

Government Decree
on Treating Domestic Wastewater in Areas Outside Sewer
Networks
(542/2003)

Section 1 - *Objective*

The objective of this Decree is to reduce domestic wastewater emissions and environmental pollution, giving special consideration to national water protection targets.

Section 2 - *Scope of application*

- (1) This Decree applies to treatment and conduction of domestic wastewater, construction and maintenance of wastewater systems, sludge from wastewater and its collection and treatment.
- (2) This Decree does not apply
 - 1) to wastewater systems of properties if they are required to be connected to the sewer networks referred to in section 3 of the Water Services Act (119/2001);
 - 2) to treatment or conduction of domestic wastewater if this requires an environmental permit; or
 - 3) the conduction of domestic wastewater does not, under section 103(2) of the Environmental Protection Act, require purification of the wastewater before it is released into the environment.
- (3) Section 4 of this Decree does not apply if there are provisions elsewhere in the law in which or under which more stringent requirements are laid down. Provisions on applying section 4 in areas that are subject to the municipal environmental protection

regulations issued under section 19 of the Environmental Protection Act (86/2000) are also contained in section 4(2) of this Decree.

- (4) The requirements on reports in section 6 apply to the conduction of domestic wastewater in cases referred to in subsection 2(3), notwithstanding the provisions of that subsection.

Section 3 - *Definitions*

In this Decree,

- 1) *domestic wastewater* means wastewater originating from water closets of dwellings, offices, business premises and other facilities, and from kitchens, washing facilities and similar facilities and equipment, and wastewater with similar properties and composition originating from milk stores at dairy farms or resulting from other business operations;
- 2) *wastewater treatment system* means all the equipment and structures referred to in Appendix 1, item 1 that are needed for the purification or other treatment of domestic wastewater;
- 3) *wastewater system* means all the domestic wastewater sewers and wastewater treatment systems located inside and outside buildings, which are needed for conduction and treatment of the domestic wastewater of the property;
- 4) *person-equivalent load for dispersed settlements* means the average load of untreated wastewater generated by one resident measured as grams per day (g/d), where a person-equivalent load of one means the daily load in which organic matter expressed as biological oxygen demand over seven days (BOD₇) amounts to 50 g/d, total phosphorus to 2.2 g/d and total nitrogen to 14 g/d;

- 5) *The load in untreated wastewater* means the loading contained in wastewater destined for wastewater treatment that is defined as the product of the average number of residents using the wastewater system and the person-equivalent load for dispersed settlements or, if the domestic wastewater is from activities other than residential, as the average daily load based on research.
- 6) *sludge* means settling or floating matter originating from wastewater in septic tanks, small-scale treatment facilities or other treatment processes that can be separated from wastewater as a fraction of its own.

Section 4 - *General wastewater treatment requirements*

- (1) The environmental loading generated by domestic wastewater must be reduced by at least 90 per cent for organic matter (BOD₇), at least 85 per cent for total phosphorus and at least 40 per cent for total nitrogen, compared with the load in untreated wastewater.
- (2) The provisions in subsection 1 above do not apply to areas that come under the municipal environmental protection regulations on maximum wastewater loads conducted into the environment issued under section 19 of the Environmental Protection Act, if the regulations require that loading generated by wastewater conducted into the environment must be reduced by at least 80 per cent for organic matter (BOD₇), at least 70 per cent for total phosphorus and at least 30 per cent for total nitrogen, compared with the load in untreated wastewater.

Section 5 - *Wastewater treatment systems*

The domestic wastewater treatment systems referred to in Appendix 1, item 1 of this Decree must be suitable for their intended use, and it must be possible to operate and maintain them so that the wastewater treatment requirements laid down are met.

Section 6 - *Wastewater system report*

A report on the wastewater system that allows an assessment to be made of the environmental loading generated by the wastewater must be available. The report must meet the requirements laid down in Appendix 1, item 2B of this Decree. The report must be kept at the property and it must be presented to the supervisory authority when required.

Section 7 - *Wastewater system plan*

- (1) If a wastewater system is to be constructed or its operation made more effective, a plan to that effect must be appended to the required application for a building or action permit or building notification made under the Land Use and Building Act (132/1999).
- (2) The plan must meet the general requirements laid down in Appendix 1, item 2A of this Decree and the dimensioning requirements laid down in item 2C. The plan thus prepared obviates the need for the report referred to in section 6.

Section 8 - *Constructing wastewater systems*

- (1) The construction of a wastewater system must be in accordance with the plan referred to in section 7.
- (2) Otherwise the construction must be in keeping with the provisions contained in and issued under the Land Use and Building Act.

Section 9 - *Use and maintenance of wastewater systems*

- (1) Each wastewater system must have up-to-date use and maintenance instructions. The instructions must meet the requirements referred to in Appendix 2. The use and maintenance instructions must be kept at the property and they must be presented to the authorities when required.
- (2) The wastewater system must be used and maintained in accordance with the instructions so that it functions as planned and the wastewater treatment requirements laid down are met.
- (3) The sludge in the wastewater system and the waste accumulated in cesspools (holding tanks) must be transported and treated in accordance with the provisions contained in and issued under the Waste Act (1072/1993).

Section 10 - *Monitoring the information on wastewater treatment systems and the availability of such information*

The Finnish Environment Institute must monitor developments in generally available wastewater treatment equipment and methods and the results achieved with them. The information based on continuous monitoring and independent and reliable assessments must be made easily available to the public.

Section 11 - *Entry into force*

This Decree enters into force on January 1, 2004.

Section 12 - *Transitional provisions*

- (1) The wastewater system report referred to in section 6 and the use and maintenance instructions referred to in section 9 must be drawn up within two years of the entry into force of this Decree. For property with no water closet, the report and the use and maintenance instructions must be drawn up within four years of the entry into force of this Decree.
- (2) Existing wastewater systems in operating condition at the time of the entry into force of this Decree and systems not yet built whose construction has been decided as part of a building permit must be made to comply with the requirements of section 4 within ten years of this entry into force of this Decree unless otherwise provided in subsections 3 and 4.
- (3) However, notwithstanding subsection 2, section 4 of this Decree applies if the property is subjected to repairs or alterations that are of such a scale that they are equivalent to new construction, 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.
- (4) If the property is covered by the transitional provision in subsection 2 and the measures required for complying with the treatment requirements in section 4 are, because of their cost or exceptional technical requirements, unreasonable for the property holder and the environmental loading must be considered negligible, improvements to the wastewater system may be carried out later than the date laid down in subsection 2, though not later than 14 years after the entry into force of this Decree. The property holder must notify the municipal environmental protection authority of the

postponement of the improvement measures within the transitional period laid down in subsection 2 and at the same time show in the notification that the requirements referred to above are met. The municipal environmental protection authority must provide the regional environment centre with an annual summary of the notifications submitted to it.

Appendix 1

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 for pre-treating wastewater that has one or more compartments and through which wastewater flows and the main purpose of which is to retain settling solids becoming 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 which does not have any pipe for discharging wastewater to the environment;
- 3) soil infiltration system, which means a domestic wastewater treatment facility that is dug into the ground or elevated in which wastewater that has at least been pre-treated in a septic tank is absorbed into the ground so that it can be purified before reaching the ground water.
- 4) sand filter system, which means a domestic wastewater treatment facility that is dug into the ground or elevated in which wastewater that has at least been pre-treated in a septic tank becomes purified when it passes through a filter layer made of sand or other soil material, after which it 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 building-related plans in the Land Use and Building Act (132/1999) and Decree (895/1999), and in the Finnish Building Code issued on the basis of them, 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 site and on studies of surface and ground water conditions and on surveys of household-water wells;
- 2) dimensioning 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 consideration must be given to the planned use and any other use of the facility and variations in it during the life-cycle of the buildings, so that the capacity is in accordance with the requirements laid down in item C below;
- 3) the plan must present the construction of the wastewater system and the working principle of the wastewater treatment system and give a reliable estimate of the treatment quality to be achieved and the environmental loading generated by the wastewater; if there is no reliable data available on the treatment quality or environmental loading of the planned

wastewater treatment system, the plan must contain measures which ensure that the requirements will be met;

4) rainwater, storm water or basement drainage water may not be conducted to the wastewater system before wastewater treatment.

5) the wastewater system plan must be in sufficient detail, so that a wastewater system meeting all requirements can be built on the basis of the plan and the quality of construction can be monitored.

6) it must be possible to take representative samples from the wastewater entering and leaving the wastewater treatment system; in the case of a soil infiltration system, and if the circumstances so demand, 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 flow of the ground water;

7) equipment and structures requiring regular maintenance must be designed so that maintenance work can be easily carried out 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 always have a safety and alarm device to indicate when the tank is full; and

9) the plan must also contain the following information to the extent necessary for constructing, operating and monitoring the wastewater system:

- a) measures preventing loading contained in untreated domestic wastewater;
- b) the wastewater treatment system and equipment, including capacity data;
- c) location and elevation of the pipes, 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) 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) any other information required

B. Wastewater system report

The report compiled on the wastewater system must give a description of the solutions for treating wastewater from the property and a reasoned assessment of the environmental loading and the fulfilment of the treatment requirements. A site plan showing the location of the wastewater system and the wastewater discharge outlets must be appended to the report. Other information

necessary for the use, maintenance and monitoring of the wastewater system, 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, the planning of the wastewater treatment system must be on the basis of the following dimensioning requirements:

1) the capacity of the wastewater treatment system of a residential property must be dimensioned in accordance with all future needs so that it meets the requirements laid down in all operating situations that may arise during the system's life-cycle; the capacity dimensioning for the number of residents in relation to the wastewater 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 the 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 accommodation places, while in 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 at dairy farms and small-scale business operations must be on the basis of research or other reliable information; and
- 4) environmental loading generated by wastewater systems must be calculated as the sum of different loadings; loading calculations of 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; origin of loading and the amounts of different types of loading as grams/person/day (g/p/d) and their percentages (%).

Origin of loading	Organic matter, BOD ₇		Total phosphorus		Total nitrogen	
	g/p/d	%	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

Appendix 2

Use and maintenance instructions for the wastewater systems

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

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

- 1) instructions for normal use of the wastewater system and its equipment and the measures required for this;
- 2) features requiring regular maintenance and monitoring, the measures required and how frequently they must be carried out;
- 3) instructions for action in the most common malfunctions of the wastewater system;
- 4) instructions for periodic inspection required to ensure functioning of the most important equipment of the wastewater system, based on the planned useful life, and the expertise required for such inspections; and
- 5) contact details of the designers and constructors of the wastewater system, and of the bodies responsible for 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 (1) a year; and
 - instructions for inspecting the condition and functioning of the structures, which must be carried out at least once every ten (10) years.
- 2) cesspool (holding tank)

- instructions for inspecting the operation of the alarm device indicating that the tank is full; the inspection must be carried out at least once (1) a year;
- a model and instructions for keeping books on the amount of wastewater transported, so that the tightness of the tank can be monitored; and
- instructions for inspecting the watertightness and other operability aspects of the tank; the inspection must be carried out at least once every five (5) years.

3) soil infiltration and sand filter systems

- instructions for keeping the distribution manhole or structure clean and for the frequency of the inspection of its operation.
- instructions for inspection of the operation of the alarm notifying of blockages in infiltration pipes and the frequency of inspections, or the frequency of the inspections for blockages; and
- instructions for inspection of the condition and operability of the structure, which must include cleaning of the infiltration pipes and which must be carried out at least once every ten (10) years.

4) package plant

- instructions for systematic removal of excess sludge, which must be carried out at least once (1) a year;
- instructions for systematic inspection of the functioning of the 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 the structures, which must be carried out at least once (1) every ten years;

the inspection must include emptying and cleaning of the basins to an adequate degree so that the condition of the underwater structures can be determined.

C. The maintenance instructions must be kept up-to-date and must take account of any measures taken to make the wastewater system more efficient and any other modifications.