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Asbestos in Japan

Use of asbestos

It was in 1880s that raw asbestos and asbestos products had been imported to Japan. In 1886, the first modern asbestos factory was founded in Osaka prefecture, and it began to manufacture asbestos packing and other insulation materials.

During World War II, asbestos could not be imported from foreign countries, so the government promoted developing domestic asbestos mines, and totally 50 mines had been in operation by 1945. But these all asbestos mines were closed before 1972 because of its poor quality and quantity except for one mill which is collecting short chrysotile fibres (less than Class 8) in the slagheap (the amount of its production was 1.05 ton in 1999).

After World War II, the amount of use of asbestos rapidly expanded with the economic growth. Asbestos was necessary for the electric power industries, shipbuilding, and heavy chemicals industries for heat treatment and the efficient use of energy. Asbestos filter was also used for electrolyte in chemical industries especially for manufacturing ammonium sulphate for getting a lot of rice. Spraying asbestos for ceiling, wall and iron frames in the buildings and railroad cars began since 1957, and became popular in the construction building in 1960-70. By the 1970s, there had been more than 300 asbestos products factories and nearly 9 thousand fulltime workers according to the Census of Manufactures, Ministry of International Trade and Industries.

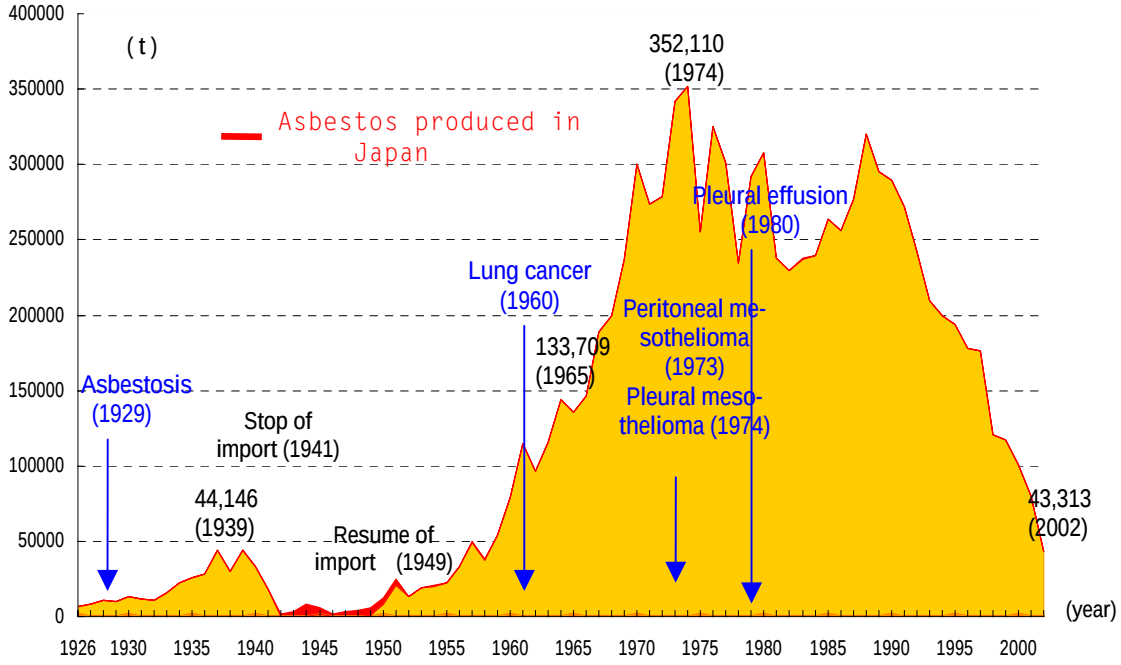

Figure: Annual asbestos import to Japan and asbestos-related diseases in Japan

These figures do not include those of factories with less than 3 full time employees. But in 1999, there were only 84 factories and nearly 1,400 fulltime workers.

More than 75 % of imported asbestos is used for cement products such as asbestos boards and slates which are used for building materials, less than 10 % for friction materials, and less than 5 % for asbestos textile. The amount of manufacturing of asbestos yarn and cloths, and asbestos slate has been decreasing since 1980, and asbestos brake lining and asbestos cement board since 1990.

Asbestos regulation

In Japan, workers who handle with asbestos are covered with two laws: Pneumoconiosis Law (1960) and Industrial Safety and Health Law (ISHL, 1972)(the Ordinance on Prevention of Hazards due to Specified Chemical Substances). This Ordinance covers the workers who handle with the chemicals and other substances containing asbestos, provided that this does not apply in respect to the substances which contain asbestos of 5 % or less in weight (since 1978), but now 1 % or less (since 1995). The employer shall make medical doctors conduct medical examination of these workers twice a year.

"The Administrative Control Level (ACL)" defined by Working Environment Measurement Standards was recommended as 0.2 fibers/cm^3 for crocidolite and 2 fibers/cm^3 for other types of asbestos in 1976 and determined in 1984. (ACL is different from the exposure limits.) In April 2001, OEL (Occupational Exposure Limits) Committee on Asbestos of Japan Society for Occupational Health proposed OEL values of 0.15 fibers/cm^3 for chrysotile and 0.03 fibers/cm^3 for other types of asbestos in the risk assessment of lifetime excess risk for lung cancer and mesothelioma as one per thousand. A working group on the revision for "ACL of Asbestos" by the Ministry of Health, Labor and Welfare has set up last year and is ongoing.

In April 1995, manufacture, import, supply and use of crocidolite and amosite and products containing them were prohibited by the amendments of Enforcement Order of Industrial Safety and Health Law. As for retired asbestos workers who meet the requirements to have irregular opacities due to asbestos on both lungs or pleural plaques due to asbestos, can be given their own Personal Health Record, and can receive health examination twice a year since 1 April 1996.

There are two further Laws concerning asbestos other than occupational health; the Air Pollution Control Law (1989), and the Waste Management and Public Cleaning Law (1992 revised).

Asbestos-related cancers

Asbestosis is compensable as one of the pneumoconiosis since 1952. The criteria of the compensation for asbestos induced lung cancer and malignant mesothelioma was established in 1978, and since then these two cancers were prescribed as occupational one by Enforcement Ordinance of Labor Standards Law. Up to the end of March 2002, a total of 235 cases for lung cancer and 230 cases for malignant mesothelioma (pleura, peritoneum) were compensated as occupational asbestos-related cancers (1977-81 11 for lung cancer, 1 for mesothelioma; 1982-86 26, 17; 1987-91 44, 29; 1992-96 54, 61; 1997-2001 90, 122). The latent period between the first contact with asbestos and the occurrence of the mesothelioma was 38.0 years on average (median 39.5) for recent 93 compensated cases (all males, 1999-2001). Among these cases, one had para-occupational exposure to chrysotile, which had been used for the filter as the first process of brewing "sake" (Japanese wine) between 1956 and 1959. Another interesting case was a pleural mesothelioma of the iron plate cutter, who had been exposed to talc contaminated with actinolite. We recently experienced another case of pericardial mesothelioma with the same type of asbestos exposure.

Since 1992, asbestos is the leading causal agent for occupational cancer except for aromatic amines which induce urinary cancers. A committee on the revision of compensation for asbestos-related disease was set up in October 2002, and reviewed the literature on mesothelioma of the pericardium and tunica vaginalis testis. More than 10 cases of pericardial mesothelioma, and 15 cases of mesothelioma of tunica vaginalis testis were found with asbestos exposure including each case report from Japan. It is well known that asbestos induces non-malignant pleural diseases. So, asbestos induced diffuse pleural thickening and encapsulated benign asbestos pleurisy will be added in the list of prescribed diseases as with severe reduced pulmonary function in this autumn.

International Statistical Classification of Diseases and Related Health Problems, 10th Revision was adopted since 1995. There were 201 deaths from pleural mesothelioma (C45.0) for males and 74 for females. In 2001, there are 414 deaths for males, and 116 for females. But these figures are less reliable in the diagnosis than those obtained from cancer registries as like as other countries. Furthermore there are 110 deaths from mesothelioma of unknown site (C45.9) for males and 49 for females, most of those may be pleural origin. There is no legal obligation for physicians to report to the authorities concerned on their occupational diseases. A remarkable underreporting of this occupational cancer may exist.

There are some investigators who wonder why the incidence/mortality of mesothelioma is far low in Japan where a lot of asbestos is imported, compared with other developed European countries. Raw asbestos had been imported under the permission of General Head Quarter (GHQ), but since the autumn of 1963, free trade of raw asbestos and asbestos products began. This is one of the reasons why the import of raw asbestos had been increasing rapidly around this year (Figure). This situation is somewhat different from the developed European countries. In 1960, nearly 77,000 tons of asbestos was imported, and about 4.6 times of tons of asbestos in 1974 (44 % Canada, 30 % South Africa, 17 % USSR, 4 % Italy, 3 % USA, and 1 % Australia in 1976). After 1986, the import of asbestos has been decreasing, and its amount was 43,318 tons in 2002 (56 % Canada, 26 % Zimbabwe, 7 % Brazil, 5 % USA, 4 % Russia, and 2 % South Africa). If we take into consideration that the latent period for mesothelioma is 30 years, the correlation between per capita asbestos consumption (kg/capita/yr) and mesothelioma incidence/mortality (/million/yr) shows linear relationship in the countries of United Kingdom, Germany, Sweden and Japan. Now we are encountering the rapid increase of mesothelioma deaths, which may reach to the level of some European countries' experience.

Toward the ban of chrysotile

The amounts of products of rockwool, glass fibers, and glass filaments are increasing in Japan. These three major man-made mineral fibers are not carcinogenic to humans. The carcinogenicity of polyvinyl alcohol fibers (PVA) has not been demonstrated in both experimental and epidemiological studies. Some ceramic fibers and silicon carbide whisker may be dangerous to humans, but the amount of use of these fibers is not so widespread than chrysotile and the general population is not exposed to these fibers in the ordinary settings. We need to do more research on these fibers and should not spread their use before the confirmation of their nontoxicity.

On 28 June 2002, the Minister of Health, Labor and Welfare announced that Japanese Government was thinking about the ban of chrysotile. The Ministry of Health, Labor and Welfare is now considering the ban of chrysotile for building and friction materials by the amendment of the Enforcement Order of Industrial Safety and Health Law.

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