

Issued in Helsinki on 10 March 2011

NB: Unofficial translation

Legally binding texts are those in Finnish and Swedish

Ministry of the Environment, Finland

**Government Decree
on Treating Domestic Wastewater in Areas Outside Sewer Networks
(209/2011)**

In accordance with the government decision, made on the basis of the presentation of the Ministry of the Environment, the following is enacted under section 27 c of the Environmental Protection Act (86/2000), as stated in act 196/2011:

*Section 1
Scope of application*

(1) This Decree applies to the conduction and treatment of domestic wastewater in situations referred to in section 27 b of the Environmental Protection Act (86/2000).

*Section 2
Person-equivalent load for dispersed settlements*

(1) Under the person-equivalent load for dispersed settlements, the amount of organic matter in untreated domestic wastewater per resident is 50 g per day, expressed as biological oxygen demand over seven days (BOD7); the amount of total phosphorus is 2.2 g and the amount of total nitrogen 14 g per day.

*Section 3
Minimum requirements for the standard of treatment of wastewater*

(1) Domestic wastewater must be treated in such a way that the environmental loading is reduced by at least 80 per cent for organic matter, by at least 70 per cent for total phosphorus, and by at least 30 per cent for total nitrogen in comparison to loading caused by untreated wastewater, as determined by applying the person-equivalent load for dispersed settlements.

*Section 4
Normative standard of treatment in areas sensitive to pollution*

In an area subject to municipal environmental protection requirements, concerning maximum wastewater loads conducted into the environment and issued under section 19 of the Environmental Protection Act, the standard of treatment of domestic wastewater should be such that environmental loading is reduced by at least 90 per cent for organic matter, by at least 85 per cent for total

phosphorus, and by at least 40 per cent for total nitrogen in comparison to the loading caused by untreated wastewater, as determined by applying the person-equivalent load for dispersed settlements.

Section 5 ***Wastewater system report***

(1) A report must be prepared on the wastewater system, enabling the assessment of the environmental loading caused by such wastewater. Such a report must also be prepared in situations where the wastewater can be conducted into the ground under section 27 b, subsection 2 of the Environmental Protection Act. The report must meet the requirements laid down in Appendix 1, item 2 B. The report must be stored at the property, and presented to a supervisory authority, upon request.

Section 6 ***Wastewater system plan and construction of the wastewater system***

(1) If a wastewater system is to be constructed, or the functioning of an existing system is to be enhanced, a plan to that effect must be enclosed with the required application for a building or action permit, or a building notification, filed under the Land Use and Building Act (132/1999).

(2) The plan must meet the general requirements laid down in item 2 A and the dimensioning requirements laid down in item 2 C of Appendix 1. The prepared plan will replace the report referred to in section 5.

(3) The wastewater system must be constructed in accordance with the plan referred to in subsections 1 and 2.

Section 7 ***Use and maintenance of the wastewater system***

(1) The wastewater system must be accompanied by up-to-date instructions on its use and maintenance. These instructions must comply with the maintenance, inspection and recording requirements for the wastewater system and the wastewater treatment system, as laid down in Appendix 2. The use and maintenance instructions must be stored at the property and presented to a supervisory authority upon request.

(2) The wastewater system must be used and maintained in accordance with the instructions, so that the system functions as planned and the requirements laid down for the standard of treatment of wastewater can be fulfilled in normal use.

(3) Provisions on the transportation and treatment of the sludge generated in the wastewater system and waste accumulated in cesspools (holding tanks) are laid down in the Waste Act (1072/1993) and thereunder.

Section 8
Monitoring and availability of information on wastewater treatment systems

(1) The Finnish Environment Institute must monitor the generally available equipment and methods for wastewater treatment, and the results achieved with such equipment and methods. All information based on continuous monitoring and independent, reliable assessment must be made easily available to the public.

Section 9
Entry into force

(1) This Decree enters into force on 15 March 2011.

(2) This Decree repeals the Government Decree on Treating Domestic Wastewater in Areas Outside Sewer Networks (542/2003).

Section 10
Transitional provisions

(1) Wastewater systems that are in operating condition and exist on the property as of 1 January 2004, and which do not meet the requirements laid down in section 3 of this Decree, must be rendered compliant with this Decree within five years of the Decree's entry into force.

(2) If renovation or alteration works equivalent to new construction are carried out on the property, or extensions of more than a minor nature are made to the property, or the wastewater system is substantially modified so that a building or action permit or a building notification is required under the Land Use and Building Act, subsection 1 shall not apply.

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Minister of the Environment

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1. WASTEWATER TREATMENT SYSTEMS

Wastewater treatment systems can comprise any of the following methods and equipment:

- 1) septic tank, which means a mechanical, watertight device intended for pre-treating wastewater and equipped with one or more compartments, through which wastewater flows and the main purpose of which is to retain settling solids that are separated from the wastewater and constituents lighter than water;
- 2) cesspool (holding tank) which means a watertight tank intended for the temporary storage of domestic wastewater or sludge and not equipped with a pipe for discharging wastewater into the environment;
- 3) soil infiltration system, which means a domestic wastewater treatment facility that is dug into the ground or terraced, and through which wastewater that has, at a minimum, been pre-treated in a septic tank, is absorbed into the ground for purification before it reaches the ground water;
- 4) sand filter system, which means a domestic wastewater treatment facility that is dug into the ground or terraced, and in which wastewater that has, at a minimum, been pre-treated in a septic tank, is purified when passing through a filter layer consisting primarily of sand or other soil material, after which the wastewater is collected into pipes and conducted into the environment or for further treatment;
- 5) package plant, which means a domestic wastewater treatment facility other than that referred to in items 1–4 above and which can be a physical, chemical or biological system or a combination of these.

2. WASTEWATER SYSTEM REPORT AND PLAN AND THEIR CONTENT

A. Wastewater system plan

In addition to what is provided in section 6 of the Environmental Protection Act (86/2000) on the location of activities posing a risk of environmental pollution and what is provided on construction-related plans in the Land Use and Building Act (132/1999) and Decree (895/1999) and in the National Building Code of Finland issued thereunder, a plan for a wastewater system that is not connected to a sewer network must meet the following requirements:

- 1) the plan must be based on adequate surveys of the terrain and soil at the building site, as well as on studies of surface and ground water conditions and on surveys of household-water wells;
- 2) dimensioning of the capacity of the wastewater treatment system must be based on the amount, quality and loading variations of the wastewater generated, while at the same time account must be taken of the planned and any other use of the property, and variations in such use during the life-cycle of the buildings, so that the capacity fulfils the requirements laid down in item C below;
- 3) the plan must present the structure of the wastewater system, the operating principle of the wastewater treatment system, as well as providing a reliable estimate of the treatment quality to be achieved and the environmental loading generated by the wastewater; if no reliable data is available on the treatment quality or environmental loading of the planned wastewater treatment system, the plan must include measures which ensure that the related requirements are fulfilled;
- 4) the plan must not propose that rainwater, storm water or basement drainage water be conducted into the wastewater system prior to wastewater treatment;

- 5) the wastewater system plan must be sufficiently detailed, so that a wastewater system fulfilling all requirements can be built on the basis of the plan and quality of construction can be monitored;
- 6) the wastewater treatment system must be planned so as to enable the taking of representative samples from any wastewater that enters and leaves the wastewater treatment system; in the case of a soil infiltration system, when necessary it must be possible to ensure proper functioning, by taking water samples from the ground water observation well; the observation well must be placed downstream, near the infiltration system in the direction of the groundwater flow;
- 7) equipment and structures requiring regular maintenance must be designed so that maintenance work can be carried out easily at all times of the year and in all weather conditions;
- 8) all necessary safety and alarm devices notifying of blockages in the system, overloading or any other malfunction must be incorporated in the wastewater treatment system; a cesspool (holding tank) must, in all cases, have a safety and alarm device that indicates a full tank; and
- 9) the plan must also contain the following information to the extent necessary for constructing, operating and monitoring the wastewater system:
 - a) measures to prevent loading generated by untreated domestic wastewater;
 - b) the wastewater treatment system and equipment, including capacity data;
 - c) the location and elevation of the pipes, the equipment and the discharge outlet of the treated wastewater in relation to nearby buildings, household-water wells or other intake water sources, surface and ground water, and other land use that may be affected by the wastewater system;
 - d) the level of the surface and ground water as measured at the site where domestic wastewater is treated and discharged and a reasoned assessment of the highest such water levels and of the functioning of the wastewater system in such circumstances;
 - e) planned functioning of the alarm and monitoring devices;
 - f) facilities requiring regular maintenance and the structures and routes required for maintenance work, such as service routes, indoor facilities used and their access routes and the locations of necessary electric wall sockets and water taps; and
 - g) other similar factors.

The plan can propose that the wastewater system be implemented in various stages, if the actual operating situation on the building site and the dimensioning based on life-cycle (C1) markedly differ, and implementation in stages is justified in order to ensure the functionality of the treatment system. In such a case, the various stages of construction must be described in the plan.

B. Wastewater system report

The report compiled on the wastewater system must provide a description of the treatment solutions for wastewater generated on the property, and a reasoned assessment of the environmental loading and the fulfilment of the treatment requirements. A site plan indicating the location of the wastewater system and wastewater discharge outlets must be appended to the report. Other information necessary for the use, maintenance and monitoring of the wastewater system and presented in item A, must also be appended to the report.

C. Dimensioning the capacity of the wastewater treatment system

In addition to what is provided in and under the Land Use and Building Act (132/1999) on wastewater treatment systems, planning of the wastewater treatment system must be based on the following dimensioning requirements:

1) the capacity of the wastewater treatment system of any residential property must be dimensioned in accordance with all future needs, so that it meets the specified requirements in all operating situations likely to arise during the system's life-cycle; the dimensioning of capacity for the number of residents in question and in relation to waste water treatment loading must be equal to or greater than the number of residents derived by dividing the net floor area, in square metres, by 30; the number of residents used as the basis for dimensioning capacity must, however, be at least five (5);

2) the number of residents used as a basis for dimensioning the wastewater treatment system capacity in buildings providing accommodation services must be at least the maximum number of bed places, while in the case of restaurant services the number of residents used as a basis for dimensioning the wastewater treatment system capacity must be at least the maximum number of customer places divided by three; the above-mentioned numbers of residents used for dimensioning the wastewater treatment system capacity must be added together if the wastewater system covers both accommodation and restaurant services;

3) average loading generated by untreated domestic wastewater from milk stores on dairy farms and small-scale business operations must be based on surveys or other reliable information; and

4) environmental loading generated by wastewater systems must be calculated as the sum of different loadings; loading calculations for wastewater systems based on waste separation must be based on the values given in Table 1 or values based on reliable general or on-site surveys.

Table 1. Composition of the person-equivalent load for dispersed settlements: the origin of loading and the amounts for various types of loading as grams/person/day (g/p/d) and their percentages (%).

Origin of nitrogen loading g/p d	Organic matter (BOD7)			Total phosphorus			Total
	%	g/p d	%	g/p d	%		
Faeces	15	30	0.6	30	1.5	10	
Urine	5	10	1.2	50	11.5	80	
Other	30	60	0.4	20	1.0	10	
Person equivalent load		50	100	2.2	100	14	100

INSTRUCTIONS FOR THE USE AND MAINTENANCE OF WASTEWATER TREATMENT SYSTEMS

In addition to what is provided on the use and maintenance instructions for buildings in the Land Use and Building Act (132/1999) and Decree (895/1999) and in the National Building Code of Finland, the use and maintenance instructions for wastewater systems must fulfil the requirements laid down in items A, B and C below.

A. The instructions must contain the following information, required for ensuring safe operation of the wastewater system, best environmental practices and reliable performance:

- 1) instructions for the normal use of the wastewater system and the equipment of the system, and the measures required for this;
- 2) features requiring regular maintenance and monitoring, the measures required and the frequency with which such measures must be carried out;
- 3) instructions for actions to be taken in order to resolve the most common malfunctions of the wastewater system;
- 4) instructions for periodic inspections, required to ensure the functioning of key equipment of the wastewater system, based on the equipment's planned useful life, and instructions on the expertise required for such inspections;
- 5) contact details of the designers and constructors of the wastewater system, and of the bodies responsible for its maintenance and monitoring.

B. The use and maintenance instructions must contain the following maintenance, inspection and recording requirements for wastewater treatment system methods and equipment:

1) septic tank

- instructions for sludge removal, which must be carried out at least once a year; and
- instructions for inspections of the condition and functioning of the structures, which must be carried out at least once every ten years.

2) cesspool (holding tank)

- instructions for inspecting the operation of the alarm device indicating a full tank; such an inspection must be carried out at least once a year
- a model and instructions for keeping books on the amount of wastewater transported from the site, in order to monitor the tightness of the tank; and
- instructions for inspecting the watertightness and other operability aspects of the tank; such an inspection must be carried out at least once every five years.

3) soil infiltration and sand filter system

- instructions for keeping the distribution manhole or structure clean and for frequency of inspection of its operation
- instructions for inspecting the operation of the alarm that notifies of blockages in infiltration pipes and the frequency of such inspections, or the frequency of inspections for blockages; and

- instructions on inspections of the condition and operability of the structure, which must include cleaning of the infiltration pipes and which must be performed at least once every ten years.

4) package plant

- instructions on the systematic removal of excess sludge, which must be performed at least once a year;
- instructions for the systematic inspection of the functioning of electrical and mechanical equipment and the frequency of inspections, and the frequency of inspections of the operation of the equipment alarm system; and
- instructions for inspecting the condition and functioning of structures, which must be performed at least once every ten years; such an inspection must include emptying and cleaning of the basins to a degree sufficient to determine the condition of underwater structures.

C. The maintenance instructions must be kept up-to-date and must take account of any measures taken to render the wastewater system more efficient, of the various stages of construction presented in the wastewater system plan, and of any other modifications.