

Research on the Utilities Used in the Sewage Treatment Plant

Year of Research

2013

Establishment of energy and resource recycling

(Purpose)

In this research, information of utilities used in sewage treatment plant was collected and organized to utilize the information as basis material for feasibility study of B-DASH (Breakthrough by Dynamic Approach in Sewage High project) technology and as application material for dissemination and promotion of B-DASH technology to individual sewage treatment plant.

(Results)

(1)Collecting utilities information

Major municipalities throughout the country and municipalities related to B-DASH project were targeted for questionnaire about utilities, and 44 municipalities were asked to answer the questionnaire. Investigated utilities contain items used in B-DASH technology as well as major items used in sewage treatment plant (**Table 1**). The answer of questionnaire was obtained from 158 sewage treatment plants of 36 municipalities by questionnaire investigation.

(2)Analysis of the procurement price of utilities

The collected data were organized and analyzed about procurement price of utilities. As an example, the result for sodium hypochlorite was shown below.

①Impact of sewage treatment plant scale

In order to confirm the impact of scale of sewage treatment plant on the unit price of utilities, relationship between sewage treatment capacity of plant and unit price of sodium hypochlorite in year 2012 was organized.(**Figure 1**) Averages of unit price of sodium hypochlorite depending on sewage treatment capacity of plant were 74.9yen/kg in the small scale plant less than 5,000m3/day, 37.5yen/kg in the medium scale plant more than 5,000m3/d ~less than 300,000m3/d , 29.9 yen/kg in the large scale plant more than 300,000m3/d. This result shows that the larger the plant becomes, the lower unit price of sodium hypochlorite tend to be.

②Unit price of each fiscal year

Figure 2 shows unit price change in every districts of the country for five years between 2009 and 2013. Unit price of sodium hypochlorite was corrected by deflator based on 2013. Unit price tended to be increasing in Tohoku and in Chubu since 2012, but the other districts remained almost the same level.

③Unit price of each district

Unit price of 2013 was organized depending on district.(**Figure 3**) Figure 3 shows that unit price of Hokkaido, Chubu, Shikoku and Kyusyu are higher price than the average of all districts.

(Summary)

Also other utilities which were shown in **Table 1** as well as sodium hypochlorite, were organized and analyzed depending on impact of sewage treatment plant scale, the unit price of each fiscal year, unit price of each district. In this study, result was obtained as basic material related to price of utilities, which enable municipalities to conduct feasibility study of B-DASH technology with closer to the actual condition considering scale of sewage treatment plant and characteristics of district.

※ Policy support project from National Institute for Land and Infrastructure Management
 Inquiries ; 1st Research Department; Takeshi Sannomiya, Toshihide Kozuka, Hiroshi Kawamura
 [03-5228-6597]

Table 1 Research items

Category	Research items
Common	Electric power, Water, Industrial Water
Fuel	Heavy oil, Heating oil, Light oil Gasoline
Chemical	Casutic soda, Sodimu hypochorite Solid chlorine, Magnesium hydroxide
Flocculant	PAC, Polyferric sulfate, Ferric chlorides Aluminum sulfate, Lime, Polyelectrolyte
Activated carbon	Activated carbon made from palm trees Impregnated carbon
Desulfurization-dry process	Desulfurization chemical

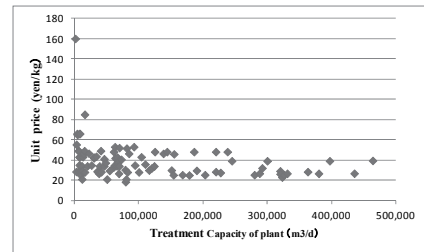


Figure 1 Treatment capacity of plant and unit price

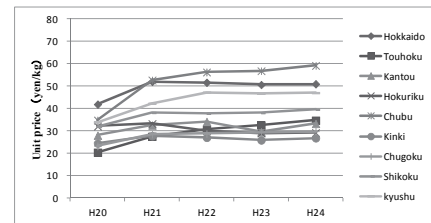


Figure 2 Each fiscal year and unit price

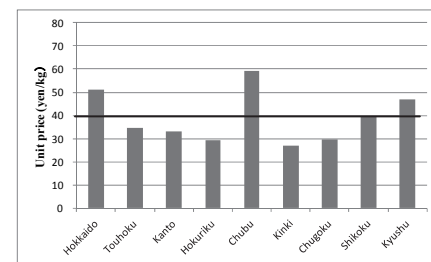


Figure 3 Each district and Unit price

Key words

Utility, B-DASH technology