Surveillance study on Tatara river regional sewerage system works treated wastewater reuse

Whole term	1999.4 ～ 2001.5	

(Purpose)

Since Fukuoka Prefecture suffered damage from a drought four times (1978, 1982, 1993 and 1994) for the past twenty years owing to characteristics such as topography and climate, it is an important water policy problem for Fukuoka Prefecture to secure water resources which cover the water demand in the prefecture.

To this end, it is necessary to show an manual for actively promoting the reuse of sewage treatment water to the cities, towns and villages related to the sewerage in the basin of each river in Fukuoka Prefecture as necessary, and let sewage treatment water play a part of prefectural water resources.

Then, in this examination we studied the presentation of a usage menu concerning the reuse of sewage treatment water using the sewerage in the basin of the Tatara River as a model as well as problems in using treated water by use and application, items of water quality to be removed and the target water quality in 1999. In 2000, we measured the effect (B) of each target water quality according to each use, and studied the method (C) of treating regenerated water to secure the target water quality, and then made a “Manual Concerning the Reuse of Sewage Treatment Water in Fukuoka Prefecture (draft)” for setting a effective target water quality and selecting a regenerated water treating method from the viewpoint of expense vs. effect analysis (B/C).

(Result)

(1) Proposing an advanced treatment process and making a roughly estimated expense function

We put in order a presumed treated water quality of an advanced treatment process combined with a unit treatment process based on information such as public data and proposed an advanced process that satisfies the range of the target water concentration that we indicated in our examination of 1999. Then, we applied each advanced treatment process to each concentration, and plotted each expense and made an expense function concerning concentrations. This has made the calculation of expenses concerning water quality possible.

(2) Extracting the effect of using regenerated water

Concerning a regenerated water using application menu (water for miscellaneous uses, environmental water and agricultural water) in Fukuoka Prefecture, we extracted use effects assumed in the range of the target water-quality concentration. Besides, we put in order an assessment method necessary for measuring the effects.

(3) A fact-finding survey for measuring the effect of using regenerated water

We implemented a fact-finding survey necessary to measure the effect of using regenerated water. Concerning water for miscellaneous uses and agricultural water, we implemented a survey by questionnaire and an on-site hearing to the organizations concerned, and concerning environmental water, we did a CVM survey (Virtual Financing Method – survey scale: 500 votes × 6 towns = 3,000 votes, recovery 43.2%).

(5) Study of business effects

We measured the effect of using regenerated water according to each use and application based on the information obtained from the fact-finding survey. The intended amount of payment calculated from the results of the CVM survey was 842 yen, 882 yen and 919 yen for a set water quality of BOD 5mg/lit., 2 mg/lit. and 0.5 mg/lit. respectively.

(6) Expense vs. effect analysis

We analyzed expenses and effects for the supply of treated water in the range of a target water quality. The results of effect analysis by each use are that even in the discharged water quality COD 2mg/lit. of sewage treatment water, B/C is 2.3 in the use of water for miscellaneous uses, and in the discharged water quality of BOD 3 mg/lit, B/C exceeds 1 in the use of environmental water, and in the discharged water quality of T-N 2.5 mg/lit., B/C exceeds 1 in the use of agricultural water, thus indicating economical validity respectively.

(7) Study of an industrialization policy

We put in order the problems for industrialization such as business classification, management classification and coverage of expenses related to a regenerated water using business.

(8) Making of a “Handbook Concerning Reuse of Sewage Treatment Water in Fukuoka Prefecture (draft)”

We made a “Handbook Concerning Reuse of Sewage Treatment Water in Fukuoka Prefecture (draft)” for the method of selecting a regenerated water treatment system based on our analysis of the uses and application, target water quality and expenses vs. effects with the aim of reusing sewage treatment water in the sewerage business throughout Fukuoka Prefecture.

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Keywords	Treated wastewater reuse, Regional sewerage system, Cost effectiveness analysis