

**No. 931/2000**

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**Government Decree  
on the Restriction of Discharge of Nitrates From Agriculture into Waters**

In accordance with a Government Decision made following submission by the Ministry of the Environment, the following is decreed pursuant to section 11 of the Environmental Protection Act (86/2000) of February 4, 2000:

Section 1

Implementation of Directive

This Decree puts into effect Council of the European Communities Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources. What follows in this Decree comprises the action programme referred to in the aforementioned Nitrate Directive.

Section 2

Scope of application

The actions referred to in this Decree must be put into effect throughout the country.

Section 3

Instructions for good agricultural practices

The following instructions apply to farming and horticulture. In the storage and use of animal manure, Annex 1 must be complied with, in addition to what is laid down in sections 4-6. Annex 3 also makes recommendations on procedures related to the use of animal manure.

## Section 4

### Animal manure storage

The manure storage for waste products excreted by animals must be sufficiently large for manure accumulated over 12 months, excluding manure remaining on pasture during the same grazing season. In determining the size of storage, farmers' joint storage, appropriate small outdoor yards and loose housing sheds with litter bedding are also considered.

Manure storages and manure gutters must be watertight. The structures and equipment used must be such that no leakage occurs when the manure storage is emptied and the manure is transferred. The size of storage must follow the principles set out in Annex 2.

Deviation from the required volume for manure storage referred to in paragraph 1 is possible if manure is transferred to another user who can accept it under a permit granted in accordance with section 28 of the Environmental Protection Act, or to another farmer to be stored as specified in this Decree or to be put into immediate reuse, or if the manure is stored in a properly made and covered manure heap provided the storage follows the procedure described in Annex 1 and releases into waters can be prevented. Any deviation must be reported well in advance to the municipal environmental protection authority, which can issue the necessary regulations pursuant to section 84 of the Environmental Protection Act. The municipal environmental protection authority must make an annual report on any such deviation reported to the regional environment centre.

Manure heaps must not be sited in areas that may become flooded or in groundwater areas.

## Section 5

### Application of animal manure

Nitrogen fertilizers must not be applied on snow-covered, frozen or water-saturated ground. Animal manure must not be applied between October 15 and April 15.

Manure may be applied in the autumn up to November 15, and application may be started in the spring no earlier than April 1, provided the ground is not frozen and is

sufficiently dry to avoid runoff into watercourses and any danger of subsoil compaction. Manure may not be applied on grassland after September 15. Organic fertilizer applied in the autumn must always immediately, and within 24 hours at the latest, be incorporated, or the field must be ploughed. The maximum amounts of manure that can be applied in the autumn are 30 tonnes/ha of solid manure, 20 tonnes/ha of cow slurry, 15 tonnes/ha of pig slurry or 10 tonnes/ha of poultry or fur animal manure.

Animal manure may be applied on a field as fertilizer equivalent to up to 170 kg/ha/year of nitrogen, while taking into consideration what is laid down in section 6.

Application of nitrogen fertilizers is prohibited between October 1 and April 15 on field areas that are repeatedly flooded in spring, but this does not apply when new growth is being established.

Use of nitrogen fertilizers is prohibited on areas closer than five metres to a watercourse. Along the width of the next five metres, surface application of nitrogen fertilizers is prohibited if the field slope exceeds two per cent.

Surface application of animal manure is always prohibited on fields whose average slope exceeds 10 per cent.

## Section 6

### Fertilizer amounts

The scale of use and application of nitrogen fertilizers is based on average crop yield, cultivation zone and crop rotation with the aim of retaining a balanced nutrient level in the soil.

Farms may use the following maximum amounts of nitrogen on fields as fertilizer, contained in both mineral fertilizer and animal manure and organic fertilizers:

- 1) winter cereals up to 200 kg of nitrogen/ha/year, of which 30 kg of nitrogen/ha in the autumn and 170 kg of nitrogen/ha in the spring, or if slowly dissolving nitrogen is used, up to 40 kg of nitrogen/ha in the autumn and 160 kg of nitrogen/ha in the spring;

- 2) potato 130 kg of nitrogen/ha/year;
- 3) grassland and pasture, silage and horticultural plants 250 kg of nitrogen/ha/year;
- 4) spring cereals, sugar beet, oilseed crops and other crops up to 170 kg of nitrogen/ha/year.

For very fine sand and coarser mineral soils, 10 kg/ha/year is deducted from the nitrogen amounts laid down in paragraph 2 above.

The total amounts of nitrogen presented in paragraph 2 above are reduced by 40 kg/ha in the case of cultivation of cereals or sugar beet on peat soil, and by 20 kg/ha in the operating areas covered by Lapland, Northern Ostrobothnia and Kainuu Regional Environment Centres. For grasslands, the reduction is 10/ha on peat soil throughout the country.

If the amount of permissible nitrogen fertilizer exceeds 170/kg/year, this amount must be split into at least two doses with at least two weeks between applications.

## Section 7

### Other regulations

Animal sheds must not be established if this may lead to a risk of polluting the ground water as specified in section 8 of the Environmental Protection Act.

The location and management of outdoor yards for animals must take the requirements of surface water and groundwater protection into sufficient consideration.

The silage effluent created in silage production must be retained and stored in watertight containers. The same regulations apply to the surface application of silage effluent as are specified concerning the application of animal manure above.

The fertilizers referred to in section 6 above must be applied on the field evenly and so as to prevent discharges into waters as effectively as possible.

## Section 8

### Nitrogen analysis

Manure nitrogen analysis must be conducted at five-year intervals after the analysis that had to be made in 1998 at the latest. Farmers must keep a record of the amount of nitrogen fertilizers used on their fields and of crop yields.

## Section 9

### Supervision

Supervision of compliance with this Decree is prescribed in chapter 13 of the Environmental Protection Act, and punishments in section 116 of the Environmental Protection Act. Employment and Economic Development Centres and municipal rural business authorities must provide regional environment centres with the information needed for supervising compliance with this Decree and for compilation of the reports required by the Nitrate Directive.

## Section 10

### Entry into force

This Decree enters into force on November 15, 2000. It repeals Government Decision 219/1998 of March 19, 1998 in the form as amended by Government Decision 907/1999.

Helsinki, November 9, 2000

Minister of the Environment Satu Hassi  
Ministerial Counsellor Ulla Kaarikivi-Laine

## Annex 1

### MANURE STORAGE IN HEAPS

For practical and hygienic reasons, litter manure can, if necessary, be stored in other than a manure storage adjacent to animal shelters. This type of distant storage refers to an appropriate manure store or to covered manure heaps made as described in this Annex. No risk of water pollution may be caused.

When manure from animal sheds is loaded onto vehicles a platform with an impermeable base must be used. The loading area should be covered if loading is regular. Tarpaulin can also be used as a cover. Manure with a dry-matter content of at least 30 %, treated in a composting plant, can be moved to a heap after 3 months of storage in a manure storage.

A manure heap must be built in the middle of a flat parcel or, in the case of a gently sloping field, near the top. Manure heaps must not be built closer than 100 metres to a watercourse or main ditch, closer than five metres to any ditch, or within 100 metres from a well from which water is drawn for household use.

A mud or peat layer at least 15 centimetres in depth must be spread at the bottom of the heap in order to catch nutrient runoff. In winter, snow must first be removed from the site. Manure must be piled up in one or a few large heaps. Storage in isolated piles along the field in fact corresponds to manure application. One heap must contain an amount of manure needed for at least one hectare of field. Piling manure in the same place every year must be avoided.

Manure heaps must always be covered with a tarpaulin or a layer of peat or an equivalent protective layer at least 10 cm in thickness, in order to prevent excessive runoff and evaporation. Heaps made in the autumn must be spread in the following spring, when the soil is no longer frozen. In the case of organic farming, manure composts made into heaps on a field must be applied to the soil during the following growing season. If this is not possible, the compost made on the field must be covered with a rain-proof tarpaulin and applied to the field no later than the following spring.

## Annex 2

Recommended capacity (cubic metres) of solid manure storage and urine and manure slurry containers for 12-month storage per animal (animal place). A manure storage of a different size should be constructed in proportion to these reference figures.

Animal species	Solid manure	Urine	Manure slurry	Solid manure + urine absorbed into litter
Dairy cow***	12.0	8.0	24.0	24.0
Heifer, suckler cow, beef cattle, breeding bull				
Young cattle < 6 months	9.0	4.0	15.0	15.0
Sow with piglets****	2.4	1.2	4.0	4.0
Sow with piglets at satellite farm*****	3.0	3.5	7.0	8.3
Growing-finishing pig* (x), breeding pig	4.4	5.2	9.6	12.0
Dry sow **	0.7	1.0	2.0	2.4
Weaned pig*(xx)	0.8	1.2	2.4	2.4
Horse	0.5	0.5	1.0	1.2
Pony	-	-	12.0	
Sheep, ewe with lambs, goat, she-goat with kids	-	-	8.0	
Laying hen in floor housing system, broiler dam	1.5	-	-	1.5
Laying hen in cage housing system				
Turkey*				
Broiler, pullet*	0.05	-		0.05
Tame duck, goose*				
Wild duck*	0.05	-	0.05	
	0.03	-	0.03	
	0.015	-	-	0.015
	0.04	-	-	0.04
	0.025	-	0.025	

\* Per animal place per year

\*\* Central unit in the sow circle; per animal place per year

\*\*\* Larger storage capacities than shown in the table are recommended for high-yielding cows

\*\*\*\* Piglets under the sow until approx. 11 weeks (normal farrowing unit)

\*\*\*\*\* Refers to satellite farms, amounts of manure per sow place, when there are 8 or more farrowings per sow place; the piglets are taken into account in the figures up to weaning age (approx. 5 weeks)

(x) Refers to fattening pigs with an average carcass weight of max. 90 kg. For higher carcass weights, figures for dry sows should be used.

(xx) Young growing pigs, age from 5 to 11 weeks

### Annex 3

## RECOMMENDATION FOR REDUCING NITRATE LEACHING CAUSED BY ANIMAL MANURE STORAGE AND USE

### 1. Proper time of manure application

The proper time to apply animal manure is primarily in the spring. The dates are prescribed in section 5 of this Decree. Application in the spring can be started within these limits when the snow has melted, the field surface is dry and all melting water has drained, even if the soil may still be frozen deeper down. Application must not cause any risk of water pollution.

The soil in the field must be tilled as soon as possible, within some four hours after manure application, in order to reduce evaporation of ammonia and to cover up unpleasant smells. Fertilizer placement of liquid manure and urine is particularly recommended. If this is not done, the manure must be incorporated or ploughed into the soil.

If manure has to be applied during the growing season, the method used should be fertilizer placement. Surface application can be used on seedlings and grasslands, preferably using trailing hoses.

If manure has to be applied in the autumn, smaller amounts are used, as specified in sections 5 and 6 of the Government Decree, and the method of application is the same as above. There should be no autumn application on peat soil. The nitrogen contained in manure applied in the autumn must be included when calculating fertilizer amounts the following spring.

Manure should not be applied on fallow fields earlier than immediately after sowing of new crops or grass seeds after the fallow season. Growth is established in the field during the same growing season to absorb nitrogen. To reduce evaporation of ammonia, manure should be applied during cool and calm weather. To prevent microbiological decomposition, it is recommended that manure be applied as late in the autumn as possible, while also following the provisions of this Decree. When choosing the time for application, and also otherwise, consideration should be shown for neighbours because of the unpleasant smell involved.



## 2. Location of animal manure application

When animal manure is applied care must be taken to ensure that no manure or nutrients contained in it can run into waterways or ditches and that no danger of groundwater pollution is caused.

Manure application should be avoided in areas where risk of groundwater pollution is possible.

Discharge of nutrients into watercourses can be reduced by leaving fertilizer-free riparian zones along watercourses and main ditches. The recommended width for such zones is at least 10 metres.

A 30-100 metre wide riparian zone free from animal manure must be left round wells and springs from which household water is drawn, the width of the zone depending on relative altitudes of the terrain, well structure and soil type.

## 3. Animal manure storage

Manure storages and manure gutters should be watertight and covered, and any liquid accumulating should be stored in a container adjacent to the manure storage. The technical specifications for building are presented in more detail in the following Ministry of Agriculture and Forestry building regulations and instructions: Environmental Protection in and around Agricultural Livestock Buildings, document code MMM-RMO-C 4, of June 6, 1999.

Secondary storage of manure is possible in heaps, mostly on small animal farms. In heap storage, maximum dry-matter content should be aimed for. It is recommended that a sufficiently large manure storage be built, that is, enough to meet a 12-month need in case of any disturbances.