

Surveillance study on biota formed in the waters at sewage disposal water discharge destination

Whole term

1996.7 ~ 2000.3

(Purpose)

With the spread of a sewerage system, the quantitative ratio of sewage treatment water to discharged water areas has been increasing. However, the realities of an ecosystem formed in a water environment in which treated water is used as a main source of water supply have not been fully grasped yet at present.

Thus, the final purpose of this research is to study how sewage treatment should be to create a variety of aquatic ecosystems with the use of sewage treatment water, and as a first step for that, clarification of the realities of a water environment created by reusing sewage treatment water, accumulation of basic data to predict a biota, study of relations with environmental factors, etc. will be pursued.

Japan Institute of Wastewater Engineering Technology, being entrusted by the Ministry of Construction Public Works Research Institute in 1996, has been promoting joint research with Sapporo City, Tokyo Metropolis, Yokohama City and Osaka Prefecture since then to do a research study. Using the research results obtained in 1996 through 1998, it summarized the relationship between a biota and water quality in a discharged water area, etc. in 1999.

(Result)

(1) Flowing-down distance and change in a biota

From the results of the study of algae attached to a brook in which only treated water is made to flow, it has been made clear that the quantity of living things tends to decrease in accordance with the flowing-down distance, but the kinds of living things and an diversity index tend to increase, on the contrary.

Concerning water quality, there was no item which clearly changes in accordance with the flowing-down distance.

(2) Change in a biota due to the confluence of treated water

Concerning algae attached to the upstream and downstream of a river into which treated water flows, the number of cells and the number of kinds trend to decrease a little in the downstream of the river, but there is no clear change in the diversity index. However, there is a considerable change in the composition of living things which live in the river.

(3) Change in a biota due to the difference in a sterilization method

The Chlorolobion genus of green algae among the species in which attached algae appear trend to appear characteristically in the treated water sterilized with chlorine. Compared with those in a water area sterilized with ozone, the kinds of attached algae are simplified. Concerning benthic animals, groups of living things are composed of simple species in the treated water sterilized with chlorine, but living things are composed of relatively many species in the water area sterilized with ozone.

(4) Water quality and species in which benthic animals appear

The relationship between ammoniacal nitrogen content and four kinds of benthic animals was studied.

Libellulidae and Lymnaeidae do not appear when ammoniacal nitrogen content becomes high. On the other hand, it has been made clear that Corixidae and Tubificidae can live in the water in which ammoniacal nitrogen content is high to a certain extent.

(5) Change in a biota due to the difference in water supply conditions

The relationship between the difference in flow velocity and depth of water and the benthic animals which appear was studied.

Such a water supply condition has been suggested that the flow velocity which is suitable for Hydropsychidae Curtis to live in water is about 0.2 to 0.6 m/sec, and the depth of water which is suitable for Hydropsychidae Curtis to live there is less than 20 cm. On the other hand, no clear tendency with regard to the flow velocity and depth of water is seen for the appearance of Corixidae, and it has been made clear that there is no specific restriction in the water supply conditions for Corixidae to live in water.

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Keywords

Landscaping water road, Aquatic environment, Aquatic ecology, Biota, Biodiversity, Diversity index