

Study on the sewage membrane treatment

Whole term

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(Purpose)

It is one of the important tasks for the future sewage projects to encourage reuse of treated water as a water resource of urban area. However, there are still questions about smell, color, sanitary safety, foaming and algae in channels, and therefore an advancement of the treated water quality for various purposes is essential.

Recently, the membrane treatment technology has improved drastically and is expected to contribute to the application and distribution of the reuse of treated water.

The methods using membranes are classified as “ micro-filtration (MF)” , “ Ultra- filtration (UF)” , and “ reverse-osmosis (RO).” MF can remove turbidity that the conventional sand filtration is unable to do. UF removes colloids and protein while RO can remove dissolved matters. Concretely, the membranes can remove turbidity, germs such as coliform group, smell, color, dissolved nutrient materials so that the treated water attains a fine quality with ease in comparison with the conventional treatment processes.

The objectives of this study were to investigate the membrane treatment technology and to make the “ Technological manual for sewage treatment system using membrane” for planning, design and application of the system.

(Results)

1. Target of the sewage membrane treatment system

The water quality of raw water was set to be the same as or better than that of the conventional secondary treated wastewater.

2. Membrane

The membrane types for the application are MF, UF and RO membranes. The methods of total filtration, cross flow filtration and submerged filtration were applied.

3. Selection of the targeted quality of treated wastewater

The targeted quality of the treated wastewater and the type of membrane were set with respect to the targeted quality required for each purpose and the role of each membrane.

4. Type and the configuration of the membrane treatment system

Two types of membrane treatment systems were used: ① MF membrane or UF membrane treatment and ② RO membrane treatment. Both the systems consisted of pre-treatment, membrane treatment and post-treatment.

5. Design of the membrane treatment system

The outline and specifications for the design of aforementioned systems were summarized.

6. The rest

The specifications for construction and maintenance were investigated and integrated. In addition, the application examples were collected and summarized in the data section.

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Keywords

MF, UF, RO, Treated water, Reuse