

DISCUSSION PAPER SERIES

Lessons from Asbestos Problems in Japan

Hiroyuki MORI

2010年2月

RPSPP Discussion Paper No.15

RPSPP

RITSUMEIKAN : POLICY SCIENCE & PUBLIC POLICY

Policy Science Association
Ritsumeikan University
56-1, Tojiin-Kitamachi, Kita-ku,
Kyoto, 603-8577, Japan.

Lessons from Asbestos Problems in Japan

Hiroyuki MORI

2010年2月

RPSPP Discussion Paper No.15

地域共創シリーズ No.15

Lessons from Asbestos Problems in Japan

Hiroyuki MORI

hmt23243 [at] sps.ritsumei.ac.jp

College of Policy Science, Ritsumeikan University

1. Introduction

Asbestos supported the social and industrial structures after the modern age owing to its various functional and lower-priced advantages. The Japanese experience indicates that asbestos functioned as a shadow substance to maintain productions of food, ship, chemical, machinery, electric power, train, automobile, water, office and housing productions that were leading industries from post world war II to high economic growth age. For their productive activities, Japan consumed it approximately 10 million tons out of more than 200 million tons used in all over the world.

The harmful effect of asbestos to human body was also well known in early era. Asbestosis cases were reported in a lot of countries before the world war II. The causal relations between asbestos and lung cancer or mesothelioma were medically elucidated in 1950s-1960s. Nevertheless the asbestos related diseases have been spread out in the world and are estimated to cause millions of death. In Japan, nearly one thousand people are died of mesothelioma annually and the number of death in male is estimated to nearly one hundred thousand. It is acceptable to regard the asbestos disaster as the most catastrophic industrial pollution.

The trigger to attention on asbestos problems in Japan is so-called “Kubota shock” that showed the environmentally exposed citizens with mesothelioma in June 2005. The Japanese government sought for how to compensate for asbestos-damaged patients, and accomplished the Act on Asbestos Health Damage Relief (Sekimen Kenkouhigai Kyusaiho) in 2006 for making relief to the victims of mesothelioma and lung cancer by asbestos that were paid no compensation like the environmental damaged.

The asbestos disaster in Japan illuminates the following features. From the standpoint of geographical features, the most disastrous asbestos problems are found in Sennan district in Osaka and Amagasaki city in Hyogo. In Sennan, there used to be an enormous number of small factories. The workers and neighborhood citizens have suffered from asbestosis and cancers. In Amagasaki, the Kubota factory produced the asbestos (crocidolite) contained water pipes. More than 300 workers and citizens died of asbestos related diseases in Amagasaki. The recent health risk investigation by Amagasaki city government showed that 103 of 379 sampled citizens that lived there in Amagasaki had pleural plaques. In terms of industrial features, nearly half of asbestos-related lung cancers and mesothelioma are found in construction industry.

The historical structures of asbestos disasters in Japan reveal the effects of the governmental policies in addition to profit seeking of private enterprises. The enormous number of asbestosis victims at Sunman was caused by the economic policy to have the small asbestos textile factories to supply cheap asbestos yarns and clothes for sustaining the industrial development. The injurious asbestos contained water pipes produced by Kubota supported the urbanization policies such as municipal mergers. The construction industry was directed to use asbestos contained materials for building office buildings and housings by Japan Industrial Standard (JIS) and the Building Standard Law (Kenchiku Kijunho) to classify asbestos contained materials as fundamental for fire proof, although those materials had been defined as poorly qualified. In reality, the demand for asbestos contained materials was increased just after the Building Standard Law deregulated the height limit of constructions and strengthened the fire protection structures of them. A lot of asbestos fibers stemmed from broken and damaged constructions by Hanshin-Awaji big earthquake in 1995 have just started to kill the workers who were engaged in taking them out.

On the other hand, such public regulations as the Pneumoconiosis Law (Jinpaiho) in 1960 and the Ordinance on the Prevention of Hazards due to Specified Chemical Substances (Tokutei Kagakubusshitsu to Shogaiyobo Kisoku) in 1971 were faulty to harmonize economy with occupational safety. Therefore, the legal actions against the government as well as the companies have been conducted.

The study is organized as follows: Section 2 presents the asbestos disasters and their historical structures at Sennan. Section 3 discusses those in construction industry. Section 4 shows the responsibilities for asbestos disasters in Japan. Finally, section 5 concludes with a summary and policy suggestions.

2. Asbestos Disasters at Sennan

2.1. Asbestos Industry

Sennan district used to be the major in accumulating asbestos textile industries in Japan. The almost all of the factories were very small and many workers were occupied by the socially weak such as Korean, discriminated area citizens, and former coal miners. They worked in occupational environments without dust collector and ventilation fun.

Asbestos textile production at Sennan started in 1912. The area was popular in textile industry and asbestos textile factories accumulated on the basis of its technology. In the official data by the government, the ration of asbestos textile factories at Sennan was approximately 60% in Japan at the end of the 1970s. Besides, the data omitted small factories. According to our interview to Osaka prefectural government, there used

to be at least 330 asbestos related factories and 100 out of them were at Sennan. Kazusada Yuoka indicated that more than 200 asbestos textile factories were operated in the 1960s-1970sⁱ. The asbestos thread and cloth produced there were used as insulator, packing, lining, membrane in major industries in the high growth age in Japan. Such industries as ships, steam locomotives, cars, petro chemistry, electric powers, steels, constructions and so forth were leaders in industrialization policy directed by the government.

2.2. Asbestos Disaster

Ministry of Home Affairs before the world war II investigated the harmful effects of asbestos dust on the workers' health in Sennan asbestos factories between 1937 to 1940. Dr. Hiroshi Sukegawa investigated 14 factories (11 at Sennan, 2 at Osaka city, and 1 at Nara) and 650 workers there. The result showed that the number of patients with asbestosis amounted to 80 (12.4%). The investigation article made proposal on mask wearing and dust collector system. Dr. Kenji Morinaga mentions that recent medical views on asbestosis were mostly clarified in this investigationⁱⁱ.

After the world war II, Dr. Horai and Dr. Sera, both co-investigators of Dr. Sukegawa, resumed the same kinds of medical investigation in 1952. Ministry of Labor also started medical investigation for clinical criteria on asbestosis since 1956. The result proved that 54 out of 330 workers at asbestos factories in Osaka had asbestosis and additional 36 might be the sufferers.

2.3. Delay of Dust Control

The first law to control asbestos dust is the Pneumoconiosis Law (Jinpaiho) aiming at protecting workers from pneumoconiosis and promoting health care for them. Pneumoconiosis Law, however, had mainly two defects. Firstly, the law did not set any criterion for dust level and so never regulated dusts practically. Secondly, the law did not take into account the actual business conditions of small factories and failed to promote hygienic conditions such as dust collectors.

In 1971, Ordinance on the Prevention of Hazards due to Specified Chemical Substances (Tokutei Kagakubusshitsuto Shogaiyobo Kisoku) was enacted with recognition that asbestos was cancer-causing substance. The ordinance obliged entrepreneurs to install local exhaust units inside of factory, to fix dustproof devices, to check asbestos dust level inside and so forth. The ordinance was revised in 1975 to regulate working conditions to utilize sprayed asbestos.

The official regulations for asbestos factories failed in bettering the hygienic conditions to a great extent in Sennan owing to expensive costs of dustproof devices and electricity rates to run them. For instance, Nakaya asbestos company said that the price

of a dust collector was over 10 million yen and electricity consumption necessary to operate it reached twice as much as that to produce asbestos commoditiesⁱⁱⁱ. This is an economic background of Sennan factories to be negative for installing dust collectors and so forth.

This delay is interpreted as supporting the economic growth because the asbestos commodities produced by Sennan factories were imperative for the leading industries.

2.4. Spread of Asbestosis

The defects of official asbestos regulations fail to decrease asbestosis sufferers to a large extent. The medical checkups of asbestosis implemented mainly by the Japan Anti-Tuberculosis Association showed the ratios of asbestosis were 7.6% in 1960, 11.3% in 1963, 11.1% in 1966, and 18.2% in 1970. In addition to the increasing ratios, the number of checked workers decreased gradually. Dr. Yoshizumi Sera pointed out that the reason of decreasing the checked was supposed to be subletting asbestos related works to family labors and sidelines^{iv}.

Dr. Morinaga investigated asbestosis patients in Osaka from 1961 to 1985 and found that the numbers are 10 from 1961-1965, 19 from 1966-1970, 43 from 1971-1975, 53 from 1976-1980, 50 from 1981-1985. The trend of asbestosis indicates that the hygienic conditions in factories were not improved to a great extent after the Pneumoconiosis Law and the Ordinance on the Prevention of Hazards due to Specified Chemical Substances were enacted.

3. Asbestos Disasters in Construction Industry

3.1. Asbestos Contained Materials and Japan Industrial Standard (JIS)

Asbestos contained materials for constructions began to be utilized in Meiji era in Japan. The major asbestos contained material asbestos cement slate was imported by Kozaburo Nozawa in 1906. The imported asbestos cement slates were adopted as building materials for factories, offices, warehouses and so forth in early 20th century.

After the Second World War, the Japan Industrial Standard (JIS) was enacted as a governmental criterion for industrial materials and goods. Asbestos cement slate was designated as JIS material in 1950. But the JIS code was given to asbestos cement slate as “fire proof” not “fire protective” owing to its fragility. Fire protective materials have been superior to fire proof ones in fire prevention.

Besides JIS, the Building Standard Law was enacted in 1950 to regulate and direct building materials for constructions.

3.2. Building Standard Law (Kenchiku Kijunho)

Building Standard Law has been crucial for construction industry. The importance of the law has been all the same for asbestos construction material companies. The law and construction materials have been inseparable in the sense that it is indispensable for materials to be listed in the law for their massive demands.

Association of Asbestos Cement Slate pointed out that the drafted law had two disadvantages for the companies.

- (1) The asbestos cement slate is not “fire protective”, but “fire proof”.
- (2) The name listed in the law is “Asbestos Board (Sekimen Ban)”, not “Asbestos Slate (Sekimen Slate)”.

Building Standard Law was frequently revised along with rapid urbanization, gigantic buildings, and material improvements attributable to high economic growth in Japan. Asbestos cement slates and other asbestos contained materials have been differently treated according to changes of the law and its related regulations.

In 1959, the law was revised to classify construction materials as “fire proof”, “quasi-fire proof”, and “fire retardant” qualified better in order. Asbestos cement slate as “fire proof” was relatively ranked up in the kinds of construction materials.

The 1963 revision of the law prescribed fire protection on high-rise buildings and defined over 31 meter ones as subject to interior regulation. The propositions proceeded to increase the demands for asbestos contained materials as fire proof cover for high-rise buildings.

In 1964, the law was significantly modified for asbestos contained materials to prescribe fire proof of specified constructions such as hotels and theaters and asbestos cement slate as “fire protective”. In addition, the Enforcement Order of the Building Standard Law was also revised to describe “fire proof” of pillar and beam by sprayed asbestos and asbestos cement slate.

The 1970 revision of the law made happen the age of skyscrapers by abolishing the 31m regulation over all Japan in addition to only big cities. Besides, the law strengthened the interior regulation for housing and prescribed the use of fire proof materials for housing interiors.

The overall prohibition of asbestos contained construction materials was enforced by the revised Enforcement Order of Occupational Health and Safety Law (Rodo Anzen Eisei Ho Sekorei) in 2006.

3.3. The Ordinance on the Prevention of Hazards due to Specified Chemical Substances

As mentioned above, the Ordinance on the Prevention of Hazards due to Specified Chemical Substances in 1971 was the first official regulation to control asbestos as cancer-causing substance. Revised ordinance in 1975 strengthened the regulation on sprayed asbestos. But there are some essential problems in the ordinance.

First of all, the ordinance was issued long after the cancer-causing effect of

asbestos was medically clarified. As Dr. Selikoff indicated, Doll proved in 1955 that asbestos caused lung cancer in workers who were exposed to an enormous amount of asbestos dusts^v. Morinaga also stated that Doll was the first to prove epidemiological relation between asbestos exposure and lung cancer^{vi}. One of the most significant epochs on the asbestos causing cancer was a major conference on the 'Biological Effects of Asbestos' hosted by the New York Academy of Sciences and chaired by Selikoff in 1964. As Bartrip indicated, "In the eyes of many specialists, lung cancer was proven, epidemiologically, to be a hazard of working in an asbestos textile factory in 1955. The link between mesothelioma and industrial exposures to asbestos dust was established in the mid-1960s"^{vii}. It is evident that the official regulation on asbestos as cancer-causing substance was delayed in Japan.

Secondly, the ordinance allowed asbestos including sprayed one to be utilized under some conditions. Though the ordinance reinforced to regulate asbestos using conditions such as moistening and asbestos containing level in sprayed asbestos, it put exceptions from the regulations. For example, sprayed asbestos with less than 5% of asbestos containing level was permitted to be utilized.

Thirdly, since the ordinance does not assume construction work sites, serious asbestos hazards multiplied in construction industry. Protective measures against asbestos dust exposure have been taken under the Ordinance on Prevention of Health Impairment due to Asbestos in 2005.

4. Responsibilities for the Disaster

4.1. Government

In both cases, the government promoted asbestos contained goods to be used for supporting economic growth and urbanization although the government realized or should have realized the harmful effects of asbestos on human health before the law or the ordinance were enforced. Moreover, those official regulative measures had crucial defects, resulting in more economic growth and urbanization. The overall prohibition of asbestos utilization was enacted by revising the Enforcement Order of Occupational Health and Safety Law in 2006. The delay would retard progress in developing substitutes for asbestos goods. Since the time gap resulted in spreading the number of asbestos victims, the government cannot help being laid blame on the responsibility.

4.2. Companies

Asbestos related companies restated "safety" of asbestos through the industrial paper *Sekimen* and other ways by ignoring the harmfulness. For example, the biggest

asbestos company Japan Asbestos Inc. recognized asbestos harms for human health at least in the mid-1960s^{viii}. On the other hand, some companies including Japan Asbestos Inc. tried to develop substitutes for asbestos goods. These activities by asbestos companies are contradictive. The companies should be blamed for industrially criminal activities in a sense.

5. Concluding Remarks

The policy suggestions on asbestos problems in Japan are comprehensively pointed out by Miyamoto (2009). Therefore, I summarize and describe the revised ways in Japanese policy treating asbestos from historical perspectives.

Firstly, all-inclusive epidemiological studies should be implemented since the real and future disasters by asbestos have never been grasped. In Korea, the Korea Research Center for Asbestos Related Diseases was founded in Pusan National University by the government and the center has carried out wide-ranging epidemiological investigation in cooperation with Pusan city government. In and around Daejeon, health and epidemiological investigations have been executed for former asbestos mining workers and residents around asbestos mining area and graduate students in an elementary school located around big asbestos factory. The government promoted medical training for doctors necessary for detecting asbestos related illness. The official initiative is important for such epidemiological studies by judging the Korean experience.

Secondly, the Act on Asbestos Health Damage Relief should be revised in several aspects. The fund system has defects in kinds of asbestos related illness, amounts of relief, recognition criterions) and financial sources (financed by all the companies). FIVA in France compensates for property and non-property losses and covers asbestosis, asbestos-related cancer, mesothelioma, pleural thickening, and pleural plaque. Both The amounts of money and recognition rates are higher than those of Japanese relief system. In Hong Kong, the Pneumoconiosis Compensation Fund was financed by taxing construction works of more than one million Hong Kong dollars by 0.25% to compensate for patients of pneumoconiosis, asbestosis, and mesothelioma in every industry. The reason of taking such a financial mechanism is that major parts of victims are found in construction industry. This is a kind of fund system based on “cause principle”, not “benefit principle” like Japanese system.

Thirdly, protective measures should be effectively taken against asbestos exposure through demolishing buildings. A number of buildings in Japan were constructed after the 1960s and they are sure to be timeworn. The current official measures are not workable owing to the defects of related laws and governmental passive activities.

Notes

- i Yuoka (2006)
- ii Morinaga (1989)
- iii Japan Asbestos Association (1981) (1982)
- iv Sera (1983)
- v Selikoff, et al (1964)
- vi Morinaga and Yokoyama (2008)
- vii Bartrip (2006)
- viii Otouma (1996)

References

- Bartrip, P. (2006) *Beyond the Factory Gate*, Continuum, London.
- Japan Asbestos Association (1980) *Asbestos (Sekimen)*, No.409.
- Japan Asbestos Association (1981) *Asbestos (Sekimen)*, No.427.
- Morinaga, K. (1989) "Epidemiological Findings of Asbestos Related Diseases in Japan" in *Pathology and Clinical Medicine* (Byori to Rinsho) Vol.7 No.6.
- Morinaga, K and K. Yokoyama (2008) "History of Health Damage by Asbestos", Morinaga, K. (ed.) *Asbestos Exposure and Asbestos Related Diseases* (enlarged edition), Sanshin Shobo.
- Otouma, S. (1996) "Toward a Creative Development Company-Expectation for Full Power" in *Japan with Trade (Boeki no Nippon)* Vol.324.
- Selikoff, I. et al, (1964) "Asbestos Exposure and Neoplasia" in *Journal of the American Medical Association* 188.
- Sera, Y. (1983), "Asbestosis in Osaka", Association of Occupational Hygiene History in Osaka, *Occupational Hygiene History in Osaka*.
- Yuoka, K.(2006) "A Study on History of Asbestos Industry and Potential Damage at Sennan" in *Labor Law Journal (Rodoho Junpo)*, No.1617.