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**Technical standard for domestic wastewater treatment
engineering of rural area**

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1 General

1.0.1 This standard is formulated to promote the improvement of rural living environment and standardize the construction, operation, maintenance and management of rural domestic sewage treatment projects.

1.0.2 This standard applies to administrative villages, natural villages, and scattered household sewage treatment projects newly built, expanded, and reconstructed, as well as household toilet renovation and toilet sewage treatment projects.

1.0.3 Rural domestic sewage treatment facilities should be based on village construction planning and location characteristics, and on the basis of comprehensive economic comparison and analysis of the construction, operation, maintenance and management of rural domestic sewage treatment facilities, appropriate treatment methods and technologies should be selected according to local conditions Technology and management methods; and the combination of resource utilization and agricultural production structure should be given priority.

1.0.4 The construction, operation, maintenance and management of rural domestic sewage treatment projects shall not only be carried out in accordance with this standard, but also comply with the relevant current national standards.

2.0.1 rural domestic wastewater

The sewage produced by rural residents mainly includes toilet sewage and domestic miscellaneous drainage.

2.0.2 toilet sewage black water

High-concentration domestic sewage produced by human excretion and washing of feces, also known as black water.

2.0.3 Domestic miscellaneous drainage gray water

Sewage from rural household kitchens, laundry, cleaning and bathing sewage, also known as gray water.

2.0.4 Domestic wastewater treatment facilities for rural area

Structures or equipment for treating rural domestic sewage, including sewage treatment structures (equipment), supporting pipe networks and auxiliary facilities.

2.0.5 onsite wastewater treatment

The method of on-site treatment of sewage from single or multiple households.

2.0.6 rural centralized wastewater treatment

The sewage of villages or farmers within a certain range is collected through the pipe network and connected to the nearby rural domestic sewage treatment facilities.

2.0.7 Rural waste water into urban sewers

Village sewage located in and around cities and towns is directly brought into the urban sewage pipe network after being collected by sewage branch pipes, and is treated uniformly by urban sewage treatment plants.

3 Basic Regulations

3.0.1 The construction of rural domestic sewage treatment projects should be based on the specific conditions and requirements of each locality, comprehensive economic development and environmental protection, the relationship between the discharge and utilization of treated water, combined with the relevant development plans for rural areas and agriculture, and make full use of existing conditions and facilities.

3.0.2 Rural domestic sewage treatment should take the county-level administrative area as the unit, and implement unified planning, unified construction, unified operation, and unified management.

3.0.3 Rural domestic sewage treatment mainly includes three methods. household sewage treatment, village centralized sewage treatment, and urban sewage pipe network treatment, and should be based on pipe network laying conditions, drainage destination, conditions for incorporating into municipal pipe network, economic conditions and Management level, etc. determine the way of sewage treatment.

3.0.4 A guarantee system should be established for rural domestic sewage treatment projects.

3.0.5 The location and land use of the sewage treatment project shall comply with relevant national and local regulations.

4.1.1 The discharge of domestic sewage in rural areas shall be determined based on field survey data.

4.1.2 When there is no field survey data, the amount of sewage discharge should be determined according to the local population size, water use status, living habits, economic conditions, regional planning, etc. or according to the discharge volume of other similar areas, or according to the values in Table 4.1.2 and the emission factor are determined.

Table 4.1.2 Reference value and discharge coefficient of daily water consumption of rural residents

4.2.1 The water quality of rural domestic sewage should be determined based on field survey data.

4.2.2 When there is no survey data, the design water quality should be determined according to the local population size, water use status, living habits, economic conditions, regional planning, etc. or the drainage water quality of other similar areas. When the farmer does not set up a septic tank, it can be determined according to the values in Table 4.2.2.

Table 4.2.2 Reference values of domestic sewage water quality for rural residents (unit. mg/L, except pH value)

Note. The concentration of the effluent after the toilet sewage is treated by the septic tank alone is higher than the reference value in the table.

4.2.3 The effluent quality of rural domestic sewage after treatment shall comply with the relevant provisions of the current national standards.

5.1.1 The collection of domestic sewage in rural areas should adopt a diversion

system.

5.1.2 The rural domestic sewage collection and discharge system shall include the household sewage collection system in the farmer's courtyard, the sewage collection system outside the farmer's courtyard and the discharge system of sewage treatment facilities.

5.1.3 The sewage pipe and its slope should be determined according to the displacement and flow velocity. The design of sewage pipelines can be carried out in accordance with the relevant provisions of the current national standards "Code for Design of Water Supply and Drainage of Buildings" GB 50015 and "Code for Design of Outdoor Drainage" GB 50014.

5.2 Sewage collection

5.2.1 The laying method of rural courtyard sewage collection system should be determined in consideration of factors such as farmers' living habits, customs and culture, courtyard layout, and sewage treatment methods.

5.2.2 The sewage collection system in the farmer's yard shall include drainage pipes, inspection wells and other facilities. Toilet sewage and domestic miscellaneous drainage should be collected separately and recycled. When centralized sewage treatment in villages is adopted or incorporated into the urban sewage pipe network, toilet fecal sewage should be discharged into septic tanks first, and then into drainage pipes; kitchen and bathing sewage can directly enter drainage pipes (ditches).

5.2.3 Cleaning ports should be installed in front of kitchen and bathroom sewers, and inspection wells should be installed in front of courtyards.

5.2.4 The sewage collection system outside the courtyard shall include facilities such as household pipes, branch pipes, main pipes, inspection wells and lifting pump stations. The sewage pipe network should be laid reasonably according to the layout of the village, topography and other factors.

6.1 General provisions

6.1.1 The treatment of rural domestic sewage should adopt biofilm method (anaerobic biofilm tank, biological contact oxidation tank, biofilter, biological turntable, etc.), activated sludge method (domestic sludge method, oxidation ditch activated sludge method, Membrane bioreactors, etc.), natural biological treatment (constructed wetlands, stabilization ponds, etc.) and physical and chemical methods (grids, grit chambers, regulating ponds, and chemical phosphorus removal, etc.). On the basis of constantly summarizing scientific research results and practical experience, combined with local conditions, it is advisable to choose new techniques, new materials, and new equipment.

6.1.2 Rural domestic sewage treatment should be equipped with slag removal facilities and