

Study on the utilization of the improved technology for the treatment capacity by ozone addition

Whole term

1993. 6 ~ 1998. 3

(Purpose)

There are rising problems associated with the activated sludge process because recently there has been abnormal foaming in the aeration tank, and thus the solid-liquid separation has been disturbed in the final settling tank owing to scumming, which is assumed to be caused by Actinomyces.

Todoroki Environment Center at Kawasaki City suffered problems in the treatment capacity due to the abnormal production of scum with the increase of inflow, because there was a favorable environment for Actinomyces with its underground location and oxygen method being in use.

Kawasaki City conducted research on bench-scale and pilot-scale plants on this technology, which would control Actinomyces and scum generation through ozone addition to the return sludge. Kawasaki City and the Japan Institute of Wastewater Engineering Technology conducted a joint research on the direct method of ozone addition in 1993 and 1994, and on the ozone addition to return sludge as a new technology application model project in 1997. And they investigated the utilization of a technology to improve the treatment capacity by ozone addition.

(Results)

The results of the experiments of Todoroki Environment Center at Kawasaki City in 1997 are as follows:

1. Investigation on the improved effect of the treatment function

① The scum generation was perfectly controlled with an ozone concentration of 5.5 mg/L.

② The correlation between the amount of scum and the number of Actinomyces was discovered, thus the amount of ozone consumption should be equal to or greater than 5.5 mg/L for scum control.

③ No influence on the treated wastewater quality, the activated sludge and the other germs were observed within the given experimental condition.

④ The improvement of the sludge settlement and the decrease of the generation of surplus sludge with respect to the consumption of ozone were confirmed.

2. Investigation on the optimal design method

The amount of ozone consumption was 2~3 mg/L in the return sludge for scum control. If the scumming would occur, it would have to be temporarily raised to over 5.5 mg/L, and then be reduced after the scum control.

3. Investigation on the maintenance and management

The target of scum control was recommended to be 20 mm of foaming.

Because the consumption of ozone over 10 mg/L could lead to a sudden deterioration in the treated wastewater quality, a special caution for operation would be required.

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Keywords

Control of scum, Ozone treatment, Actinomyces, Abnormal foaming