

Survey study on a sewerage transit system (disposer's drainage survey)

Whole term

2002.6 - 2003.3

(Purpose)

In recent years, quick, simple and hygienic garbage treatment is demanded because of rising of living standard, advancement of public consciousness of living environment, increasing of high layer buildings, arrival of the aging society, increase of double-income household, etc. The disposer conventionally used in mainly U.S. as one of treatment methods of garbage is coming to use in Japan. The disposer is considered effective also as the means of energy resource collections (digester gas, gas power generation, etc.) or the means of reduction of garbage volume. However, it is assumed that the fundamental property of the sewer which includes disposer's drainage differs from the sewer which does not include disposer's drainage in respect of discharge load, distribution of particle size, sedimentation characteristic, etc. Therefore, there are many unknown conditions on the influence which the sewer including disposer's drainage has to the sewerage facilities.

In such background, the purpose of this research was decided to collect the fundamental data (material for judgment) for the examination of influence of disposer's drainage on sewerage facilities. Through the real survey for the apartment house which introduced the disposer with processing unit, "the disposer with processing unit" and "directly connected disposer" in terms of discharge load, etc were investigated.

(Result)

In this research, the author carried out the survey of actual conditions of drainage, the survey of influence in the conduit, the survey of actual conditions of disposer with processing unit, the amount survey of garbage, and the questionnaire survey.

(1) The Survey of Actual Conditions of Drainage

Main drainage time was at a duration from 18 to 22 o'clock for kitchen wastewater, and at two durations from 20 to 22 o'clock and from 6 to 10 o'clock for living wastewater.

The unit factors of amount of drainage for every survey places were 211 L/person/day on average (187 - 236 L/person/day) when the disposer's drainage was installed, and 203 L/person/day on average when not installed, which was a little difference. Compared the drainage without the disposer with the drainage before treated by processing unit of disposer, the disposer's drainage was a little higher in BOD and COD, however SS, total nitrogen, and total phosphorus were not large different.

(2) Influence Survey in Conduit

When the substances which induce the deposition in a pipe (gravel etc.) or the slack of drain pipe were existed, the sediments which mainly made from shell and eggs shell including slightly fat at the water's edge were seen in the conduit, .

(3) Survey of Actual Condition of Disposer's drainage with Processing Unit

The removal ratio by the processing unit of disposer indicated high in SS, BOD, COD, and n-hexane extract. The ignition loss of the sediment on the inside of processing unit was about 10% lower than the ignition loss of inflow SS, thus it can be concluded that decomposition was progressing in the tank.

(4) The Amount Survey of Garbage

Although the amount of garbage changed greatly with survey days, it decreased by using disposers in general.

(5) Questionnaire Survey

The questionnaire survey was conducted to residents who are using the disposer's drainage, and those who have not used it. It was answered that advantages of disposer are to eliminate offensive odor and unpleasant leach ate from garbage and to save spaces for kitchen garbage storage. On the other hand, there were many opinions on disadvantages such as noise, vibration, concern for declining of water quality in the environment, etc. The average purposed payment to using disposer's drainage became 944 yen/month/household. The estimated result of the obligation fees by actual use of disposer's drainage became about 1,100 yen/month/household (including an electricity bill, water rates, sewerage charge, and the price for one disposer's drainage, but not including the depreciation cost of processing unit). Moreover, it was over the purposed payment about 140 yen/month/household in the result.

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Key words

Disposer, Actual condition survey, Garbage survey, Questionnaire survey