

A call for an international ban on asbestos

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In order to eliminate the burden of disease and death that is caused worldwide by exposure to asbestos, the Collegium Ramazzini calls for an immediate ban on all mining and use of asbestos. To be effective, the ban must be international in scope and must be enforced in every country in the world.

Asbestos is an occupational and environmental hazard of catastrophic proportions. Asbestos has been responsible for over 200 000 deaths in the United States, and it will cause millions more deaths worldwide. The profound tragedy of the asbestos epidemic is that all illnesses and deaths related to asbestos are entirely preventable.

Safer substitutes for asbestos exist, and they have been introduced successfully in many countries. The grave hazards of exposure to asbestos and the availability of some safer substitute materials have led a growing number of countries to eliminate the import and use of asbestos. In the United States, there has been a drastic reduction in the use of asbestos. Asbestos has been banned by Sweden, Norway, Denmark, the Netherlands, Finland, Germany, Italy, Belgium, France, Austria, Poland and Saudi Arabia.

The health consequences of the use of asbestos in contemporary industrial society have been amply documented in the international scientific literature. The toll of illness and death among asbestos workers in mining, construction and heavy industry is well known. The pioneering work of British, South African and Italian investigators¹⁻³ laid the foundation for the definitive investigations by Irving Selikoff and colleagues of insulation workers in the United States. Selikoff's monumental studies showed, first, the greatly increased mortality rate of insulation workers⁴ and, later, the synergistic relationship between tobacco smoking and working with asbestos.⁵ Men who were followed for more than 20 years from the first exposure sustained excessive risks of lung cancer and mesothelioma, as well as the risk of other neoplasias.⁶ These risks affect not only those who work with asbestos, but also their families and neighbours (from material on clothing or plant emissions), users of products that contain asbestos and the public at large.

Asbestos is a general term applied to certain fibrous minerals long popular for their resistance, tensile strength and acoustic insulation properties. Asbestos minerals are divided into 2 large groups: serpentine and amphibole. There is only one type of asbestos derived from serpentine

minerals, chrysotile, which is also known as "white asbestos." Amphibole minerals include 5 asbestos species: amosite, crocidolite, tremolite, anthophyllite and actinolite. Two of these are the most commercially valuable forms: amosite, or "brown asbestos," and crocidolite, or "blue asbestos." The other amphibole minerals are of little commercial importance.

All forms of asbestos cause asbestosis, a progressive, fibrotic disease of the lungs. They can all cause lung cancer and malignant mesothelioma.^{7,8} Asbestos has been declared a proven human carcinogen by the US Environmental Protection Agency (EPA) and by the International Agency for Research on Cancer of the World Health Organization.^{9,10} Early indications that chrysotile might be less dangerous than other forms of asbestos have not been supported.¹¹ The preponderance of scientific evidence to date demonstrates that chrysotile also causes cancer, including lung cancer and mesothelioma.^{12,13} Canadian chrysotile that is amphibole free is still associated with mesotheliomas.¹⁴

A leading asbestos researcher, Julian Peto, and colleagues predict that deaths from mesothelioma among men in Western Europe will increase from just over 5000 in 1998 to about 9000 by the year 2018.¹⁵ In Western Europe alone, past asbestos exposure will cause a quarter of a million deaths from mesothelioma over the next 35 years. The number of lung cancer deaths caused by asbestos is at least equal to the number of mesotheliomas, suggesting that there will be more than half a million asbestos-related deaths from cancer over the next 35 years.¹⁵ In Sweden, Jarvholm has reported that the number of deaths caused each year by malignant mesothelioma is greater than the number of deaths caused in that country by all workplace injuries.¹⁶

An immediate international ban on the mining and use of asbestos is necessary because the risks cannot be controlled by technology or by the regulation of work practices. The strictest occupational exposure limits in the world for chrysotile asbestos (0.1 fibre per millilitre of air) are estimated to be associated with lifetime risks of 5 per 1000 for lung cancer and 2 per 1000 for asbestosis.¹⁷ These occupational exposure limits can be achieved in the United States and in a few other highly industrialized countries, but the residual risks are still too high to be acceptable. In newly industrializing countries engaged in mining, manufacturing and construction, asbestos exposures are often

much higher, and the potential for epidemics of asbestos disease is greatly increased.^{18,19}

Scientists and responsible authorities in countries still allowing the use of asbestos should have no illusions that the "controlled use" of asbestos is a realistic alternative to a ban. Moreover, even the best workplace controls cannot prevent occupational and environmental exposures to products in use or to waste. Environmental exposure from the continued use of asbestos is still a serious problem. A recent study of women residing in communities in Canadian asbestos mining areas found a 7-fold increase in the rate of death from pleural cancer.²⁰ Large quantities of asbestos remain as a legacy of past construction practices in many thousands of schools, homes and commercial buildings in developed countries and are now accumulating in thousands of communities in developing countries.

An international ban on the mining and use of asbestos is necessary because country-by-country actions have shifted rather than eliminated the health risks of asbestos. The asbestos industry has a powerful influence over many countries. Even in the United States, the asbestos industry succeeded in 1992 in overturning the EPA's recommended ban and phasing out of asbestos by a technical ruling in the courts. Canada, Russia and other asbestos-exporting countries have developed major markets in the newly industrializing nations. Conditions of current asbestos use in developing countries now resemble those that existed in the industrialized countries before the dangers of asbestos were widely recognized.

The commercial tactics of the asbestos industry are very similar to those of the tobacco industry. In the absence of international sanctions, losses resulting from reduced cigarette consumption in the developed countries are offset by heavy selling to developing countries. In a similar fashion, the developed world has responded to the asbestos health catastrophe with a progressive ban on the use of asbestos. In response, the asbestos industry is progressively transferring its commercial activities and the health hazards to the developing countries.

Multinational asbestos corporations have a deplorable history of international exploitation. These firms have opened large and profitable internal and export markets in Brazil, Uruguay, Argentina and elsewhere in South America, Mexico, India, Thailand, Nigeria and Angola. Brazil is now the fifth-largest producer and consumer of asbestos in the world, after Russia, Canada, Kazakhstan and China.²¹ Whereas asbestos use in the United States amounts to less than 100 g per citizen per year, asbestos use in Brazil averages more than 1 kg per citizen per year.

The grave health hazards of asbestos are entirely preventable. The health risks of asbestos exposure are not acceptable in either industrially developed or newly industrializing nations. Moreover, suitable, safer substitutes for asbestos are available. An immediate worldwide ban on the production and use of asbestos is long overdue, fully justified and absolutely necessary.

The Collegium Ramazzini (www.collegiumramazzini.org) was founded in 1982 by the late Professor Irving J. Selikoff of the Mount Sinai School of Medicine, New York. Its international headquarters are located in the Castello de Bentivoglio near Modena in Italy. The mission of the Collegium is to translate scientific data into public policy in the areas of environmental and occupational medicine. New members of the Collegium are elected by the current members. The Collegium is a nonprofit agency registered in Italy. Funds for the support of the Collegium are obtained from the bequests of private individuals and the dues of members. The Collegium receives no support from government, industry, labour unions, trial lawyers or other groups with a vested interest in the outcomes of the decisions of the Collegium. Individual members of the Collegium have wide and varied interests: some are involved in providing paid consultations to industry and to trial lawyers on various matters including asbestos claims. The Collegium Ramazzini's call for an international ban on asbestos has been published in a number of biomedical journals. As such, it may be freely copied.

Competing interests: None declared for Drs. LaDou, Landrigan, Bailar and Foa. Dr. Frank has provided testimony for both plaintiffs and defendants in legal cases concerning asbestos. All funds thus generated have gone to the university at which he was employed.

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