

Investigation on the promotion for advanced wastewater treatment process using existing facilities

Year of Research

2013

Water quality improvement
by advanced sewage treatment

(Purpose)

Water environmental standards of rivers and sea areas have been improving steadily with the progressive development of sewerage systems. However, compared to rivers and sea areas, water pollution in the closed water bodies such as lakes and three major bay areas are still in serious situation due to red tide and blue tide caused by eutrophication.

Immediate reduction of inflow pollution load and upgrading sewage treatment plant (STP) to advanced wastewater treatment system is vital in improving water quality of closed water bodies. Taking this into account, some existing STPs have already started activities to improve the quality of treated wastewater by partially rehabilitating their existing facilities and remodeling their operational management systems. (See **Figure 1**).

Despite the readily available technical competence, this technology has not received nationwide acknowledgment and adaptation due to inadequate knowledge sharing among the STPs (and staff). Therefore, in order to assist STPs to conduct similar activities to improve their quality of treated water, this investigation aims to (i) collect and share examples of nitrogen and phosphorus removal by partially rehabilitating the existing facilities of the STP and remodeling the operational management system - targeting the existing STPs with conventional activated sludge process; and (ii) analyze the merits of adopting the step-by-step advanced wastewater treatment system.

Further, it should be noted that, in this investigation, "step-by-step advanced wastewater treatment process" is defined as a phased improvement of treated water quality by adopting a treatment method that can be introduced at an early stage at an existing STP in which total rehabilitation is not allowed for the time being due to remaining depreciation period.

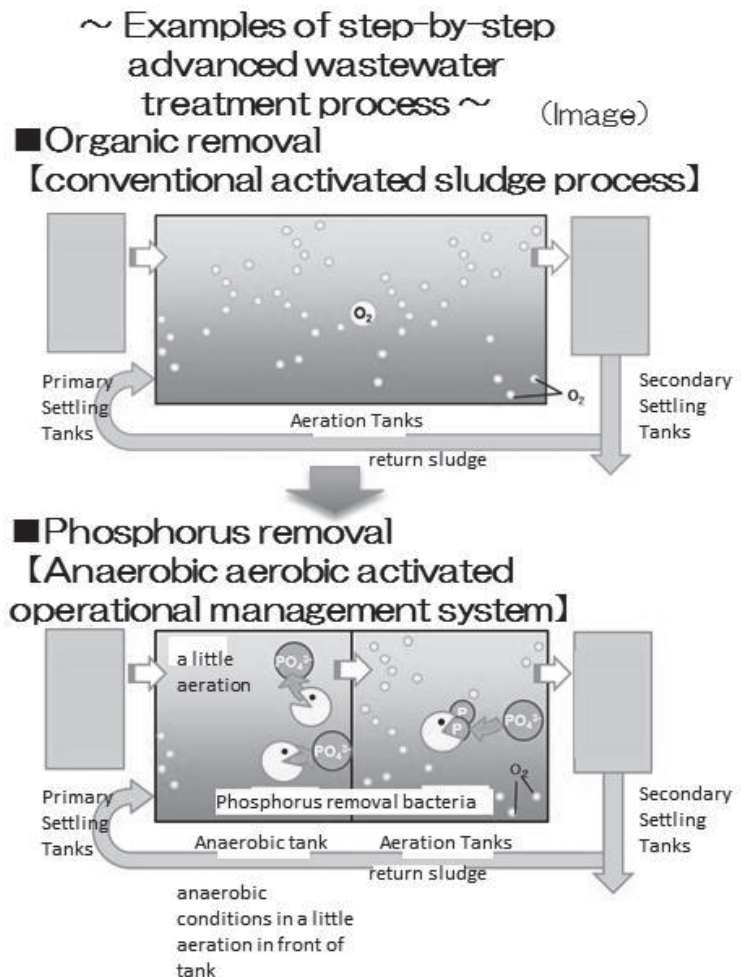


Figure 1 Example of advanced wastewater treatment process by using existing facilities

(Results)

(1) Data collection

Conducted nation-wide interviews and questionnaire surveys to confirm the current level of experience and know-how of advanced wastewater treatment process in existing STPs with conventional activated sludge process, in which adequate treated water quality is secured by the partial rehabilitation of existing facilities and remodeling of operational management system. These STPs were listed up from the statistics data and information of MLIT (Ministry of Land, Infrastructure, Transport and Tourism) and JSWA (Japan Sewerage Works Association).

(2) Holding strategy conferences for knowledge creation of advanced wastewater treatment

Introduced case examples of advanced wastewater treatment process through partial rehabilitation of existing facilities and remodeling of operational management system and reported approaches for promotion of advanced wastewater treatment process in the future.

[Contents of First Conference]

1) Announced/explained the purpose and outlines of the strategy conference to promote advanced wastewater treatment process through knowledge management, 2) Reported the survey results of current situation of "step-by-step advanced wastewater treatment process" and case example of Osaka city, Fanabashi city and Saitama prefecture, and 3) Discussed approaches for promotion of advanced wastewater treatment process in future.

[Contents of Second Conference]

1) Reported case examples of Tokyo, Kyoto prefecture and Kurume City, 2) Explained about "Knowledge book for advanced wastewater treatment (Draft)" and coordinated it based on opinions and recommendations from the participants.

(3) Development of "Knowledge book for advanced wastewater treatment" and brochure

Confirmed the case examples for advanced wastewater treatment process with outline, background of adoption, structure and flow diagram of equipment, control items for operation and actual activities to control, and treated water quality data before/after adoption of advanced wastewater treatment for development of "Knowledge book for advanced wastewater treatment" classified by treatment objects, Nitrogen and Phosphorus (N, P). In addition, developed brochure for approaches for promotion of "step-by-step advanced wastewater treatment process".

(4) Summary

"Knowledge book for advanced wastewater treatment" prepared in this investigation is based on the information of only the existing STPs with conventional activated sludge process, in which adequate treated water quality is secured. In the future, additional data/information should be accumulated and analyzed for systematization of the knowledge.

For promotion of advanced wastewater treatment process, it is expected that existing STPs intending to adopt the "step-by-step advanced wastewater treatment process" in future will utilize the "Knowledge book for advanced wastewater treatment" for their reference.

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