RESEARCH USING QUESTIONNAIRE ON ACTUAL SITUATION OF COMMUNICATIONS WITH LOCAL RESIDENTS OF CS DISPOSAL FACILITIES

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ABSTRACT

There are various causes for opposition of constructions of waste disposal facilities by the local residents, and one of them is the mistrust of the local residents in the operation of the facilities that is resulted from poor communication between the operators of the facilities and the residents. We have implemented a questionnaire to review the communication from the viewpoint of the local residents, and studied on the means of the communication and exchange of the opinions based on the results of the survey.

As a result of this study, we found that explanation meetings are organized frequently as the means of communication that allows mutual exchange of enormous amount of information including thoughts of parties involved in landfill projects, their facial expressions, attitudes and others. It was also found that many of the respondents of the questionnaire expect the uses of means that utilize information technologies, allowing wide propagation of information before explanatory meetings are held.

Keywords: Communication means, Agreement, Troubles, Disposal Facilities, Information

1. Communication with residents

1.1 Way of communication

Aiming at "social acceptance" of CS disposal facilities, this working group investigated the "communication" with community that is one of the elements constituting the concept of CS disposal facilities.

We studies the way of communication with residents so that the final disposal facilities can be accepted by the local community.

The principal factor that acts as a drag of the social acceptance of the final disposal facilities is, according to the result of our experiences and case studies, considered to be "poor communication with the local residents".

1.2 Survey by questionnaire on the communication means

We sent out questionnaires to the persons involved in communication with the resident about "the actual state of communication with the resident".

Through this questionnaire which used the case examples of constructions of CS disposal facilities, we investigated the kinds and purposes of the means of communication with the residents that were actually implemented, and what the parties involved in the project (such as project implementing bodies, planners, designers, and constructors) are considering about the timing and type of the means of the communication to be utilized depending on the matters such as their positions and estimated situations of troubles at the construction, and then the results were analyzed.

The surveys on the situations of utilization of the means in actual cases (such as the timing and purpose of the communications) and evaluations of them by those who are engaged with landfill projects are our unique implementation which has never been made before.

2. Design of questionnaire

To achieve social acceptance of the CS disposal facilities, it is necessary to examine the method after understanding the observing points of the parties involved in the project.

To review the communication among the parties, we decided to implement a questionnaire to investigate the means of the communication.

It was determined to understand actual situations of the communication by using indirect methods such as hearing with the project implementing bodies.

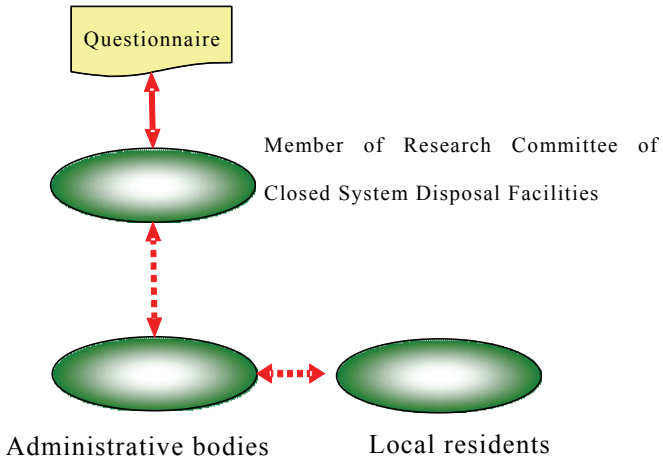

Figure 1

The questionnaire was designed by taking the following points into consideration when to determine the entries.

2.1 Project implementing bodies

For the questionnaire that is sent out to municipal organizations, although they are in the environment where they are allowed to allocate professional engineers who belong to their construction division, it may be difficult for some local government offices to organize specialized project for the construction of the disposal facilities. Therefore, we took into consideration the possibility that their reply may be affected by the nature of individual project bodies.

2.2 Involvement of respondents into the project

It was taken into consideration that the state of involvement of respondents into the project can affect the contents of their replies due to their individual viewpoints on this matter.

It was also determined to obtain their answers about their situation in the entire project because it may take long time to complete the process from the planning to completion of the construction.

2.3 Situations of projects during planning and construction

We have investigated case examples of the troubles that occurred in the past, and thus, it was determined to obtain the answers about the troubles that occurred with regard to the CS disposal facilities.

Since this questionnaire covers the CS disposal facilities that have already been constructed, the replies with regard to the case example of relinquishment of the projects due to troubles could not be obtained. Therefore, it was determined to include questions about the period of time spent for establishment of agreement and the timing of the resolution.

2.4 Communication means

It was determined to obtain reply about the means of the communication that were actually used, and to get feedback about the effective means of the communications from those who engaged in the practice.

The form of questionnaire that was used this time has a section for writing the name of the CS disposal facility with a note describing that the name will not be disclosed. The note was added so that the respondent can provide detailed information as much as possible without anxiety.

3. Results of survey by questionnaire

3.1 Responses of questionnaire

1) Situations of responses

The questionnaires were sent to the contact persons of Research Committee of Closed System Disposal Facilities that were selected based on the CS disposal facilities performance list that was prepared in December 12, 2006. We asked the contact persons of Research Committee of Closed System Disposal Facilities to distribute the forms among the persons of individual companies that are deemed the most suitable as the respondents of the questionnaire. We additionally asked the contact persons of Research Committee of Closed System Disposal

Facilities to distribute the forms among the persons of the company that designed the disposal facility in preference to other companies because we estimated that the company is involved in the final disposal facility project earlier than other parties and thus grasping the situation in earlier stage of the project.

At the time the questionnaire was implemented, there are forty six CS disposal facilities in Japan, and the members of Research Committee of Closed System Disposal Facilities was involved in forty two (42) of them. The members of Research Committee of Closed System Disposal Facilities became engaged in 91.3% of all the CS disposal facilities that have been constructed in Japan as of the time of implementation of the questionnaire.

The number of responses to the questionnaires is 34, that is 81.0% of all questionnaires sent out, and 73.9% of all CS disposal facilities covered.

2) Association of respondent with landfill projects

Table 1 shows the association of respondent with landfill projects.

The reason why the number of respondents is larger than the number of responses is that there was a respondent who belongs to a company that is both the planner and designer, and thus responded twice, and an another respondent who belongs to a company that is both the designer and constructor, and thus responded twice,. There is a case that one respondent who belongs to a planner which is a government office.

Because the questionnaires were sent out first to the members of Research Committee of Closed System Disposal Facilities, many of them related to the designer and constructor companies, many of the respondents belong to these bodies, totaling 80.6% of all the respondents.

Table 1 Number of respondents and bodies to which they belong

Association with landfill project	No. of responses	Percentage to total responses
Project implementing bodies	1	2.8%
Planners	6	16.7 %
Designers	19	52.8 %
Constructors	10	27.8 %
Others	0	0 %

3) Status of respondents

Table 2 shows the positions of the respondents to the questionnaire.

Approximately 53% of all the respondents are the managers or submanagers of the project, meaning that they are in the positions responsible for it. Approximately 20% of all the respondents are technicians and 27% are others. Others mainly include managers of waste disposal facilities, staffs in head office engineering division, ales representatives and technical staffs. It appears that the manager of a waste disposal facility is in a position near to the project manager. These data demonstrate that approximately 56% of all the respondents are in the positions that re responsible for the project.

Table 2 Status of respondents

Status of respondents	No. of responses	Percentage to total responses
Project managers	12	35.3 %
Project submanagers	6	17.6 %
Technicians	7	20.6 %
Desk workers	0	0 %
Others	9	26.5 %

4) Project implementing bodies

Table 3 shows the bodies that implement the facility projects.

The body of "Other" to which One respondent belongs is a final disposal facility that was owned by a local government office at the time of order, and then, absorbed by a municipal body during the construction. There was a case that the body to which the respondent belongs was a local government office at the time of the response, and now absorbed by a municipal organization. And thus, the body is recorded as a local government office in the Table 3.

The facility project implementing bodies include municipal organizations and local government offices approximately half-and-half.

Table 3 Disposal facility project implementing bodies

Project implementing bodies	No. of responses	Percentage to total responses
Municipal organizations	17	50.0%
Local government offices	16	47.1%
Other	1	2.9%

3.2 Situations of project at the time of planning and construction

1) Time spent until agreement on construction was reached

Table 1 shows the time spent until agreement on the construction of disposal facilities was reached. The questionnaire defines the period as the period from the announcement of the plan to the residents to the achievement of the agreement. The respondents for the case the period is "5 years or over" include one respondent of the case the period is "likely 5 years or over".

Table 4 Time spent until agreement on construction was reached

Time	No. of responses	Percentage to total responses
Less than half a year	3	8.8%
Less than a year	6	17.6%
1 to less than 2 years	2	5.9%
2 to less than 5 years	11	32.4%
5 years or over	4	11.8%
Unknown	5	14.7%
No response	3	8.8%

As for the time spent until agreement on

construction was reached, there are 26 respondents who responded to this question with the number of years except those of the cases of "Unknown" and "No response".

The details of these 26 cases are shown in Figure 2. Approximately 40% of these 26 cases reached the agreement in less than two year, and approximately 85% of them reached the agreement within less than 5 years. For the CS disposal facilities that were completed, most of them reached the agreement in approximately 5 years from the announcement of the project to the residents. Approximately 45% of the cases reached the agreement in 2 to 5 years, which means that many of the projects reach the agreement within this period.

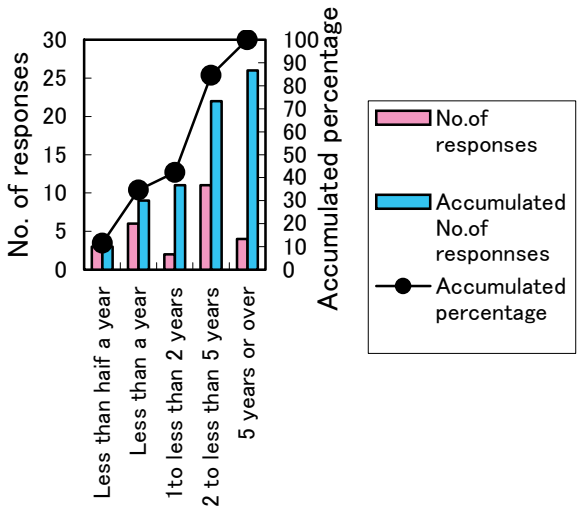

Figure 2 No. of years until agreement on construction was reached

2) Delay of construction due to troubles with residents

Table 5 shows the number of respondents classified according to the period of delay of construction due to the residents' movement against the project. The questionnaire defines the troubles as "the delay of construction by six months or more due to the residents' movement against the project".

Table 5 Troubles with residents causing delay of construction

Troubles	No. of responses	Percentage to total responses
Delay of half a year or less	0	0%
Delay of less than a year	2	5.9%
Delay of 1 to less than 3 years	2	5.9%
Delay of 3 years or over	2	5.9%
No delay due to troubles	21	61.8%
No trouble after construction	2	5.9%
Troubles with delay unknown	3	8.8%
No response	2	5.9%

There are 30 cases in which the trouble with residents occurred if two cases of "No response" and two cases of "No trouble after construction" are excluded. Of the 30 cases, there are 21 cases that experienced no troubles. This can mean that 70% of the cases experienced no troubles.

Of the responses saying that they experienced troubles, two cases describe that they experienced no troubles with regard to the

CS disposal facilities. Therefore, it can be considered that over 70% of the completed CS disposal facilities experienced no trouble with the residents.

For the cases that experienced troubles, the delay of construction due to the troubles seems to be a half a year or longer.

In Table 5 "Troubles with residents causing delay of construction", the respondents describe the area where the opposition to the construction occurs and the reasons for the movement as follows.

① The project derailed due to the residents' deep-seated doubts about previous disposal facility because they suffered from bad smell, flies and damages by birds caused by the sloppy management of the facility.

② Since the disposal facility that was planned had a gasification furnace and a recycling exhibition facility, there was a movement against the construction by some neighboring residents who have fear of health hazard from chemicals such as dioxin.

③ There was a movement against the construction by fisheries cooperative of the river into which the leachate was to be released and by residents downstream the facility.

3) Time of troubles

Table 6 shows the times the troubles occurred. Most of the troubles occur during the stage of fundamental conception phase, approximately 35.8% of all, and then, in the fundamental designing phase, approximately 21.4%.

Table 6 Time of troubles

Time of trouble	No. of responses	Percentage to total responses about time of troubles
Fundamental conception phase	5	35.8%
Site acquisition phase	1	7.1%
Fundamental planning phase	1	7.1%
Fundamental designing phase	3	21.4%
Detailed planning phase	2	14.4%
During construction	1	7.1%
After completion of construction	1	7.1%
Total no. of responses about time of troubles	14	100%

4) Times of resolution of troubles

Table 7 shows the times individual troubles were settled. The number of responses about time of settlement of the troubles is eight, including seven cases that replied about the time of troubles (Table 6) and then replied about the times of the settlement plus one case the did not reply about the time of troubles but replied about the time of the settlement. There was a response that replied "no trouble experienced" but written the time of settlement, which is not included in this table.

For all responses except one, the times of

resolution of troubles are after the fundamental designing phase. The final disposal facility that has not reached the settlement is the one replying that the troubles occurred in all phases.

Table 7 Time of settlement of troubles

Time of trouble	No. of responses	Percentage to total responses about times of settlement of troubles
Fundamental conception phase	1	12.5 %
Site acquisition phase	0	0 %
Fundamental planning phase	0	0 %
Fundamental designing phase	1	12.5 %
Detailed planning phase	1	12.5 %
Construction phase	2	25.0 %
After completion of construction	2	25.0 %
Not reached settlement	1	12.5 %
Total responses about times of settlement of troubles	8	100 %

5) Causes of settlement of troubles

Table 8 shows the causes of settlement of the troubles. Eight cases that replied with the times of settlement of the troubles include one case that does not reach the resolution. There was a case that did not reply with the time of settlement but replied with the cause of the resolution. There was a response that replied “no trouble experienced” but written the cause of settlement, which is not included in this table.

The causes of resolution of the troubles mainly include “deepening of local residents’ understanding on the final disposal facility” and “replanning to the local residents’ demands”.

Table 8 Causes of settlement of troubles

Cause of settlement of troubles	No. of responses
Deepening of local residents’ understanding on the final disposal facility	5
Replanning to the local residents’ demands	3
Returning profits to community	2
Others	0
Causes unknown	2
Not written	1
Total no. of responses that experienced trouble	13

3.3 Results of questionnaire

1) Time the communication means was used and desirable time of use of the means

Figure 3 shows the relationship between the communication means that were used and the number of uses of individual means for the

"time the communication means was used" and the "desirable time of use of the means". From this figure, it is known that the order of the numbers of uses of the means is as follows for the "time the communication means was used"; ① explanatory meetings, ② public relations magazines, ③ study sessions, ④ others and then ⑤ signature campaign in descending sequence. The order of the numbers of uses of the means is as follows for the "desirable time of use of the means"; ① explanatory meetings, ② public relations magazines, ③ web site, ④ reports and then ⑤ deliberation councils in descending sequence. For both the "time the communication means was used" and the "desirable time of use of the communication means", the uses of the "explanatory meetings" and "public relations magazines" are at the top and the second respectively.

Figure 4 shows the relationship between the phases of the project and total number of uses of all the communication means for "time the communication means was used" and the "desirable time of use of the means". From this figure, it is known that the order of the phases of use of the means is as follows for the "time the communication means was used"; ① fundamental planning phase, ② fundamental conception phase, ③ construction phase and then ④ planning phase in descending sequence. The order of the phases of use of the means is as follows for the "desirable time of use of the means"; ① fundamental conception phase, ② fundamental planning phase, ③ site acquisition phase and then ④ construction phase in descending sequence.

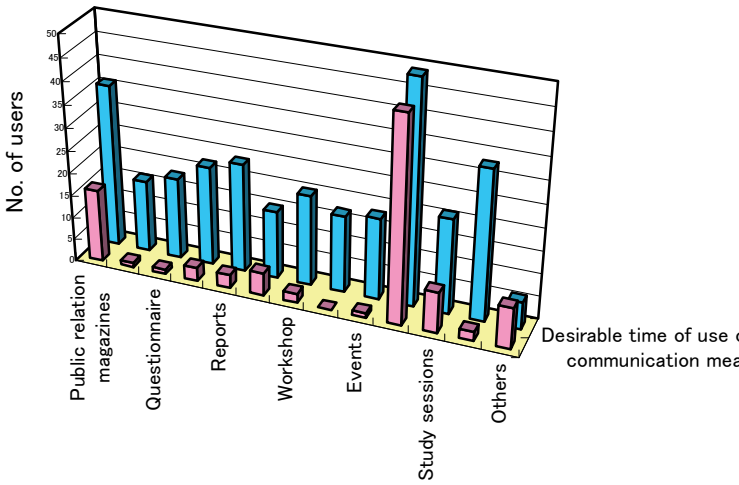

Figure 3 Number of uses of the communication means

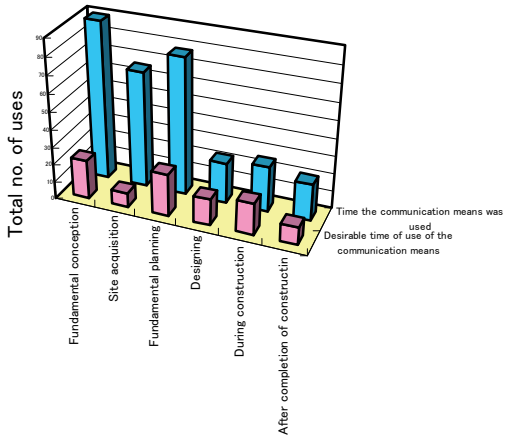

Figure 4 Total of numbers of uses of the means in individual phases

Figure 5 shows the relationship between the communication means and the number of uses of the means for each phase of use for the "time the communication means was used", and Figure 6 shows the relationship between the

communication means and the number of uses of the means for each phase of use for the "desirable time of use of the communication means".

For the "time the communication means was used", the "explanatory meetings" is used in every phase. Then, the "public relations magazines" is used.

For the "desirable time of use of the communication means", the "explanatory meetings" is used in every phase also. Then, the "public relations magazines" is used in every phase also.

"Deliberation councils" and "reports" show similar tendency for both the "time the communication means was used" and the "desirable time of use of the communication means". For the "desirable time of use of the communication means", the use of the means is expected in the "fundamental conception phase" and "designing phase". "Telephone" and "signature campaign" are highly expected in the "site acquisition phase" of "desirable time of use of the communication means", they are not used in fact.

The "workshop" and "citizens councils" show similar tendency for both the "time the communication means was used" and the "desirable time of use of the communication means". As for the "phase of use of the means", the use of the means is expected in the process from the "fundamental conception phase" to "fundamental planning phase".

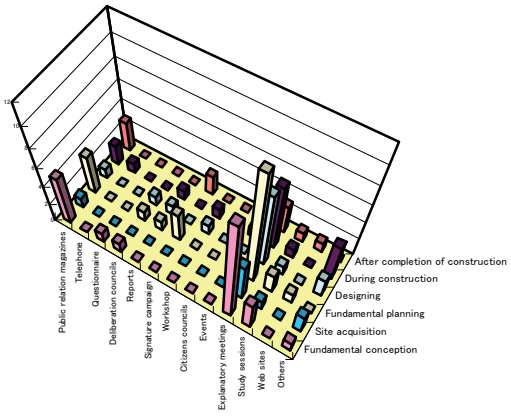

Figure 5 Communication means and phase of use of the means vs no. of uses of the means for the "time the communication means was used"

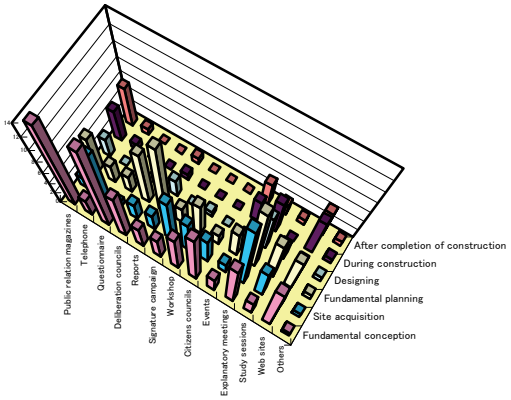

Figure 6 Communication means and phase of use of the means vs no. of uses of the means for the "desirable time of use of the communication means"

2) Purpose the communication means were used and desirable purpose of use of the communication means

Figure 7 shows the relationship between the communication means and the number of uses of

the means for the “purpose the communication means were used” and the “desirable purpose of use of the communication means”. From this figure, it is known that the order of the numbers of uses of the means is as follows for the “purpose the communication means were used”; ① explanatory meetings, ② public relations magazines, ③ study sessions and then ③others in descending sequence. The order of the numbers of uses of the means is as follows for the “desirable purpose of use of the communication means” in descending sequence. The order of the numbers of uses of the means is as follows for the “desirable purpose of use of the communication means”; ① explanatory meetings, ② web site, ③ public relations magazines, ④ study sessions, ④ reports, ④ deliberation councils and then ⑤ workshop in descending sequence. For both the ”purpose the communication means were used” and ”desirable purpose of use of communication means”, the number of uses of the “explanatory meetings” is the largest, and the number of uses of the “public relations magazines” is also large.

Figure 8 shows the relationship between the purpose of use of communication means and the number of uses of the means for the “purpose the communication means were used” and “desirable purpose of use of communication means”. From this figure, it is known that the order of the numbers of uses of the means is as follows for the “purpose the communication means were used”; ① disclosure of information, ② sharing of information, ③ solution of problems and then ④ collection of information in descending sequence. The order of the numbers of uses of the means is as follows for the “desirable purpose of use of communication means”; ①sharing of information, ② disclosure of information, ③ solution of problems, and then ④ collection of information in descending sequence. The numbers of uses of communication means for both the “disclosure of information” and “sharing of information” are large for “purpose the communication means were used” and “desirable purpose of use of communication means”. The number of uses of communication means for the “collection of information” is the smallest for both “purpose the communication means were used” and “desirable purpose of use of communication means”. We consider that the use of bi-directional communication means which is “sharing of information” or highly transparent means which is “disclosure of information” is desired, not a one way communication which is “collection of information” only.

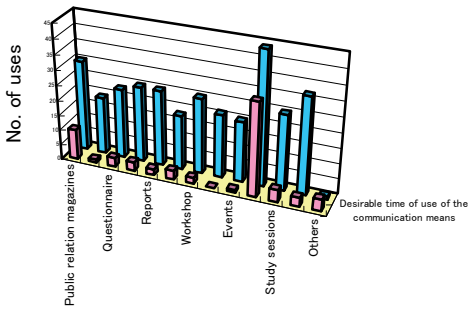

Figure 7 Number of uses of the communication means

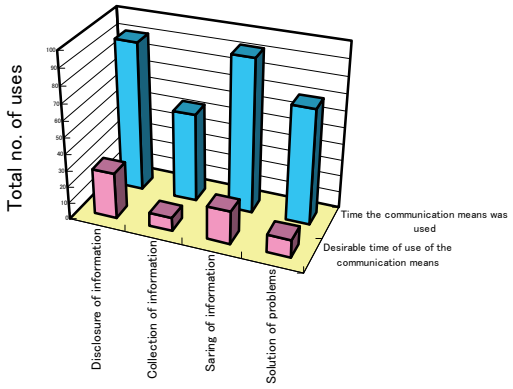

Figure 8

Purpose of use of communication means

Figure 9 shows the relationship between the communication means and the number of uses of the means for each purpose the communication means were used, and Figure 10 shows the relationship between the communication means and the number of uses of the means for each desirable purpose of use of communication means.

For the "purpose the communication means were used", the "Explanatory meetings" was used most for every purpose. Then, "public relations magazines" is used for the purposes limited to "disclosure of information" and "sharing of information".

For the "desirable purpose of use of communication means", the "explanatory meetings" is used relatively even for every purpose, but if the means for the "purpose the communication means were used" is compared with the means for the "desirable purpose of use of communication means", the "explanatory meetings" for the "desirable purpose of use of communication means" is used not equally among the purposes.

The "questionnaire" is used for the "collection of information" and is expected largely. The "deliberation councils" and "signature campaign" are expected for "solution of problems". The "reports" is expected for the "disclosure of information". The "workshops", "citizens councils" and "study sessions" show similar tendencies for both the "purpose the communication means were used" and "desirable purpose of use of communication means", and are expected for the "sharing of information".

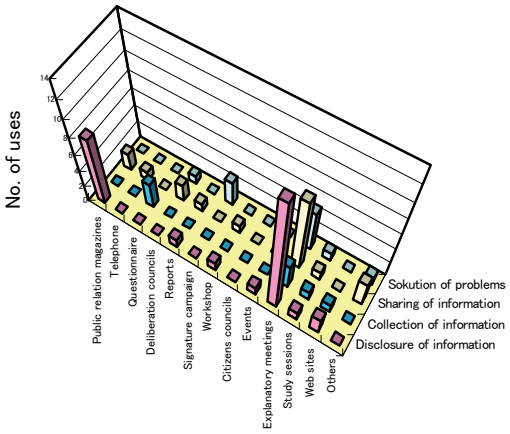

Figure 9

Relationship between the communication means and the number of uses of the means for each "purpose the communication means were used"

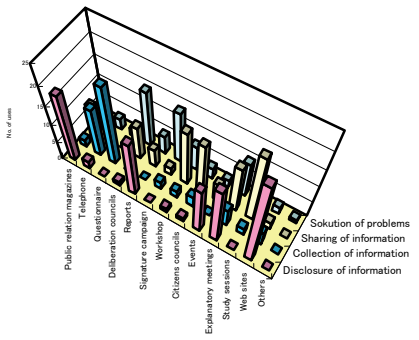

Figure 10

Relationship between the communication means and the number of uses of the means for each "desirable purpose of use of communication means"

3.4 Opinions expressed in the questionnaires

① Respondent involved in final disposal facility A

"Organizing study sessions with participation of residents in addition to the explanatory meetings to incorporate wide range of views from the general public into the planning of disposal facilities together with the residents as much as possible is one of elements that make it easy to obtain the residents consent."

② Respondent involved in final disposal facility B

"Since it is essential to disclose the movements and jobs of the parties involved in the disposal facility project and hearing of opinions and disclosure of information have to be made fairly and impartially, it is desirable to use the methods of the disclosure capable of informing the residents of the matters well and to use the methods as little as possible."

③ Respondent involved in final disposal facility C

"I think it is necessary to be careful not to use the communication means losing the substance.

Since it is especially difficult to obtain the residents consent on the "trouble making facilities" such as the final disposal facilities, it may be important to organize a communication means that allows promotion of compromise between the government and residents and to implement the means properly.

3.5 Discussions on the results of replies

Of 42 questionnaires sent out to the CS disposal facilities into which the members of Research Committee of Closed System Disposal Facilities were involved, we received 34 replies, which is as high as 81.4%. The request for reply to the questionnaires was made through the members of Research Committee of Closed System Disposal Facilities. However, the actual respondents include the project implementing bodies and some respondents describes that they conducted hearings with the project implementing bodies. Thus, the result of the replies can be ratable fairly as that of the analysis of the actual communication means.

An outstanding feature of the design of this questionnaire is that it receives replies with regard to the communication means on the two points; the "time the communication means was used" and the "desirable time of use of the communication means". The questionnaire also surveys the number of uses of the communication means in individual phases of the project from "fundamental conception" to "after completion of construction" and for the

purposes of their uses including “disclosure of information”, “collection of information”, “sharing of information” and “solution of problems”.

Understanding that “time the communication means was used” describes “actual time of use” and “desirable time of use of the communication means” describes “desired time of use”, the following conclusions are obtained.

① From the replies of ”actual time of use”, it can be known that the “explanatory meetings” is used in every phase actively.

Considering that the “CS disposal facilities guide book” that is used in the research activities of the social acceptance working group is designed to provide basic information in the explanation meetings, it was confirmed that there is a place the guide book can perform its roles sufficiently.

② “Explanatory meetings” and “public relations magazines” are used frequently in both ”actual time of use” and ”desired time of use”.

③ The numbers of respondents that replied with the “web site”, “reports” or “deliberation councils” for the “desired time of use” is more as compared with those for the “actual time of use”.

④ The numbers of respondents that replied with the “web site” is much in nearly all phases, those that replied with the “report” is much in “fundamental planning phase”, and those that replied with the “deliberation councils” is much in “fundamental conception phase” and “fundamental planning phase”. The desired phase varies depending on the type of communication. It is thought that the reason why the numbers of respondents who replied with “reports” or “deliberation councils” is much is the fact that the respondents to this questionnaire are those who are practically engaged with the project. The results of the responses might be different if there was a means to hear directly from the residents.

⑤ The numbers of respondents that are much for the “desired time of use” are those who replied with “workshop”, “citizens councils” , “events”, or “study sessions”. This result demonstrates that bi-directional communication means are highly expected. The numbers of respondents who replied with “workshop”, “citizens councils”, or “study sessions” are much for the process from the “fundamental conception phase” to the “fundamental planning phase”, and the numbers of respondents who replied with “events” are much for the process from “fundamental planning phase” to “construction phase” and “after completion of construction”.

⑥ The purpose of the “web site” that was selected by many respondents for the “desired time of use” is built up on the “disclosure of information”. This tendency may show the increase of desire for new means such as IT (Information Technologies).

⑦ For the “desired time of use”, many respondents replied with purposes including “disclosure of information” and “sharing of information”.

For the number of respondents who replied with the communication means for the purpose of “disclosure of information”, those

who replied with “web site” is the most, and then, “public relations magazines”, “reports” and “study sessions” in this order.

For the number of respondents who replied with the communication means for the purpose of “collection of information”, those who replied with “questionnaire” and “telephone” are much.

For the number of respondents who replied with the communication means for the purpose of “sharing of information”, those who replied with “study sessions”, “workshop” and “Citizens councils” are much.

For the number of respondents who replied with the communication means for the purpose of “solution of problems”, those who replied with “questionnaire” and “signature campaign” are much, and many respondents described the “signature campaign” as a means that outlines a path for concrete actions.

Although there is a reality that not so many communication means are used for “actual time of use” as compared with “desired time of use”, from these results, it seems that the respondents to the questionnaire who are the persons engaged with landfill projects expect the utilization of “web site” for “disclosure of information” , and “workshop” or “citizens councils” for “sharing of information”.

4 .CONCLUSION

According to the results of survey by the questionnaire to the member of Research Committee of Closed System Disposal Facilities, it seems that the “explanatory meetings” is used actively, and will be used in the future.

In the places of explanatory meeting where those who make explanations and those who receive the explanations are present in the talks, enormous amount of information including not only literal information but also thoughts of both parties, their facial expressions, attitudes and others can be known bi-directionally and immediately. And thus, it is estimated that the mutual exchange of such information advances the situation to a new scene. Acceleration of progress of the situation can lead to speedy solution of problems.

The purposes what the persons actually engaged in the landfill projects desire are “disclosure of information” and “sharing of information”, and thus, the communication means that are hoped are the ones that utilizes IT and the workshop, and especially “web site” is hoped very much.

As the order of the uses of the communication means in the future, the information is disclosed through the means that uses IT and/or workshop to the persons involved in the projects, and then, after the residents obtain prior information to some extent, the explanatory meetings using interviews is organized for freely exchanging ideas. In this way, we wish to set forward the social acceptance of the landfills by deepening mutual understanding between the project implementing body and the local residents.

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