

STUDY ON RESIDENTS' RESPONSE / BEHAVIOR TO FOOD POLLUTION BY DIOXINS : EFFECTIVE COUNTER-MEASURES FOR PUBLIC RELATIONS

Isao Okazaki¹, Tetsu Watanabe¹, Yoshihisa Watanabe^{1,2} and Kazuki Suzuki²

1: Department of Community Health, Tokai University School of Medicine,
143 Shimokasuya, Isehara, Kanagawa 259-1193 Japan Fax: 81-463-92-3549

2: Institute of Health Systems Development,
6-12-9 Ochiai, Tama 206-0033 Japan Fax: 81-42-374-5694

Introduction

A panic happened over the case of food pollution by Dioxins, reported by TV news in February 1999. First report was on pollution in spinach at Tokorozawa area in Japan, but the second changed into leaf vegetables, and finally changed, as polluted vegetable was not actually a vegetable but a tealeaf. The government announced, testing only one sample, no effect on human beings due to the low level of the dioxins. Although report was corrected, panic of consumers was focused to spinach of Tokorozawa and sales amount of spinach was remarkably decreased for long term. Such panic has been observed several times in Japan, such as a white radish sprouts case, which was suspected pollution by O157, and even after a panic a white radish sprouts has almost disappears from Japan. At recent case of a nuclear accident in Tokai village, Ibaraki in September 1999, agricultural products sales of Ibaraki prefecture declined remarkably even now (\$94mil. Damage until 24 March 2000), besides the government announce of its safety.

Under such situation, we thought, analysis of residents' consciousness on the case of pollution was quite important to prevent a panic and to relieve excessive reaction. So we designed a survey on residents' consciousness on dioxin pollution at a community surrounding many incinerators and a community that has no incinerators.

Methods and Materials

We took methodologies of public health research and sociological approach. To research consciousness of residents on health effect by dioxins, 3 stages of surveys were designed. The first stage was an interview survey to selected residents, the second was a telephone survey, and the third was a mailing survey.

1) Selection of survey sites

We selected two cities of population size from 100 to 300 thousand, as covered large area, to avoid biases from small communities. One was a city that has incinerator problems (pollution, health effect etc.), and another was selected for a reference, which had no such problems.

2) Interview survey

We interviewed 10 residents at each site. The local government offices cooperated on the selections of interviewees.

3) Selection of telephone survey objects

We made a telephone number list by two telephone directories (white pages).

We allocated of sample numbers in alphabetical order, and picked up by random sampling.

4) Telephone survey

RISK EVALUATION – POSTERS

Telephone survey was designed to clarify health consciousness of dioxin and to get acceptance of next mailing survey. But, as we thought the residents were quite sensitive to the word of "Dioxin" itself on the basis of the interview survey, we decided a questionnaire had to be designed not to mention dioxins directly.

(Table 1) Sampling Result on Telephone Survey

Survey area	Total call				
		Reject answer	Accept answer		
			Accept survey	mail	Reject mail survey
Area A (Incinerators)	648	347	301	250	51
Area B (No incinerator)	549	267	282	250	32
Total	1,197	614	583	500	83
Rate	100.0%	51.3%	48.7%	41.7%	6.9%
	-	-	100.0%	85.8%	14.2%

5) Design of questionnaire of a mailing survey

We designed a questionnaire based on the interview and telephone survey. We recognized that as the term of "Dioxin" was quite sensational for the residents because this issue had been reported almost everyday, we designed a questionnaire mainly as to health attitude, nutrition, food, action to the white radish sprouts pollution case by O157, future action for a food pollution case, and dioxin was treated as one of chemical entities.

6) Mailing Survey

We sent a questionnaire, a return envelope, and a telephone card for a compliment of cooperation to our survey. The total number of object residents was 500. And we obtained extremely high rate of reply, 96.6%, which showed great interests of the residents in "Dioxin".

(Table 2) Reply Rate of Mailing Survey

	No. of mail	No. of reply	Reply rate
Area A (Incinerators)	250	243	97.2%
Area B (No incinerator)	250	240	96.0%
Total	500	483	96.6%

7) Analysis

We input data of the questionnaires, calculated them as single and cross tables, and tested relationships between each question using qui-square test.

Results and Discussion

We found that the most concerned chemical entity at both areas was "Dioxin" in the level of almost 100% (Fig.1). But at the reference area, other chemical entities were also concerned because of the urbanization. We found rather low concern for PCB that was similar chemical to dioxin. This means the concern about dioxin was influenced by mass media due to many news of dioxin than PCB.

To the question of "How maintain and / or improve your health", the highest answer was "Careful of foods" (Fig.2). This consciousness would cause residents' sensitive reaction to the case of food pollution. To another question of "How feels safety of food", 64% answered "Anxious

for safety” (Very anxious 9.6%, Anxious 54.0%), and only 0.8% answered “Safe”, 34.7% answered “Almost safe”. It seemed that usual anxiousness about food caused radical reaction to the report about the suspicion of food pollution, and such reaction would spread to the nation wide one after another by news of mass media about the reactions of residents...

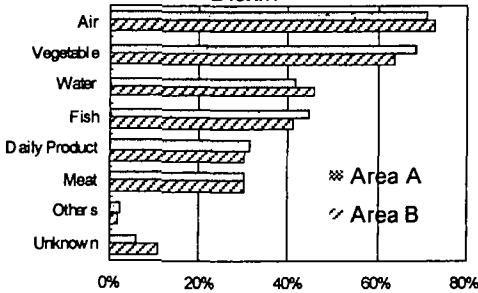
Although the residents were anxious on food, how well did they know Dioxin?

To the question of “Which route do you think on human intake of Dioxin?”, highest answer was “From the air”(Fig.3). And next was “From vegetables”. It seemed that these answers were influenced by TV news, which exhibited smokes of incinerators and fields of vegetables nearby. Only a half of residents knew “From fishes” and 1/3 knew “From daily products and meats”.

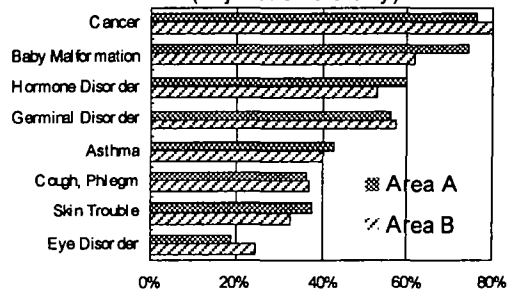
To the question about health effects of Dioxin, higher answers were cancer, baby malformation, hormone disorder, germinal disorder etc. (Fig.4) And following answers were asthma, cough or phlegm, which will be associated by smokes of incinerators. A skin trouble (we designed this question for chloracne) was rather minor that only 35.5% of residents knew.

We could see any differences between both areas. In “Area A” which has been surrounded by many incinerators, the local government office has carried out educational programs on dioxins for the residents; nevertheless it seemed that mass media had more influence for the residents.

(Fig.3) Route of Human Intake of Dioxin

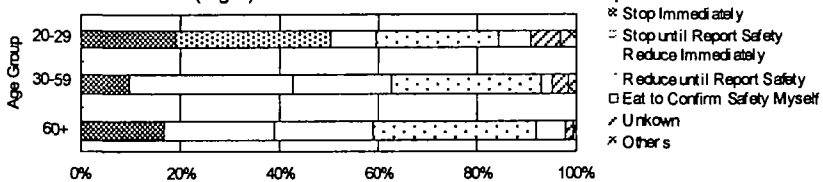


(Fig.4) Health Effect on Over Intake of Dioxin (Major answers only)



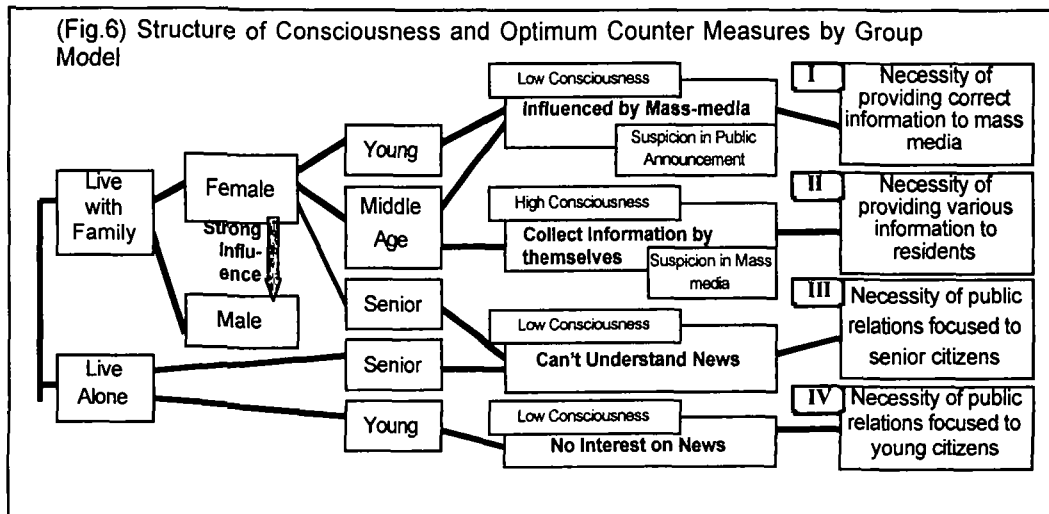
See the last question of “How do you behave if you see news about food pollution in the future?”. 41.6% of residents answered, as they will stop to eat immediately or stop to eat until reporting safety. And other 50.2% of residents answered, as they will reduce amount to eat. Only 4.0% of residents answered they would continue to eat unchangingly, confirming the safety themselves. By age group, these tendencies were different. In young group (age 20-29), radical responses were slightly higher than the other groups. In old age group (age over 60), “Reduce” was higher than other groups, which showed they could not change their lifestyles easily.

(Fig.5) How Behave if Food Pollution will Report



RISK EVALUATION – POSTERS

Based on several analyses by family type, sex, age group, attitude for food etc., we found several behavior groups to do effective public relations to a food pollution case such as dioxins. The first realization was that "It should be focused to female". The consciousness on food was slightly lower in male group, but we analyzed they could be educated by female influences. Thus all the groups were classified to major 4 ones. Group I -large group-, will be influenced by news or report of mass media, and they don't believe the government's safety announcement. For this group, the effective way to educate residents and prevent their excessive reactions will be to promote public relations and lead mass media to refrain from sensational reports. Group II -rather small group-, do not believe mass media's report until confirming themselves. This group will respond radically if they found problems. So quick action to provide information in detail is a key issue. For Group III and Group IV, suitable ways to focus on characteristics of the groups are necessary.



Although we analyzed based on Japanese in this paper, results will be change in consciousness structure by social-cultural background. So we are thinking we should research cross-national comparison for further study.