

ASBESTOS CASE AND ITS CURRENT IMPLICATIONS FOR GLOBAL HEALTH*

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The prevention of asbestos-related disease is a global public health issue and, more specifically, a matter of global environmental health. The latter is defined by the National Institute of Environmental Health Sciences (NIEHS) as “research, education, training, and research translation directed at health problems that are related to environmental exposures and transcend national boundaries, with a goal of improving health for all people by reducing the environmental exposures that lead to avoidable disease, disabilities and deaths” (www.niehs.nih.gov/research/programs/geh/index.cfm). This calls for a transnational and cross-disciplinary approach to global health (1, 2).

The global health impact of asbestos has been discussed in top scientific journals (3-5). The total estimate of deaths each year from lung cancer, mesothelioma and asbestosis related to occupational asbestos exposure increased from 90,000 in 2006 to 107,000 in 2010 (6, 7). In 2009, Monograph 100C of the International Agency for the Research on Cancer (IARC) provided the updated list of cancer sites causally associated with exposure to asbestos adding larynx and ovary (8). Recently, Park *et al.* (2011), focusing on mesothelioma only, estimated a cumulative number of 174,000 cases during 1994-2008 in 56 countries with data on mesothelioma occurrence, and another approximately 40,000 cases in countries with no official statistics on mesothelioma, but with available data on asbestos use (9).

The global dimension of this issue is explained by world data on asbestos production and use. Similar to the last years, the 2012 world production of asbestos amounted to 2,000,000 tons. This considerable quantity is roughly half of the peak world production reached in 1977 (4,793,451 tons). In these 35 years, the number of asbestos-producer countries has decreased: presently, four countries concentrate nearly 90% of the world production: Russia (1,000,000 tons), China (440,000 tons), Brazil (300,000 tons) and Kazakhstan (240,000 tons) (10-12). The current scenario of global asbestos production, use and trade is influenced by two major factors: the adoption of partial or total asbestos legislation ban by 54 countries (13) and the progressive reduction of asbestos production in Canada, the leading country in the last decades as producer and supplier of asbestos fibers and asbestos-containing products to numerous industrializing countries. In fact, asbestos production in Canada decreased from 1,517,360 tons in 1977 to 180,000 in 2007 and there was no asbestos chrysotile production in Canada in 2012 (10-12). The use of asbestos is still allowed in many countries in the world, even if in 2012 its consumption was concentrated in China and India for more than 50% of the world consumption (531,000 and 493,000 tons, respectively). In that year the consumption in Brazil, Indonesia and Russia corresponded to 167,602, 161,824 and 155,746 tons, respectively (www.ibasecretariat.org). Data of asbestos production and consumption indicate that Russia has been taking the leading role for asbestos export previously played by Canada.

These data demonstrate that prevention of asbestos-related disease is still today a quite crucial issue in many regions of the world and that the consequences of occupational and environmental asbestos exposure are a global plague.

* Already published in *Ann Ist Super Sanità* 2013;49(3): 249-51.

In this frame, United Nations agencies such as the World Health Organization (WHO) and the International Labour Organization (ILO) intervened in 2006 through specific actions particularly addressed to those countries where asbestos use was still allowed. The WHO Declaration on “Elimination of asbestos-related diseases” recognizes the carcinogenicity of all types of asbestos, including chrysotile, as well as states that the most effective way to eliminate asbestos-related diseases is to stop use of all types of asbestos, stressing the impossibility of asbestos “controlled” use. The declaration highlights the increasing global burden of asbestos-related diseases, also affecting those countries that banned asbestos, because of the long latency period of these diseases (6).

ILO adopted the “Resolution Concerning asbestos” in June 2006, recognizing that the elimination of the asbestos use, and the identification of the most appropriate management of asbestos currently in use, are the most effective prevention actions to protect workers from asbestos exposure. The resolution stresses that the ILO Convention on asbestos n. 162 of 1986 should not be used to provide a justification for the use of asbestos considering that all forms of asbestos, including chrysotile, are classified by IARC as known human carcinogens (14).

Despite the aforementioned actions promoted by WHO and ILO, an effective regulation of the international trade of chrysotile asbestos has never been reached within the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (United Nations). In 2002, the European Union and Chile presented the first request for inclusion of chrysotile asbestos in Annex III of the Rotterdam Convention as an industrial chemical dangerous to human health and environment. The voting of the Conference of the Parties in 2004, as well as in 2006, 2008 and 2011, did not reach a unanimous consensus. The most important producers of asbestos chrysotile (Canada, Russia, Kazakhstan) and consumer countries (India) voted against the adoption of a national decision-making process on import and export of asbestos chrysotile, namely PIC Procedure. They rather claimed the “controlled” and “safe” use of chrysotile asbestos (15). It is important to underline that the adoption of the PIC procedure does not represent a global ban of a hazardous chemical, but it makes possible for importing countries to decide which are the hazardous chemicals that can be imported and to reject those that they are unable to safely handle on the basis of the advice regarding their toxicity. The most recent voting at the Conference of the Parties on the chrysotile was in May 2013 and, despite the increasing expectations for a different result, again a consensus was not reached. Consequently, the proposal to list chrysotile asbestos in the Annex III of the Rotterdam Convention will be considered in the next Conference of the Parties which will be held in 2015 (16). This prolonged impasse exemplifies the impact of political and economic strategies on population’s health and the environment at local, national and global level.

The specific case of Italy, whose industrial development from late nineteenth century up to the asbestos ban in 1992 was characterized by asbestos mining and industrial use, has been extensively investigated (17-19). The most recent report on the occurrence of pleural mesothelioma in Italy (20) shows a national mortality rate of 1.7 cases per 100,000 (corresponding to about 1,000 annual deaths) with significant spatial clustering in correspondence to asbestos-cement manufacturing plants, petrochemical facilities, shipyards, other industries characterized by use or presence of asbestos and geologically contaminated areas.

Taking into account asbestos-related mortality from neoplasms other than mesothelioma and from asbestosis, a conservative estimate of the current burden of asbestos-related disease in Italy could be of about 2,000 yearly deaths. Twenty-one years have elapsed since the 1992 asbestos ban, and a National Asbestos Project has been launched by the Ministry of Health in order to promote research on a number of priority issues in the domains of aetiology, pathogenesis, diagnosis and treatment of asbestos-related disease (www.iss.it/amianto) (21).

The Italian experience has now the potential to contribute to the global prevention of asbestos-related disease. Cooperation among researchers, health and law professionals from countries that banned asbestos together with those from countries that still did not is worthwhile and urgent. Training and information dissemination can contribute to create awareness on the increasing social costs caused by delaying asbestos ban. Countries with well-established public health policies and practices for preventing asbestos-related diseases can supply their expertise and technology to those countries where asbestos is still manufactured and used, supporting their gradual transition (22). The above-mentioned Italian National Asbestos Project includes activities of international cooperation that are founded on previous initiatives of ISS that were designed for Latin American setting (23-25).

Although this brief description of the asbestos case is far from being exhaustive, it allows the identification of the key implications for global health. First, the asbestos case testifies the links between public health, environment and socio-economic development, corroborating the need for a cross-disciplinary approach. Second, national or global asbestos ban has transnational socio-economic implications related to global health. Third, the relevance of international cooperation for contributing to create awareness and preparedness to effectively address prevention action and the treatment of asbestos-related diseases. Finally, even if the global ban has not yet been achieved, the increasing number of national bans will certainly lead towards the successful epilogue of this long-lasting struggle.

References

1. Koplan JP, Bond T, Merson M, Reddy K, Rodriguez M, Sewankambo N. Towards a common definition of global health. *Lancet* 2009;373(9679):1993-5.
2. Marušić A. Global health – multiple definitions, single goal. *Ann Ist Super Sanità* 2013;(49)1:2-3.
3. Asbestos scandal [Editorial]. *Nature* 2010;468:868.
4. Kirby T. Canada accused of hypocrisy over asbestos exports. *Lancet* 2010;376:1973-4.
5. Cullinan P, Pearce N. The asbestos disease epidemic: here today, here tomorrow. *Thorax* 2012;67(2):98-9.
6. World Health Organization. Elimination of asbestos-related diseases. Geneva: WHO; 2006. Available from: www.who.int/occupational_health/publications/asbestosrelatedddiseases.pdf; last visited 4/12/13.
7. World Health Organization. *Elimination of asbestos-related diseases*. Geneva: WHO; 2006. (Fact sheet N. 343).
8. International Agency for Research on Cancer. Asbestos, (chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite). In: *Metals, arsenic, dusts and fibres. A review of human carcinogens*. Lyon: IARC; 2012. (Monograph on the Evaluation of Carcinogenic Risks to Humans vol. 100C). p. 219-309.
9. Park EK, Takahashi K, Hoshuyama T, Cheng T-J, Delgermaa V, Giang Vinh Le, Sorahan T. Global magnitude of reported and unreported mesothelioma. *Environ Health Perspect* 2011;119(4):514-8.
10. Virta RL. *Worldwide asbestos supply and consumption trends from 1900 to 2000*. Denver, CO: U.S. Department of the Interior, U.S. Geological Survey; 2003. (Open-File Report 03-83).
11. Virta RL. *2011 Mineral Yearbook. Asbestos (Advanced release)*. Denver, CO: U.S. Department of the Interior, U.S. Geological Survey; 2012.
12. Virta RL. *2012 Mineral Yearbook. Asbestos (Advanced release)*. Denver, CO: U.S. Department of the Interior, U.S. Geological Survey; 2013.

13. Kazan-Allen L. *Chronology of national asbestos bans*. International Ban Asbestos Secretariat (IBAS); 2013. Available from: http://www.ibassecretariat.org/chron_ban_list.php; last visited 4/12/13.
14. International Labour Organization. *Resolutions No. 95 (2006) (0/5) adopted by the 95th Session of the General Conference*. Geneva: ILO; 2006
15. Terracini B. Convenzione di Rotterdam: il crisotilo ancora in lista d'attesa. *Epidemiol Prev* 2008;32(6):275-6.
16. Rotterdam Convention Secretariat. *Extraordinary UN conference takes historic strides to strengthen chemical safety globally*. UNEP, FAO; 2013. Available from: www.pic.int/TheConvention/Media/PressReleases/ConferenciaExtraordinariade-lasUN/tabid/3230/language/en-US/Default.aspx last visited 4/12/13.
17. Comba P, Merler E, Pasetto R. Asbestos-related diseases in Italy: epidemiologic evidences and public health issues. *Int J Occup Environ Health* 2005;11:36-44.
18. Donelli G, Marsili D, Comba P. *Le problematiche scientifico-sanitarie correlate all'amianto: l'attività dell'Istituto Superiore di Sanità negli anni 1980-2012*. Roma: Istituto Superiore di Sanità; 2012. (I beni storico-scientifici dell'Istituto Superiore di Sanità, 9).
19. Fazzo L, De Santis M, Minelli G, Bruno C, Zona A, Marinaccio A, Conti S, Comba P. Pleural mesothelioma mortality and asbestos exposure mapping in Italy. *Am J Ind Med* 2012;(55):11-24.
20. Fazzo L, Minelli G, De Santis M, Bruno C, Zona A, Marinaccio A, Conti S, Pirastu R, Comba P. Mesothelioma mortality surveillance and asbestos exposure tracking in Italy. *Ann Ist Super Sanità* 2012;48(03):300-10.
21. De Castro P, Marsili D, per il Gruppo di lavoro del Progetto Amianto. Progetto nazionale Amianto. *Not Ist Super Sanità* 2013;26(3):14-6.
22. Takahashi K, Kang SK. Towards elimination of asbestos-related diseases: a theoretical basis for international cooperation. *Saf Health Work* 2010;1(2):103-6.
23. Marsili D, Comba P, Bruno C, Calisti R, Marinaccio A, Mirabelli D, Papa L, Harari R. La prevención de las patologías del asbesto: perspectivas operativas de la cooperación italiana con los países de América Latina. *Rev Salud Pública* 2010;12(4):682-92.
24. Harari R, Marsili D, Comba P (Ed.). Cooperazione scientifica Italia (ISS) Ecuador (IFA). La prevenzione delle patologie da amianto: un problema di sanità pubblica. Roma: Istituto Superiore di Sanità; 2009. Italian and Spanish. (Rapporti ISTISAN 09/43).
25. De Castro P, Marsili D, Poltronieri E, Agudelo Calderón C. Dissemination of public health information: key tools utilised by the NECOBELAC network in Europe and Latin America. *Health Info Libr J* 2012;29(2):119-30.