NB: Unofficial translation; legally binding texts are those in Finnish and Swedish

Ministry of the Environment, Finland

Government Decree

on Urban Waste Water Treatment

888/2006

Issued in Helsinki 12 October 2006

In accordance with the Government decision made on a submission by the Ministry of the Environment, the following is enacted on the basis of sections 11 and 16 of the Environmental Protection Act (86/2000), issued on 4 February 2000, and section 36 of the Water Services Act (119/2001), issued on 9 February 2001:

Section 1

Scope of application

(1) The provisions of this Decree apply to the treatment and conducting of urban waste waters that require an environmental permit as specified in section 28 of the Environmental Protection Act (86/2000).

Section 2

Definitions

(1) For the purposes of this Decree, the term:

1) *Domestic waste water* means waste water from residential settlements and services which originates predominantly from the human metabolism and from household activities;
2) *Industrial waste water* means any waste water which is discharged from premises used for carrying on any trade or industry, other than domestic waste water and run-off rain water;
3) *Urban waste water* means domestic waste water or the mixture of domestic waste water with industrial waste water or run-off rain water;
4) *Population equivalent* (p.e.) one means the load per day with a seven-day biochemical oxygen demand (BOD_7) of 70 g of oxygen (O_2); the population

equivalent is calculated on the basis of the maximum average weekly load per day entering the treatment plant, excluding unusual situations;

5) *Agglomeration* means an area where the population or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to a waste water treatment plant or to a final discharge point.

Section 3

Waste water collection

(1) Agglomerations must be included in the areas referred to in section 8, subsection 3 of the Water Services Act (119/2001) as ones to be included in the sewage networks of a water supply plant's area of operation.

(2) Waste water treatment requirements must be observed in the planning, construction and maintenance of waste water sewers, using the best available technology and paying special attention to:

1) The quantity and qualities of urban waste waters;
2) The prevention of leakages;
3) Restricting the pollution of water bodies as a consequence of overflow waters.

Section 4

Waste water treatment

(1) Waste waters shall be subject to secondary (biological) or an equivalent treatment and the treatment must comply with the requirements listed in Table 1 in the Annex to this Decree. Phosphorus must be removed from waste waters and the phosphorus removal process must comply with the requirements listed in Table 2 of the Annex.

(2) The need for nitrogen removal from waste waters must be determined in the environmental permit application and decided in the environmental permit. Nitrogen must be removed whenever the reduction of nitrogen load can improve the status of waters. Denitrification requirements must meet the terms set forth in Table 2 of the Annex. The required nitrogen removal must be implemented within seven years of any permission granted becoming legally valid.

(3) Requirements stricter than those specified in Tables 1 and 2 of the Annex are applicable should the Environmental Protection Act or any provisions issued under it so provide.

Section 5

Prohibition on discharge of sludge into waters

(1) Residual sludge, whether treated or untreated, from urban waste water treatment plants, may not be discharged into waterways.

Section 6

Monitoring

(1) A waste water treatment plant must be constructed so as to facilitate the taking of representative samples of incoming waste water, waste water under treatment and waste water being discharged into waterways. The load caused by an urban waste water treatment plant and its impacts on the receiving aquatic environment shall be monitored in accordance with the requirements set forth in section B of the Annex.

Section 7

Programme of enforcement and situation report

(1) The execution of this Decree is monitored through a programme of enforcement, constituting a national plan as specified in section 26 of the Environmental Protection Act (86/2000).

(2) The Finnish Environment Institute prepares the required proposals for amendments to the programme of enforcement at two-year intervals.
The Finnish Environment Institute monitors implementation of the programme of enforcement and publishes an annual national situation report on urban waste water treatment plants and waste water sludges.

Section 8

Entry into force

(1) This Decree will enter into force on 1 November 2006.

(2) The Finnish Environment Institute will prepare the first proposal for a programme of enforcement referred to in section 7 by the end of the year 2007.

(3) This Decree repeals the Government decision (365/1994) issued on 19 May 1994 concerning the treatment of waste waters discharged into waters from public sewers and certain branches of industry, and waste waters discharged into a public sewer by industry, as amended by a later Decision of the Government (757/1998).

A. Waste water treatment requirements

Table 1. Minimum requirements for secondary (biological) waste water treatment. Secondary (biological) treatment means treatment of waste water by a process involving biological treatment with a secondary settlement or another equivalent process in which the requirements established in this Table are respected. The requirements set forth for concentrations and the minimum percentage of reduction can be optional.

Parameters	**Concentration**	**Minimum percentage of reduction[1)]**	**Reference method of measurement[2)]**
Biochemical oxygen demand (BOD_7 at 20°C without nitrification[3)])	30 mg/l O_2	70%	Homogenised, unfiltered, undecanted sample. Determination of dissolved oxygen before and after 7-day incubation at 20°C ± 1° C, in complete darkness. Addition of a nitrification inhibitor.
Chemical oxygen demand (COD)	125 mg/l O_2	75%	Homogenised, unfiltered, undecanted sample. Oxidizing agent: potassium dichromate.
Total suspended solids	35 mg/l	90%	Filtering of a representative sample filtered through a 0.45 µm filter membrane. Drying at 105°C and weighing.

[1)] Minimum percentage of reduction calculated in relation to the load of the influent entering the treatment plant.
[2)] The reference method of measurement can be replaced by another if a relationship between the results of the substitute method and the one mentioned herein can be established.
[3)] The measurement of BOD_7 can be replaced by the measurement of total organic carbon (TOC) or total oxygen demand (TOD), if a relationship can be established between BOD_7 and the substitute parameter.
Analyses concerning discharges from lagooning will be carried out on filtered samples; however, the concentration of total suspended solids in unfiltered water samples shall not exceed 150 mg/l.

Table 2. Minimum requirements for nutrient removal in waste water treatment. The requirements set for concentrations and the minimum percentage of reduction can be optional.

Parameters	**Concentration**	**Minimum percentage of reduction[1)]**	**Reference method of measurement[2)]**
Total phosphorus	3 mg/l (less than 2,000 p.e.)	80%	Molecular absorption spectrophotometry
	2 mg/l (2,000-100,000 p.e.)		
	1 mg/l (more than 100,000 p.e.)		
Total nitrogen [3)]	15 mg/l (10,000-100,000 p.e.)[4)]	70%	Molecular absorption spectrophotometry
	10 mg/l (more than 100,000 p.e.) [4)]		

[1)] Minimum percentage of reduction calculated in relation to the load of the influent entering the treatment plant.
[2)] The reference method of measurement can be replaced by another if a relationship between the results of the alternative method and the one mentioned herein can be specified.
[3)] Total nitrogen means the sum of total Kjeldahl nitrogen (organic N+NH_4) nitrate-nitrogen (NO_3) and nitrite-nitrogen (NO_2).
[4)] These values for concentration are annual means as referred to in paragraph B 3, sub-paragraph c of this Annex. However, compliance with the requirements set for nitrogen may be controlled using daily averages, if it can be proven in accordance with this Annex that the same level of protection is obtained. In such cases, the total nitrogen concentration of each 24-hour sample may not exceed 20 mg/l when the temperature from the effluent in the plant's biological process is 12 °C at a minimum. The conditions concerning temperature can be replaced by a limitation on the time of operation, in order to take account of regional climatic conditions.

B. Monitoring of urban waste waters and evaluation of results.

The monitoring method applied must correspond to the requirements described below.

1. Flow-proportional 24-hour samples will be collected at the same well-defined points in the outlet and, if necessary, from the inlet of the treatment plant in order to monitor compliance with the requirements for discharged waste water laid down in this Decree.

However, monitoring of a waste water treatment plant with a population equivalent of no more than 499 can be based on a daytime sample of a minimum of eight (8) hours.

Good international laboratory practices aiming at minimizing the degradation of samples between collection and analysis will be applied in taking and processing samples.

2. The minimum annual number of samples is determined according to the size of the treatment plant and the samples are to be collected at regular intervals during the year as follows:

- p.e. no more than 499	2 samples
- p.e. 500-1,999	4 samples
- p.e. 2,000-9,999	12 samples during the first year. Four samples in subsequent years, if it can be shown that the results during the first year comply with the provisions of this decision; if one sample out of the four fails to meet the requirements set forth in Table 1, 12 samples must be taken in the year that follows.
- p.e. 10,000-49,999	12 samples
- p.e. 50,000 or over	24 samples

3. The treated waste water is assumed to conform to the relevant requirements if each relevant parameter complies with the relevant parametric values in the following way:

a) In monitoring compliance with the requirements set forth in Table 1, for treatment plants with a p.e. exceeding or equal to 2,000, the number of samples allowed to fail the requirements for concentrations or percentage reductions may not exceed the values specified in Table 3. For treatment plants with a p.e. of less than 2,000, the annual means of samples must meet the requirements set forth in Table 1 for concentrations or percentage reductions.

b) For the parameters of Table 1, the maximum concentrations under normal operating conditions must not deviate from the parametric values by more than 100%. However, as regards total suspended solids, deviations of up to 150% are acceptable.

c) The parameters specified in Table 2 for concentrations and percentage reductions are annual means.

4. Extreme values for water quality will not be taken into consideration if they are the result of unusual situations such as heavy rain.

Methods other than those specified in sections 1 to 3 can be used if they can be proven to provide equivalent results.

Table 3. Maximum permitted number of samples failing to conform to the limit value requirements of Table 1.

Number of samples taken in any year	Maximum permitted number of samples which fail to conform with the limit value requirements
4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
54-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18
252-268	19
269-284	20
285-300	21
301-317	22
318-334	23
335-350	24
351-365	25