilities for the livestock farming sector would remain on balance unchanged. The bill offers in principle the best opportunities to the livestock farms that are situated farther away from the built-up area, in hilly terrain and where the predominant wind direction is not aimed at odour sensitive objects. Conversely, livestock farms that are situated near the built-up area, in an area with low vegetation and unfavourably located in relation to odour sensitive objects ('upwind') will be confronted with disappointing expansion possibilities.

Apart from this it was concluded that livestock farms that are interwoven into ribbon developments will in principle not be able to count on substantial latitude for expansion, not even if the municipal council makes maximum use of its power to lay down bye-laws. Conversely, this power can probably offer enough leeway to livestock farms as provided for in article 4, first paragraph, which are situated in ribbon developments (like the 'dairy cattle livestock farms in the Mergelland').

Another effect on the business of livestock farms is the following.

Odour sensitive objects that are part of the livestock farm have a relatively low protection level (article 3, second paragraph). Visitors to these objects (including recreational campers and participants in other activities) will naturally experience more odour nuisance than visitors to comparable objects that are not a part of a livestock farm. It must be noted that the difference in protection level has (non quantifiable) effects for the possibilities of successful exploitation of the activity. The bill deems these effects to be acceptable however.

#### 7.4 Effects for the judicial apparatus

There is a high number of appeals against permits for livestock farms. On the one hand because livestock farms are relatively frequently required to apply for permits, compared to businesses in other sectors. On the other hand because the livestock farming sector is more in the public eye than most other businesses. The environmental aspect odour is relatively frequently at the root of these appeals. The assessment framework for odour nuisance leads to clear outcomes: the expansion or new establishment of a livestock farm is not granted a permit if an odour sensitive object is situated within a certain minimum distance. This imperative clarity, connected with the shortcomings mentioned in section 2.3 and appellants' fear that they will be confronted with unacceptable nuisance, make the odour regulation suitable as grounds for appeal.

The number and nature of the appeal procedures will change. In principle local 'sticking points' will be solved by setting a different value. The fear for unacceptable odour nuisance will be discussed more while drawing up the municipal vision and bye-law and less during the permit granting procedure for the livestock farm. The assessment framework that is used in implementation practice is no longer comprised of parts from a number of documents, supplemented by a number of court decisions. Efforts were aimed at formulating the system and contents of the bill clearly, simply and unambiguously. Well-supported research results and recent environmental-technical insights were taken into account. The above is expected to result in fewer appeal procedures.

## II Article-by-article commentary

### Article 1

#### *Concentration area*

A concentration area is an area designated as such in appendix I to the Fertilisers Act. A concentration area consists of one or more reconstruction areas and 'other' areas, such as existing urban areas. A reconstruction area is defined in the Concentration Areas Reconstruction Act as 'an area that is further defined in a reconstruction plan within a concentration area, where the reconstruction is actually taking place'.

The bill maintains the distinction between concentration area – non-concentration area (rather than reconstruction area – non-reconstruction area) so as to prevent misunderstandings about the applicable assessment framework for livestock farms in the 'other' areas provided for above.

#### *Animal accommodation*

An animal accommodation usually consists of a stalling system in which the animals are kept. The animal accommodation also includes the barnyard belonging to the stalling system, but does not include pastures. In general a plot of land that is evidently used as a barnyard for livestock and that borders on the establishment in the narrow sense of the term is designated as a barnyard. In practice pasture and barnyard are not always clearly differentiated, but jurisprudence stipulates that pasture is not in principle part of the establishment.

#### *Odour sensitive object*

People are sensitive to odour nuisance. It is the places where these people live or stay however that can be designated as odour sensitive objects. In general three criteria determine the scope of the term 'odour sensitive object' and the degree of protection for an odour sensitive object:

- duration of stay by people at a location;
- number of people at a location, and
- particular sensitivity of groups of people to odour.

In the bill the first criterion mentioned determines whether a location is an odour sensitive object. Both other criteria determine the degree of protection (height of the protection level).

The designation 'location' in the definition of terms is synonymous with place or space. The border of a location is formed by the place where the three criteria in the definition are no longer satisfied. That means that the border of an odour sensitive object does not need to coincide with the border of a property, the façade of a building or the partition of a terrain. Since the Environmental Management Act aims to regulate the effects of an establishment on the environment, the term 'location' is limited to a place or space that is not a part of said establishment.

The definition consists of three parts:

a. The location is intended for human residence or stay.

The location must be designated as intended for residence or stay in the zoning plan.

The bill contains values with respect to the maximum permissible odour intensity on an odour sensitive object. The values result in the observance of a spatial separation (certain distance) between the livestock farm and an odour sensitive object. The spatial separation is observed in granting the livestock farm a permit, but also has indirect effects on the construction of odour sensitive objects at a distance closer than that which results from applying this bill. In this sense the values - and distances, mentioned in article 4 - have a spatial component as well as an environmental-hygienic one. Because of this connection the definition is not limited, unlike in the past, to the actual criterion listed in b. A location must not only (actually) be intended for residence or stay, but must also be legally and planologically be permitted as such. Locations that are being used in violation of the zoning plan are therefore not protected against odour nuisance.

b. The location is by nature, layout and design suitable to be used for human habitation or stay.

c. The location is permanently or regularly used for human residence or stay.

The accent is on the total duration of actual stay (or residence) during a particular unit of time (usually a year). Not only permanent stay is eligible for protection, but shorter duration of stay also



results in protection to the extent that there is at least regular stay. Regular stay refers to a presence at the location, during a not insignificant part of a unit of time, of one or more people, with or without equal intervening periods of absence.

There are 'one or more people' present at the location. Since 'people' are eligible for protection, it is not relevant whether the location is inhabited or stayed at by the same individual or by different persons. That has the consequence that, to the extent that the total duration of stay is in agreement, the short term presence of a number of people is equated to the long term presence of one or a few people. Whether an object is odour sensitive does not depend on the size of the group of people that stays at the location. As explained below, the size of the group does (partially) determine the height of the level of protection against odour nuisance.

#### *Degree of protection*

The second and third criteria are incorporated in the differentiated standard in article 3, first paragraph, and article 4, first paragraph. The second criterion is fleshed out with the distinction between 'within the built-up area' and 'outside the built-up area.' The built-up area can be described as an area that has a predominantly residential function because of uninterrupted development and in which many people per unit of surface area actually live or stay.

The third criterion (the particular sensitivity to odour) has led to a distinction between 'concentration areas' and 'non-concentration areas.' That distinction is –partially – justified by a demonstrated significant difference in odour experience for several groups of people within livestock concentration areas.

For the sake of completeness it is also pointed out that a municipal council considering application of article 6 must motivate the degree of protection of an odour sensitive object with another criterion:

- envisioned spatial layout of the area, or
- divergent correlation between odour intensity and odour nuisance.

Both these criteria are further explained in the commentary on article 8.

## **Article 2**

The Odour Nuisance and Livestock Farming Act will be the exclusive assessment framework for granting permits to livestock farms. The second paragraph makes an exception to this in the event that instructions are set out pursuant to articles 8.11, 8.44, 8.45 or 8.46 of the Environmental Management Act. In addition a permit must be refused if granting the permit would conflict with article 8.10, second paragraph, of the Environmental Management Act.

The inclusion of the latter article is necessary in connection with the relationship to the IPPC directive. The IPPC directive prescribes the application of the best available techniques for new installations and for significant changes to existing installations. Article 8.10, second paragraph, at a, of the Environmental Management Act stipulates that the permit will be refused if the best available techniques cannot be applied. That is the case if the application is not based on the best available techniques eligible for the establishment in question and this also cannot be provided for in the necessary permit instructions. A permit should also be refused on these ground if application of the best available techniques eligible for the establishment in question is only possible by abandoning the basis of the application (in abandoning the basis of the application the permit must be refused in accordance with fixed jurisprudence).

## **Article 3**

### *First paragraph*

The term 'built-up area' is not defined, nor is it in the Spatial Planning Act. The border of the built-up area is not determined by the Road Traffic Legislation, but, just as in spatial planning, it is

determined by the nature of the environment. Within a built-up area the constructed objects located at short distances from each other are concentrated in a cohesive structure.

The permit is refused if the odour intensity on an odour sensitive object exceeds the value. For an explanation of the height of this value see section 3.3. The bill contains three exceptions to the general rule in article 3, paragraph 1:

- a. the municipal council has set a different value instead of the one set in the regulation (article 6). In that case this different value may not be exceeded;
- b. a distance of 100 metres, or 50 metres, respectively (article 3, second paragraph) is observed between a livestock farm and an odour sensitive object that is part of another livestock farm;
- c. on grounds of article 4, a distance of at least 100 metres (built-up area) or 50 metres (outside built-up area) must be observed between an odour sensitive object and an animal accommodation used to hold animals for which no odour emission factor has been published.

#### *Second paragraph*

There is an exception to the general protection level for odour sensitive objects that are part of another livestock farm. Such objects, like the business residence or a side activity, are usually situated in the immediate vicinity of animal accommodations. The objects are then exclusively or primarily burdened with odour from the farm's own animal accommodations since odour emission at a short distance from an object does after all lead to higher odour intensity than that same odour emission at a greater distance.

The contribution to odour intensity from nearby livestock farms is negligible to the extent that these odour emissions are lesser, equal to, or slightly greater than the odour emission stemming from the farm's own animal accommodations. A limited level of protection is acceptable in such cases. To reduce the number of situations in which the nearby livestock farm does contribute (substantially) to the odour intensity, a minimum distance has been prescribed between the livestock farm and an odour sensitive object on the terrain of the nearby livestock farm.

The limited protection of the objects is linked with their presence on the livestock farm. That means that if the objects are no longer a part of the livestock farm, the general protection level from article 3 is applicable, to the extent of course that the municipal council has not set a different value for the area.

#### *Third paragraph*

The paragraph sets regulations for an 'overburdened situation.' An overburdened situation arises if the odour intensity on an odour sensitive object is higher than the prescribed value. The paragraph amounts to the following. For new livestock farms planning to keep animals for which an odour emission factor is determined, the permit is refused if the odour intensity will be higher than the (different) value. For existing livestock farms the permit will be refused if the measure or provision for which a permit is being applied will result in the norm being exceeded, or – if the value has already been exceeded – results in an increase of odour intensity.

In practice, applications are usually bundled. If the application consists of a number of parts, the various parts will be assessed separately. Only a part that does not lead to an increase in odour intensity may be granted a permit. An application to carry out techniques to lower odour emissions during simultaneous expansion of the livestock population will therefore only be granted a permit for the first part, even if the entire application on balance does not lead to higher odour intensity.

The bill does not contain any decontamination requirements for existing situations. To prevent misunderstandings it is noted however that article 8.25, first paragraph, at a, of the Environmental Management Act, regarding so-called ‘unacceptable overburdened situations,’ does remain fully in effect.

#### **Article 4**

##### *Second paragraph*

If no odour emission factor has been set for an animal category, the minimum distances from article 4, first paragraph, apply. For the animal category fur-bearing animals minimum distances apply, which are linked to the size of the livestock population – unlike the distances set in article 4, first paragraph. In connection with the significant odour emission by fur-bearing animals, a minimum distance of 50 or 100 metres does not suffice. The ministerial regulation aims to include in essence the table that has been used since the Brochure on livestock farming and nuisance act from 1985, with a separate standard for inside the built-up area and outside the built-up area.

##### *Third paragraph*

The paragraph sets regulations for an ‘overburdened situation.’ An overburdened situation arises if the distance between an odour sensitive object and the animal accommodation is smaller than the distance prescribed by law. The establishment permit is refused if the distance requirement is not satisfied. For existing livestock farms the permit for changes to the establishment is refused if the distance is too small and the measure or provision for which the application has been submitted will lead to an increase in the number of animals kept, regardless of the animal category.

#### **Article 5**

The façade of an animal accommodation must be situated at least 50 metres (inside the built-up area) or 25 metres (outside the built-up area) from an odour sensitive object. In principle the distance is measured from the emission point of the animal accommodation to the closest odour sensitive object. It is however possible that an object may in fact be located at enough distance from the emission point, but at too short a distance from the closest façade of an animal accommodation. In connection with restricting odour nuisance in the case of regular maintenance and unavoidable losses through leakage that occur with mechanical ventilation, unforeseen circumstances and the wish to guarantee a certain minimum distance to an odour sensitive object, the bill stipulates a minimum distance that may not be violated.

#### **Article 6**

The municipal council is authorised to deviate from the prescribed value and distance within a wide bandwidth. The diagram below illustrates the prescribed values for the different areas, placed between the accompanying upper and lower limits of the bandwidth:

<i>odour intensity <math>ou_E/m^3</math> (<math>P_{98}</math>)</i>	non-concentration area	concentration area
inside built-up area	$0.1 \geq 2.0 \leq 8.0$	$0.1 \geq 3.0 \leq 14.0$
outside built-up area	$2.0 \geq 8.0 \leq 20.0$	$3.0 \geq 14.0 \leq 35.0$

Apart from this, the municipal council is authorised to halve or increase the prescribed distance provided for in article 4.

The bill assumes an approach customised to the area; the different value or distance set by the municipality applies for all livestock farms in the area. In addition the municipal council can provide a single type of odour sensitive objects with a different level of protection, namely the 'odour sensitive objects that have served as part of a livestock farm'.

The background to this exception to the area-focused approach is as follows.

The commentary to article 3, second paragraph, explains why odour sensitive objects, to the extent that they are part of a livestock farm, are in fact given little protection. Closure of the livestock farm causes this exceptional position to expire, so that the usual level of protection included in article 3, first paragraph, applies.

Closure of the business usually happens unexpectedly, at least for the municipal council that considers application of article 7.

The municipal vision on the desired spatial layout will usually be based on the assumption that the existing livestock farms in the area will continue to operate. The closure of a business leads to a change in the protection level of the odour sensitive objects that were a part of the now closed livestock farm, which could result in the expansion possibilities for nearby livestock farms proving unexpectedly more limited than was assumed in drawing up the vision and bye-law. This change can impede realisation of the desired spatial layout.

The municipal council can prevent such hindrance by providing these odour sensitive objects, which currently make up part of a livestock farm but which (perhaps) in future will not, a relatively low level of protection for the future. Article 6, second paragraph, grants the authority to do this.

The legal protection against the municipal bye-law is equal to that against every other bye-law set pursuant to the Municipalities Act. There is, in principle, no appeal possible in administrative court against such a bye-law. Based on the fact that the competent authority is granted full policy freedom within the bandwidths specified in article 6 and the criteria in article 8 and taking into account the democratic legitimacy of the different value or distance set by the municipal council, such an appeal may also be uncalled for.

For the sake of completeness it is also pointed out that a municipal executive in applying article 6 may to some extent be confronted with the future regime of the Public Law Act on the Right of Restrictions Perusal. This law concerns the restrictions stipulated by administrative law to which real estate is subject and which have been imposed by the government. These restrictions stem from administrative law deeds by administrative bodies of *inter alia* municipalities on grounds of an authority granted by or pursuant to a law, order in council, ministerial regulation or bye-law. Written preparatory deeds or draft decrees, to which under or pursuant to law an administrative legal restriction is attached, fall under the term 'decree on restrictions' because of this legal consequence. Setting down such a decree gives rise to, amends or revokes a restriction stipulated by administrative law. An example of this kind of restriction could be a decree in the context of article 6 of the bill under consideration.

### **Article 7**

A different value or distance leads to latitude that can be used to benefit the expansion of the livestock farm or the construction of odour sensitive objects. Since the municipal plans are always known before setting this different value or distance, a livestock farm can lay claim partly or entirely to the future space by submitting an application. The converse is the case if a lower value is being considered. A livestock farm can then still apply, for one more time, for an expansion in order to reserve 'rights' or 'environmental latitude' to the greatest degree possible. After the bye-law has been set down, this will result in a significantly overburdened situation. The municipal policy freedom would in both cases be illusory.

In order to prevent this unwanted situation the municipality is authorised to take a so-called suspension decision. The permit applications are then suspended ('frozen') from the date that the

preparatory decision comes into effect until the municipal vision and the bye-law have come into effect or the particular term has expired.

The duration of protection is in principle limited to one year, unless a draft bye-law has been put before the municipal council in a timely manner. In that case the suspension decision will remain in effect until the bye-law has been set down. Pursuant to the 'negative list' based on article 8:5 of the General Administrative Law Act, no appeal against the decision may be lodged. Article 12 of this bill provides for this.

The fifth paragraph governs the announcement of the suspension decision. Electronic announcement (such as report on the municipal website) has been added to the provisions stipulated in Part 3.6 of the General Administrative Law Act.

After the bye-law has come into effect or after the suspension decision has expired, it may emerge that the permit applications that have been suspended may jointly result in higher odour intensities than the bye-law or legal norm permits. In that case the municipal council will have to consider, when putting the decision into effect or in any event when the bye-law comes into effect, how it will allocate the limited scope for expansion among the various livestock farms.

At the moment, competing permit applications are in practice largely processed on the basis of the date of receipt. The municipality may continue to abide by that somewhat arbitrary criterion, but article 8.8, first paragraph, under c, of the Environmental Management Act does not stand in the way of applying a different criterion. Taking into consideration that the different values and distances are motivated on the basis of the envisioned spatial layout of the area in question, the municipal council may also for example include in the bye-law that permit applications will be assessed more than in the past in light of the total pallet of (desired) changes in that area and will apply a different criterion for this reason.

## **Article 8**

A deviation from the values listed in article 3, first paragraph, or the distances from article 4, first paragraph, can only be motivated exclusively on the basis of the criteria listed in article 8. In a general sense these criteria taken from the IPCC directive are further detailed in section 6 of these explanatory notes. The following is more specifically noted with regard to the criteria mentioned at a and b:

### *a. Envisioned spatial layout*

A different value or different distance will be motivated by the municipal vision on the part of the municipal territory for which setting this value or distance is being considered. The vision contains the desired spatial layout for the area, at least with regard to the development of the livestock farming sector and odour sensitive objects.

With this vision in mind it is looked into to what degree certain desired developments will be hindered or impeded by the standard set in articles 3 and 4. The municipality is subsequently authorised to determine a value or distance within the bandwidth of article 6 in such a way that promotes realisation of the municipal vision.

The bill does not set down any particular regulations with regard to the contents of this criterion. However, the municipal vision must of course fit within the context of the municipal, provincial and national spatial policy.

### *b. Divergent correlation between odour intensity and odour nuisance*

In the report 'Study on odour nuisance from stalls in intensive livestock farming' (PRA, 2001) the correlation between odour intensity and odour nuisance is determined for the animal category pigs. The study does not indicate that the nuisance experienced from the animal categories cattle (beef calves), mink and chicken varies significantly statistically from that from pigs. It cannot be ruled out that future research may lead to the conclusion

that at the same odour intensity, the odour nuisance from the first category of animals mentioned may in fact be significantly lower than that from pigs. As far as is known, no competent authority is currently considering such research however.

If qualitatively equivalent research indicates sufficiently that the correlation between odour intensity and odour nuisance for a particular animal category diverges significantly from the correlation on which this bill is based, the article makes it possible to maintain a different odour intensity value on the basis of new knowledge. Since the bill ultimately aims to protect odour sensitive objects from odour nuisance, there are no environmental-hygienic objections to such a divergence.

To prevent any misunderstandings it is noted that this paragraph is concerned with the generally applicable correlation between odour intensity and odour nuisance of a particular animal category, and not with concrete situations in which livestock farms or odour sensitive objects argue a different value or distance because they purport either to cause only limited nuisance, or experience excessive nuisance, respectively. It is acknowledged that odour nuisance is a local problem, but a one-time consultation in concrete situations does not yield any generally applicable conclusions but rather a random indication of the odour perception of a particular, whether representative or not, group of odour sensitive objects nearby livestock farms. In that case the different value or distance would be based on too subjective grounds, with insufficient guarantees for conscientious and fair decision making.

The following is noted regarding the procedure. The authority to set a different value or distance is not granted to the municipality without qualification. A number of topics must be reviewed in order to conscientiously prepare the municipal vision and the bye-law. The bill is limited to the topics that must in all cases be considered. A guidebook for the competent authority will address *inter alia* the other relevant topics.

Firstly, the different value must remain within the bandwidth set out in article 6. Secondly, the municipality must determine the existing and future odour situation stemming from the livestock farms in the area before any decision making takes place. Using the calculation method in article 10, and the correlation between odour intensity and odour nuisance described in the guidebook for the competent authority, a picture will be painted of the environmental effects. Chapter 6 of these explanatory notes explains the need for the requirement.

The municipality must also investigate whether a different value or distance will have an effect on the territory of a neighbouring or nearby municipality (article 9) before putting such a value or distance into effect. If that is the case, consultation must take place. The situation does not only arise if a livestock farm and an odour sensitive object that will be burdened are located in different municipalities. It is strongly recommended that the envisioned and future spatial layout of (parts of) areas be coordinated with other municipalities, if this layout has considerable consequences for the possibilities of residential construction or expansion and establishment possibilities of livestock farms.

It goes without saying that the height of the different value or the exact different distance must be clear from the decision making that will apply for the area in question. It must be clear in advance to everyone what maximum degree of odour intensity is to be permitted.

### **Article 9**

The municipal decision to create an alternative protection level for a certain area can have an impact on the expansion possibilities of livestock farms in nearby municipalities. A relatively high level of protection for odour sensitive objects in a border area diminishes after all the expansion possibilities for livestock farms immediately outside the municipal border. For this reason consultation with the nearby municipalities is prescribed, in advance of decision making regarding the different value or distance.

This consultation is not new. Municipalities often face situations which require coordination with nearby municipalities, in the context of spatial planning for instance. Consultation is usually also held in order to make policy more uniform. In practice reaching agreement between municipalities is seldom an insurmountable obstacle. Consequently the bill does not provide for any special 'dispute settlement' outside of the usual administrative and legal possibilities.

### **Article 10**

The article prescribes among other things how odour intensity on an odour sensitive object is calculated. In order to avoid long, costly studies, the calculation method is legally set by ministerial regulation. The use of an alternative odour emission factor or an alternative dispersal model is therefore not an issue. The regulation provides further information on the calculation method, which also includes the list of odour emission factors and the dispersal model that should be used.

### **Article 11**

The municipality is authorised to set a different value. For a few partial areas however it can reasonably be concluded that the value obtained – despite the wide bandwidth – is insufficient for implementation practice. By applying the Interim Act on Urban Environmental Policy the municipal council can set a value for (parts of) those areas that exceeds the limits of the bandwidth. For an explanation of the urban environmental policy see the Interim Act on Urban Environmental Policy.

### **Article 12**

No appeal can be lodged against the suspension decision. This is effected by including article 8 in the appendix to article 8:5 of the General Administrative Law Act, thereby placing the suspension decision on the negative list. In connection with the relatively short term of effect of the suspension decision an appeal procedure is not regarded as useful. The suspension decision serves to provide acute protection to interests that are at stake.

### **Article 14**

This clause contains interim provisions for permit applications that have been submitted before this bill comes into effect. The 'old law' remains in effect on such applications until the moment at which the permit decision becomes irrevocable. The 'old law' in this case is understood to be the law such as that which applies until the moment when the bill under consideration comes into effect.

In order to promote the reconstruction of livestock concentration areas, municipalities have permitted the construction of one or more homes in direct connection with the demolition of the stalls of the livestock farm. This concerns cases in which the livestock farm is participating in the Livestock Farm Closure Scheme and the residence was built on a lot that belonged to the livestock farm on the date that the scheme came into effect (19 March 2000). Pursuant to article 7, at b, of the Act on stench emission from livestock

farming, the protection level of the new residence is equal to that of a business residence on a livestock farm.

Application of article 3 would lead to a higher protection level for the new residence, which may cancel out agreements between the municipality and livestock farm. In order to avoid this unwanted situation, the tenor of the provision from the Act on stench emission from livestock farming is included in this bill.

The State Secretary of Housing, Spatial  
Planning and the Environment,



Regulations with regard to odour nuisance caused by animal accommodation used in livestock farming (Odour Nuisance and Livestock Farming Act)

Greetings to all who shall see or hear this! Be it known:

Whereas we have considered it desirable to lay down rules concerning decisions on permits for livestock farms pursuant to the Environmental Management Act, to the extent this involves odour nuisance caused by the animal accommodation used in livestock farming;

We, therefore, having heard the Council of State, and in consultation with the States General, have approved and decreed as We hereby approve and decree:

article 1

The following definitions apply in this act and the provisions based upon it:

*concentration area*: concentration area South or concentration area East as indicated in annex I of the Fertiliser Act, or an area designated as such by municipal ordinance;

*animal accommodation*: a space, covered or uncovered, in which animals are kept;

*odour emission factor*: odour emission per animal, set by ministerial decree according to the animal category designated for this purpose;

*odour sensitive object*: building, intended for and according to its nature, organisation and layout suitable for use as human residence or stay and which is therefore used in such a way permanently or in a comparable manner;

*odour nuisance*: effects of the emission of odour on the environment;

*livestock farm*: establishment that belongs to a category designated pursuant to article 1.1, third paragraph, of the Environmental Management Act and intended for raising, fattening, keeping, trading, transporting or weighing animals.

article 2

1. In deciding on a permit for the establishment or amendment to a livestock farm, the competent authority takes into account the odour nuisance from odour intensity stemming from animal accommodation exclusively in the manner indicated under or pursuant to articles 3 through 9.
2. The first paragraph does not apply for the refusal of a permit with application of article 8.10, second paragraph, of the Environmental Management Act or for rules that are set with the application of articles 8.11, 8.44, 8.45 or 8.46 of the Environmental Management Act.

article 3

1. A permit for a livestock farm is refused if the odour intensity of the livestock farm on an odour sensitive object situated:
  - a. within a concentration area, within the built-up area, exceeds 3.0 odour units per cubic metre of air;
  - b. within a concentration area, outside the built-up area, exceeds 14.0 odour units per cubic metre of air;
  - c. outside a concentration area, within the built-up area, exceeds 2.0 odour units per cubic metre of air;
  - d. outside a concentration area, outside the built-up area, exceeds 8.0 odour units per cubic metre of air.
2. In contravention to the first paragraph, the distance between a livestock farm and an odour sensitive object which is part of another livestock farm, or that on or after 19 March 2000 has ceased comprising part of another livestock farm:
  - a. must be at least 100 metres within the built-up area;
  - b. must be at least 50 metres outside the built-up area.
3. If the odour intensity, defined in the first paragraph, is greater than indicated in that paragraph, or the distance, defined in the second paragraph, is smaller than indicated in that paragraph, a permit, in contravention to the first and second paragraphs, is not refused if the odour intensity does not increase and the number of animals of one or more animal categories does not increase.
4. If the odour intensity, provided for in the first paragraph, is greater than indicated in that paragraph, the number of animals of one or more animal categories increases, and a measure aimed at reducing odour intensity will be applied, then a permit is granted for the change to the number of animals, to the extent that the increase of odour intensity resulting from this change does not amount to more than half of the reduction of the odour intensity that should be the result of the measure applied with a view to reducing odour intensity caused by the livestock population for which a permit was previously granted.

article 4

1. The distance between a livestock farm which keeps animals of an animal category for which no odour emission factor has been set by ministerial decree and an odour sensitive object must be:
  - a. at least 100 metres within the built-up area;
  - b. at least 50 metres outside the built-up area.
2. In contravention to the first paragraph, the distance or the odour emission factor for fur-bearing animals will be set by ministerial decree.

3. If the distance, provided for in the first or second paragraph, is smaller than indicated in that paragraph, a permit, in contravention to these paragraphs, is not refused if the distance between the livestock farm and the odour sensitive object, situated at the distance provided for in the first or second paragraph, does not decrease and the number of animals of one or more animal categories for which no odour emission factor is set does not increase.

#### article 5

1. Without prejudice to articles 3 and 4, the distance from the outer surface of an animal accommodation to the outer surface of an odour sensitive object must be:
  - a. at least 50 metres within the built-up area;
  - b. at least 25 metres outside the built-up area.
2. If the distance provided for in the first paragraph is smaller than indicated in that paragraph, a permit, in contravention to the first paragraph, is not refused if the distance, provided for in the first paragraph, does not decrease and:
  - a. the odour intensity on the odour sensitive object which is situated within the distance listed in the first paragraph, and the number of animals of one or more animal categories, do not increase, or
  - b. the distance provided for in article 4 between the livestock farm and the odour sensitive object which is situated within the distance listed in the first paragraph does not decrease and the number of animals of one or more animal categories for which no odour emission factor is set does not increase.

#### article 6

1. A municipal ordinance may stipulate that within a part of the municipality's territory a value applies other than the relevant value provided for in article 3, first paragraph, with the understanding that this other value:
  - a. is not less than 0.1 odour unit per cubic metre of air and not more than 14.0 odour units per cubic metre of air within a concentration area, within the built-up area;
  - b. is not less than 3.0 odour units per cubic metre of air and not more than 35.0 odour units per cubic metre of air within a concentration area, outside the built-up area;
  - c. is not less than 0.1 odour units per cubic metre of air and not more than 8.0 odour units per cubic metre of air outside a concentration area, within the built-up area;
  - d. is not less than 2.0 odour units per cubic metre of air and not more than 20.0 odour units per cubic metre of air outside a concentration area, outside the built-up area.
2. A municipal ordinance may stipulate that a different value or distance, provided for in article 3 or 4, set out in the ordinance may apply for odour sensitive objects that have served as part of a livestock farm.
3. A municipal ordinance may stipulate that within a part of the municipality's territory a different distance is applicable than the distance provided for in article 4, first paragraph, with the understanding that this must be:
  - a. at least 50 metres within the built-up area;
  - b. at least 25 metres outside the built-up area.
4. A municipal ordinance may stipulate that within a part of the municipality's territory a different distance is applicable for fur-bearing animals, with the understanding that this distance may not be less than the distance provided for in article 4, second paragraph.

article 7

1. In order to prevent an area from becoming less suitable for achieving the objective to be realised with the ordinance, provided for in article 6, the municipal council may decide to suspend permit application pending this ordinance.
2. In deciding to suspend application the council will decide for which area this applies and on which day this will take effect.
3. A decision to suspend application expires at the moment that the ordinance in preparation of which the decision was taken comes into effect. A decision to suspend also expires if the draft for the ordinance has not been put before the council within a year after the suspension decision has come into effect.
4. A suspension decision will be announced by making this decision open to examination. Article 3:42 of the General Administrative Law Act is applicable. Announcement regarding the preparatory decision will also be made electronically.

article 8

1. In determining the different value or distance, provided for in article 6, the municipal council must take at least the following into account:
  - a. the existing odour situation and that to be expected from the livestock farms in the area;
  - b. the importance of an integrated approach to contamination, and
  - c. the need for an equally high level of protection for the environment.
2. In determining the different value or distance the municipal council also takes into account:
  - a. the desired spatial layout of the area, or
  - b. the divergent correlation between odour intensity and odour nuisance.

article 9

If a different value or different distance than listed in articles 3 or 4 is defined for an area as provided for in article 6, and the effect from setting this other value or other distance affects the territory of a neighbouring municipality, the municipal council may only put the different value or distance into effect after consultation with this neighbouring municipality.

article 10

By decree from the Minister of Housing, Spatial Planning and the Environment, in agreement with the Minister for Agriculture, Nature and Food Quality, regulations are set regarding the manner in which:

- a. the odour intensity, provided for in article 3, is determined;
- b. the distance, provided for in articles 3 and 4, first paragraph, is measured.

article 11

The Interim Act on Urban Environmental Policy is amended accordingly:

1. Article 1, point h, is replaced by:
  - h. animal accommodation: animal accommodation as provided for in article 1 of the Odour Nuisance and Livestock Farming Act;
2. Article 2, point b, is replaced by:
  - b. to deviation of the values and distances, provided for in the articles 3, 4 and 5 of the Odour Nuisance and Livestock Farming Act.

article 12

In the annex relating to article 8:5 of the General Administrative Law Act, a passage is added to section C after part 5, reading as follows: 6. Article 7 of the Odour Nuisance and Livestock Farming Act.

article 13

The Act on stench emission from livestock farming in agricultural development areas is repealed.

article 14

1. If an application for a permit is submitted before the time at which this act comes into effect with relation to such an application, the law applicable to such an application at that time remains in effect until the time at which the decision on the application has become irrevocable.
2. For the application of articles 3 through 6, a residence that was built on or after 19 March 2000:
  - a. on a lot that at that time was in use as a livestock farm;
  - b. in connection with the whole or partial decommissioning of the livestock farm, and
  - c. in connection with the demolition of the industrial buildings that were part of the livestock farm,
 must be located at least 100 metres from a livestock farm within the built-up area, and at least 50 metres from a livestock farm outside the built-up area.
3. The second paragraph is accordingly applicable to an odour sensitive object that is present on the lot provided for in that paragraph.

article 15

This act comes into effect on a date to be determined by Royal Decree.

article 16

This act shall be cited as: Odour Nuisance and Livestock Farming Act.

Charge and order that this shall be published in the Netherlands Bulletin of Acts and Decrees and that all Ministries, authorities, boards and civil servants to whom it pertains shall see to the precise implementation thereof.

The State Secretary of Housing, Spatial Planning and the Environment,