

A Study on Operational Consciousness of Environmental Learning Facilities from a National Survey in Japan

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INTRODUCTION

In general, the responsibility for Municipal solid waste (MSW) treated in Japan lies with the municipalities, and there are facilities for the same in municipalities nationwide. Several of them are equipped with environmental learning functions such as factory tours, which can play an important role in the region. However, the actual situation of these facilities has not been surveyed nationwide in detail, so far. In December 2020, we had the opportunity to conduct a national survey to understand the actual state of environmental learning functions in MSW treatment facilities. In this study, we analyze the relationship between facility equipment and operation contents, from the operation consciousness of facility operators obtained from this national survey. The purpose of this research is to explore the possibility of improving its operation and making it a base for local activities.

MATERIALS AND METHODS

The target of the survey is the MSW treatment facility specified by Regulations of Waste Management and Public Cleansing Law in Japan. The targets are 3300 facilities based on the "Waste Yearbook 2021 Edition" (published by Environmental Industry Newspaper in Oct.2020) are targeted for this study. The content of the survey is 7 pages of the questionnaire, which consists of 13 questions of basic facilities information and 19 questions of basic operational information, in a multiple choice format. The survey form was sent by mail, and the response was returned by mail, email, and WEB form. The number of valid responses to the survey is 1670 (as of December 27, 2020). However, since there were 391 cases of unknown address, etc., the number of valid shipments is 2909, and the valid response rate is 57.41%.

In the analysis, we focused on the following 4 operational consciousness questions from the survey.

Q. For each item, please choose the closest idea from the answers. (Select only one)

Conscious (1) : We have confidence and satisfaction in our facility operation

Conscious (2) : Our facility is a local environmental learning base

Conscious (3) : Our facility is an activity base for local people

Conscious (4) : Our training and development of operators is going well

A. 1. Strongly Disagree 2. Disagree 3. Neither Agree Nor Disagree 4. Agree 5. Strongly Agree

Next, we selected the number of facilities equipment and the education ratio of planning stage from the facility information, also selected the organizational attributes (dedicated or installer direct operation) and regional relations from the operation information. Then, we analyzed the relationship with the above consciousness.

RESULTS AND DISCUSSION

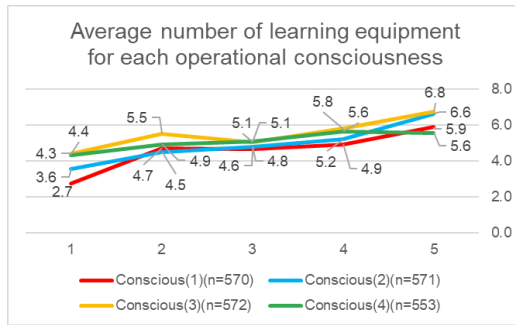


Fig.1 Relationship with learning equipment

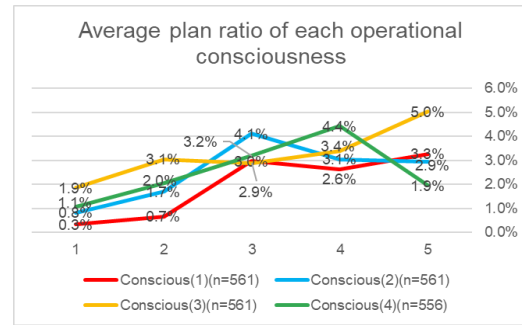


Fig.2 Relationship with planned ratio

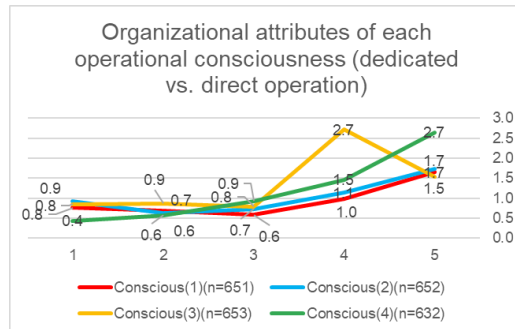


Fig.3 Relationship with organizational attributes

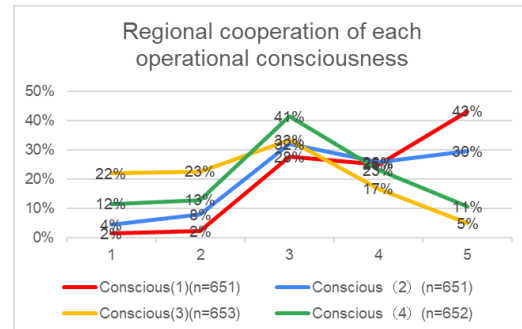


Fig.4 Relationship with regional cooperation

In terms of installation, it was confirmed in Fig. 1 that the more "equipment contents (number of equipment)", the higher the consciousness of each operation, and that the enhancing equipment is effective in promoting the use of facilities. On the other hand, even if the "planning ratio of environmental learning functions" is high (as in Fig. 2), there is a decline in (2) "environmental learning" and (4) "operation awareness of human resource development". We consider that the reason is the occurrence of operational issues that were unexpected at the planning stage.

Next, as shown with Fig. 3 "Operator attributes" (which compares operation facts between dedicated and direct operation), the dedicated organization is generally more conscious of operation than the directly operated by the installer, and the dedicated organization operates better in other data as well. Although the analysis results are not shown, the dedicated organization tend to carry out medium- to long-term operational plans and evaluations. This is an element that will guide the improvement of operations. On the other hand, Fig. 4 shows that (3) "local activity bases" and (4) "operation awareness of human resource development" declines despite the deep "relationship with the community". As the regional relations deepen, we perceive that challenges will arise with the current situation of community activities and human resource development.

CONCLUSION

It was found that the environmental learning facilities and equipment of the MSW processing facility need to be planned in anticipation of the operation stage at the planning stage, and constant efforts for improvement including review of the operation organization are required at the operation stage. In the future, we will interview and investigate the issues of interesting facility that have been obtained, and will further deepen our research.

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