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ASBESTOS POLLUTION AND ITS COUNTERMEASURES

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KEYWORDS

Asbestos, Pollution, Replacement, Cement, Slate

ABSTRACT

In order to consider the asbestos pollution and its countermeasures I visited Europe, where active movements are under way with respect to asbestos regulation, and talked with specialists of organizations and enterprises.

I had a strong impression from this study in Europe that almost all asbestos products will be replaced by other materials and cannot survive. The largest reason for this movement is the problem of large cost for safety control.

Although asbestos products cannot survive, enterprises manufacturing them can survive. Such enterprises should invest, not in maintaining good working conditions to continue production of asbestos products, but in manufacturing products using materials that can replace asbestos.

1. INTRODUCTION

Continual inhalation of air highly polluted with asbestos permits asbesos to accumulate in the body, thereby causing fatal diseases such as lung cancer.

In order to consider what Japan should deal with the problem of asbestos pollution, I visited, December 1992, 7 countries in Europe, where active movements are under way with respect to asbestos regulation, and talked with specialists of 12 organizations and enterprises.

In this research, I will discuss the asbestos pollution and its countermeasures on the basis of the results of investigation conducted at the places as shown in Table 1.

2. RESULTS OF INVESTIGATION AND CONSIDERATION

2.1 Movements toward Regulation of Use of Asbestos

The carcinogenic property of asbestos was pointed out by medical circles in Denmark in 1938. In the former West Germany, generation of lung cancer due to asbestos was reported in 1942.

Since around 1970, an aggressive campaign for preventing asbestos pollution has proceeded in Sweden, Norway, Denmark and the like. Sweden and Norway, which used only a small amount of asbestos products, decided at an early period to ban of asbestos totally.

Many reports have then been publicized in various countries on generation of diseases caused by asbestos, such as lung cancer and peritoneal and pleural mesotheliomas. Denmark and Germany banned asbestos in 1987 and 1993, respectively. Italy will ban in 1994, while Belgium and Holland have decided to ban it in the near future.

UK has not decided when to start banning asbestos totally, but the annual amout of asbestos used has shown a marked decrease of 200,000 tons in 10 years ago to current 20,000 tons. Risk Assessment Commisson in UK confirmed in 1992 that asbestos was banned as a rule. On the other hand, French regulation against asbestos is mild, so that they will use asbestos there under sufficient safety control.

Table 1.

Arbejdstilsynet (National Labour Inspection, Denmark)
Asbestos International Association (France)
Assocemento (Cement Association, Italy)
Commission of The European Communities (Belgium)
Wirtschaftsverband Asbest (Asbestos Industrial Guild, Germany)
Maschinenbau und Metall Berufsgenossenschaft (Machine and Metal Labor Union, Germany)
Asbestos Information Center (UK)
Dansk Eternit (Asbestos-cement Manufacturing Company, Denmark)
Everite (Asbestos-cement Manufacturing Company, France)
Eternit Group (Asbestos-cement Manufacturing Company Group, Belgium)
Nuova Sacelit (Asbestos-cement Manufacturing Company, Italy)
Polyfibre (Fibre Trading Company, Switzerland)

2.2 Asbestos Issue in Commission of European Community

Mr. P. Glynn, who is a principal administrator of a department dealing with the asbestos issue in Commission of European community said, "EC Commission has not resolved to ban asbestos totally. This is because France and other countries have been opposing stubbornly with respect to the bill of banning asbestos. We make it a rule, when faced with opposition in preparing a bill, to repeat debates to reach a common consent so that the resulting bill can sufficiently reflect opinions from member countries."

By the way, the administrative building of EC Commission, a large-scale skyscraper under the name of "Vermo", has been the symbol of EC commission and one of the showplaces of Brussel. When constructed in the 1960s, the building used asbestos. Since the middle of January 1992, all of more than 3,600 members woking inside have evacuated the building according to a plan to remove assbestos and repair the building. Then, it was feared that removal work of asbestos should scatter it, resulting in asbestos pollution, and hence the work for the removal and repair has not started. As of December 11 1992, when I visited there, the building still remained completely vacant and looked like a ghost building.

In the 1970s, a scientific study started to examine 6 types of asbestos and it was found that chrysotile is less hazardous than the other 5 types. Those countries that have totally banned astestos do not allow any type of asbestos to be used. On the other hand, countries having not decided the banning are intending to control and use asbestos safely to stop spraying asbestos, which readily scatters asbestos, and to limit the method of use to those that hardly scatter asbestos, such as asbestos cement which seals chrysotile in cement.

2.3 Usefulness of Asbestos

Mr. D. Bouige, director general of Asbestos International Association, said, "Chrysotile is a markedly effective material among asbestos and is usable with sufficient safety under control. No other fibers can compete with asbestos with respect to price and properties such as durability. Even substitutes for asbestos may have some problemes or other. Under control, asbestos is safely usable and to this end a manual for safe use has been prepared."

It is true that, for developing contries, asbestos is an inexpensive and valuable industial material difficult to replace. However, for Japan, which is one of advanced countries like Europe and is becoming a mature society, control and safe use of asbestos will never prove to be inexpensive.

2.4 Decision of Asbestos-cement Manufacturing Companies

Eternit group, having started commercial production of asbestos cement in the early part of the 19th century, is the largest conglomerate of asbestos cement production in the world. Mr. Stephan Schmidheiny, owner of this group, directly heard of health hazard of asbestos, he decided to stop using it. The grounds for his decision were concern for the safety of workers and political consideration for the group to survive.

The largest ground for his decision is cost and responsibility. The amount of expenses for a company incurred by the use of asbestos is tremendous and may ruin the company itself. The expenses include those for checking and controlling the concentration of asbestos and countinuously conducting health care of employees, insurances for generation of actual patients and costs of lawsuits for loss of lives or health injury.

Mr. H. S. Petersen, the project leader of research and development department of Dansk Eternit, Denmark, while looking back upon those days, said fullheartedly, "Complete stoppage of using asbestos was decided as a selection to survive as an enterprise, while public opinion was straightforwardly taken into account. Development of technology for replacement of asbestos required 18 years, which was a bitter period to us." The development had been conducted with a policy to use the existing equipment and to prevent cost increase, and the company employed a process which uses no asbestos on the ground that processes comprising reducing the amount of asbestos used are disadvantageous from the viewpoint of economy.

2.5 Cost of Asbestos Replacement and Cost of Safety Control

In Italy, banning of asbestos was decided at first as a national policy and then enterprises started developing replacement technologies. On the very day that I visited Sacelit that had produced asbestos cement, they stopped operating their manufacturing lines for asbestos cement. Already, manufacturing lines utilizing a replacement fiber material had been shipping new product.

Dr. F. d'Agostino, a director technics of Sacelit, said, "Even if it be allowed to use asbestos under control, no enterprises using it can survive because the costs with respect to human life such as periodic inspection and insurance are extremely high."

Mr. A. Sabouraud, who is the manager of Everite a French manufacturer of asbestos cement said, "In France, there are no movements or presssure from consumers or government, demanding banning of

asbestos. We are making efforts to use asbestos safely under control in accordance with the procedure set up by Asbestos International Association. Our workers have consented to continuing use of asbestos. They think that stoppage of use of asbestos will reduce market and are afraid they should lose job for that. Our largest concern is how to decrease the amount of asbestos used and we have studied to solve this problem these 10 years."

On the other hand, Mr. P. Glynn principal administrator of EC Commission said, "Manufacturing company of France is intending to continue using asbestos and producing asbestos cement. This may largely be due to the fact that they have already invested a lot of money in equipment and the like to put the woking circumstances in good condition and to prevent asbestos pollution and hence they cannot afford to develop a non-asbestos product." This commmnet of Mr. Glynn's was very impressive to me.

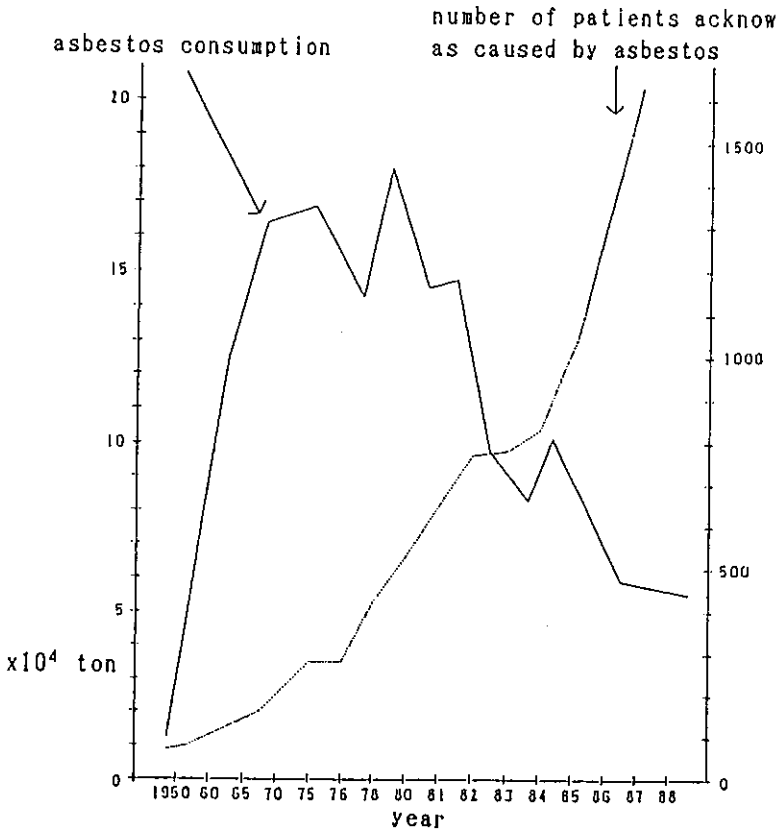

Fig. 1. Relationship between the asbestos consumption and the number of patients acknowledged as caused by asbestos in the former West Germany[1]

Those are 0.5 and 0.25 in Belgium and Germany respectivelyl. In France, where asbestos is not banned, for example slate manufacturing companies settle 0.2 to 0.3 fibers/cc in their private regulations. The above limits are for working areas directly handling asbestos with high pollution concentrations.

According to "What is asbestos", a brochure issued by Life and Culture Bureau of Tokyo Metropolis, the average concentration of asbestos in the atomosphere of Tokyo is 0.00028 fibers/cc, which looks sufficiently lower than the above limits. However, this value has reached a level that cannot be overlooked in consideration of not more than 0.001 fibers/cc, which is the acceptable limits set up by Federal Environmental Agency of Germany.

2.8 Fears of Dispersion of Asbestos

It is said that asbestos sealed in cement is not hazardous. However, asbestos dust can hardly be reduced in areas where workers cut asbestos cement with a saw. Furthermore, asbestos cement, which is widely used as roofing and the like in Japan, may have possibilities to deteriorate when exposed to sunlight and natural weathering and scatter into the surrounding air.

In a test in a laboratory, it has been observed that asbestos fiber scatters by brushing from asbestos cement exposed in an artificial weathering room[3]. When these are taken into account, it is very difficult in practice to, as France proposed, control such that asbestos can be used in a safe manner.

3. CONCLUSION

It is true that asbestos has excellent properties and there are a few products therfrom that are applicable to those specific end-uses where they can be always under control for safe use without worrying about cost. However, I had a strong impression from this study in Europe that almost all asbestos products will be replaced by other materials and cannot survive. The largest reason for this movement is the problem of large cost for safety control.

In Japan, we sometimes hear the following argument in the course of developing asbestos replacement technology. "Stopping the use of asbestos will cause the large problem of increasing the cost, since asbestos is inexpensive and exhibits excellent performances. Then it is advantageous to use asbestos under safety contoll." Can this argument be correct? From what I learned in Europe, I cannot but say that asbestos is not an inexpensive material but requires a high

compensation cost.

A measure to prevent asbestos pollution has been considered by reducing the asbestos content in asbestos cement from 10% around in the past to 5% or less. However, even if we reduce the amount of used asbestos, we should be ready for a large cost necessary for preventing pollution as long as we continue to use asbestos.

Although asbestos products cannot survive, enterprises manufacturing them can survive. To this end, such enterprises should invest, not in maintaining good working conditions to continue production of asbestos products, but in manufacturing products using materials that can replace asbestos.

4. ACKNOWLEDGEMENTS

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