

The Asian Initiative to Stop the Spread of Asbestos-related Diseases in the Region, A Proposal

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Abstract

Asia is often noted for its rapidly growing economy and its large share of the world's population. The region is also diverse, in terms of development, socio-demographic, historical, political, and cultural dimensions. Asbestos-related diseases are inter-related with all these factors, and further complicated by globalization. The objective of this presentation is to build on the fruits of the Asbestos Symposium for the Asian Countries (represented by eleven countries) held in UOEH in 2002, and formulate an Asian initiative.

In the region, the trend in consumption of asbestos shows a striking contrast: the industrialized countries show a steady decrease, and developing countries show a definite increase. While most countries have enforced bans on the use of crocidolite, amosite is not banned in some countries. Regarding chrysotile, Singapore and recently Japan, are the only two countries which have banned its use practically. The banning of asbestos is not on the agenda, at least officially, in other countries. China continues to be one of the world's largest consumers and producers of chrysotile asbestos. Regarding asbestos-related diseases, asbestosis is a recognized occupational disease in most countries, but under-diagnosis and under-reporting is apparent in developing countries. Mesothelioma is far more underdiagnosed (as a disease and more so as an occupational disease) and incidence/mortality data are available for only a few countries. For asbestos-related lung cancer, the situation is abysmal.

Asia is likely to be on the verge of an epidemic of asbestos-related diseases. However, asbestos-exporting corporations are keen to take advantage of the demand created by rapid economic development of the region. Hence a careful, justifiable and concerted effort is needed to stop the spread of asbestos-related diseases in the region. A preliminary action plan will be proposed to serve as basis for a progressive discussion with an aim to gain wide acceptance.

Background

Asia is often noted for its rapidly growing economy and its large share of the world's population. The region is also diverse in terms of development, socio-demographic, historical, political and cultural dimensions. Asbestos-related diseases are inter-related with all these factors, and further complicated by the force of globalization.

The objective of my paper is to build on the fruits of the "Asbestos Symposium for the Asian Countries" held in Kitakyushu in 2002 as a joint effort between the University of Occupational and Environmental Health (UOEH), Japan, and the Finnish Institute of Occupational Health [1,2]. From this platform, I would like to propose a preliminary action plan aimed at stopping the spread of asbestos-related diseases in the Asian region.

Results

Ten countries were represented at the Asian Asbestos Symposium of 2002. Delegates were requested to share national (macro-level) data regarding the use of asbestos and the situation of asbestos-related diseases in their respective countries. All countries represented belonged to the region of eastern and southeastern Asia, but the data revealed a sharp contrast between countries.

The fact that the countries showed a more than ten-fold difference in terms of per capita income served as a reference point to examine the situation regarding asbestos. As for national bans, most countries had already banned the use of crocidolite, but amosite was banned to a lesser extent. Regarding chrysotile, Singapore and Japan were the only two countries that had either banned or planned to ban its use practically. The banning of asbestos was not on the agenda, at least officially, in the other countries.

The trend in consumption of asbestos showed a striking contrast: while the industrialized countries with higher per capita GDP showed a steady decrease, the industrializing countries showed a definite increase.

A similar trend was seen in the situation of the occupational exposure limits (OEL), legal requirements for medical follow-up of exposed workers, and availability of statistics on asbestos-related diseases. As for OEL, China was the only country using the gravimetric method while the other countries counted the number of fibers. Current OELs varied from 0.1 in Malaysia to 5.0 f/ml in Thailand, although the OELs were updated often and the presented values may not have indicated the actual current values.

The gradient by economic status was even more apparent for mandating of medical

check-up and availability of statistics: the more industrialized countries tended to show better status. Several of the industrializing countries did not mandate medical follow-up of the asbestos-exposed population while the industrialized countries generally did. Similarly, the industrializing countries did not have any statistics as opposed to the industrialized countries. Nationwide mortality statistics for mesothelioma were available only for Japan, Korea and Singapore. Taiwan reported 11 mesothelioma cases during 1979-1992 in a hospital-based survey. For China and Vietnam, statistics for mesothelioma were available for limited areas. Such information was not available for Indonesia, Malaysia, the Philippines, or Thailand. This indicated that mesothelioma is under-diagnosed, especially as an occupational disease. It should be noted that diagnosis of mesothelioma is a major problem even in industrialized countries.

Hence, the lessons learned from the Asbestos Symposium of 2002 can be summarized as follows.

First, the situation warrants being dealt with in the context of “the Asian issue.” While asbestos-producing countries are mostly non-Asian countries with the notable exception of China, asbestos-consuming countries are concentrated in the Asian region. In fact, five (or seven) of top ten “world’s most consuming countries” are Asian countries (or located on the Asian Continent). There is a striking gap between the Asian countries in the stance towards use of asbestos and mandatory management of asbestos-exposed workers, closely paralleling economic status.

Second, because of the large share of the world trade volume that Asia carries, a ban in one country can lead to a transfer of the volume to another country not imposing a ban. Such a domino effect must be avoided by all means.

Third, as exemplified by mesothelioma, the recognition of asbestos-related diseases is yet to develop in the region. It is possible that the current level of asbestos consumption will lead to a substantial burden of asbestos-related diseases in the long run.

Taking Japan as an example, the historical trend in the consumption of asbestos can be characterized as follows [3]. Asbestos mining was minimal except for the World War II (WWII) period, but diminished soon afterward. Thus importation was virtually the only source of input, which can be characterized by four phases. **Phase 1 (1930-1950)**: pre-, mid-, and post-WWII period ranging from 10,000 to 45,000 MT/yr including nil import years during and immediately after WWII. **Phase 2 (1950-1970)**: accelerating period from almost nil in 1950 to ca. 300,000 MT/yr in 1970. **Phase 3 (1970-1990)**: prime-level period fluctuating between 200,000 and 350,000 MT/yr with the historical peak recorded at 352,000 MT/yr in 1973. **Phase 4 (1990-present)**: decelerating period starting around 1990 at ca. 300,000 MT/yr, retreating to the 100,000 MT/yr level in the year 2000, and further decreasing today. Noteworthy events during this phase are the

prohibition of crocidolite and amosite in 1995, the amendment of the Prevention of Air Pollution Law in 1997 to prohibit scattering of asbestos during abolition, inclusion of asbestos in 2000 into the designated list of Pollutant Release and Transfer Register (PRTR), and finally, the decision to prohibit chrysotile in 2002 (in principle), which was enforced in October 2004.

The curve showing the annual import of raw asbestos to Japan can be considered as the cumulative exposure curve imposed on Japan as a country. From this viewpoint, the surface area below the curve would be equivalent to the cumulative dose incurred by Japan in its totality. It is reasonable to assume that the future burden of asbestos-related diseases will be induced from an unknown fraction of this cumulative dose.

Recently, an ecological study was conducted to estimate the induction period of mesothelioma using aggregate data from nine countries (seven European countries, New Zealand and Japan) [4]. The premises of the analysis were the time-series data on the consumption of raw asbestos and incidence/mortality of mesothelioma in the respective countries. In most countries, exposure to asbestos has reached its peak, whereas the incidence of mesothelioma is still rising. Autoregressive Poisson regression modeling allowed invocation of different time-lags to specify which time-lag produced the best correlation between the two time series. This suggested that the most probable estimate for the mean induction period at society level is approximately 25 yr with a possible range of 25 to 35 yr. The estimated regression function is almost linear, but there is a large variation around the fitted models. Based on this model, for an annual asbestos use of 4.2 kg/man, the model prediction is 13.1 per million man-yr for mesothelioma, with a 95% confidence interval of 8.8 -19.7 per million man-yr.

Proposal

Given the above background, and because of the apparent demand created by rapid economic development of the region, a careful, justifiable and concerted effort is needed to stop the spread of asbestos-related diseases in the region. A preliminary action plan is proposed to serve as the basis for progressive discussion with the aim to garner wide acceptance. The proposed action plan is characterized by an epidemiologic approach emphasizing quantification and measurement as well as by taking the Asian perspective.

- 1) The recognition that Asia is likely to be **on the verge of an epidemic** of asbestos-related diseases needs to be clarified and shared. To this end, the logical first step would be to compile quantitative data, *i.e.*, to promote the development of national databases on level of exposure, morbidity/mortality of related disorders, and compensation status. The justification is that prevention is about reducing incidence, hence the *status quo* needs to be quantified from the outset. Data should be collected prospectively, but

retrospective data should also be included to the extent possible. A regional database should be compiled from national databases.

- 2) Social awareness of the actual status of asbestos-related diseases, as well as their projected status, should be raised in the respective countries by **various players in society**. Such information on the quantitative status should serve as the basis for spin-off research as well as translation for and utilization by the public at large. In this connection, a network of concerned parties of multi-disciplinary background should be established and a pertinent website initiated.
- 3) Because **Asia is deemed a target region** by asbestos exporting industries and countries, countermeasures should be devised and implemented to resist this force. Again, the situation calls for immediate elaboration as to the identification of the unique characteristics of the region, *e.g.*, forces in play to increase the demand for asbestos, availability of unique substitutive resources to enhance appropriate solutions, etc.
- 4) The status quo speaks for the fact that governments and industries have already been talked into adopting/maintaining the controlled-use policy by parties possessing economic interest. Hence, a determined, multidisciplinary, and international coalition is warranted to match such forces. The benefit of adopting a total ban should be advanced, but should be coupled with scientific evidence including cost-effectiveness analysis, preferably derived from Asian data. Point-by-point counter-arguments for the controlled-use policy should be constructed and made accessible to the public at large via documentation (academic and non-academic) and the Internet.
- 5) An Asian Success Model should be developed to prevent the spread of asbestos-related diseases at all levels of prevention (primary, secondary and tertiary). In this connection, the number of countries adopting a total ban on asbestos must be increased, at the same time taking care to prevent the transfer of the problem. Model development should entail the feedback cycle of monitoring the progress quantitatively, feedback to remedial action and recording of the process. International collaboration should be developed on both a regional and global scale without distracting the regional focus. Ultimately, the Model should be devised to contribute to the global scene.

References

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