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Asbestos: Protecting the future and coping with the past

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Summary

All types of asbestos cause cancer in humans. It is thus estimated that hundreds of thousands of people around the world fall ill each year as a result of asbestos exposure in the workplace. These diseases do not develop immediately following exposure to asbestos, but appear only after a number of years. Three decades may pass between initial exposure to asbestos and the appearance of related disease symptoms, triggering a public health time bomb in all countries where workers are still not protected from asbestos. Although a ban on asbestos is necessary, there is also a need to cope with the past by eliminating or protecting ourselves from asbestos-containing material which is already in place.

Often, the removal of asbestos is perceived as an integral part of the decision to ban asbestos. The costs and difficulties related to the removal of asbestos-containing material is being used as an argument to impede the decision to ban asbestos. However, the removal of existing asbestos-containing material is not the primary concern: the most urgent step is to ban asbestos. The session will look into the practical implication of the different stages that will follow an asbestos ban, namely a) the removal of asbestos-containing material and b) the availability of alternative, substitute products.

A ban is inevitable

At the last General Assembly of the International Social Security Association (ISSA) held in September 2004 in Beijing, the Special Commission on Prevention adopted a declaration on asbestos in which it urged all countries to ban the manufacture, trade and use of all types of asbestos and asbestos-containing products as quickly as possible, (Annex 1). This appeal was repeated a year later at the XVIIth World Congress on Safety and Health at Work held in September 2005 in Orlando, in the United States of America. An information leaflet entitled "Asbestos: towards a world-wide ban" was published in 2006 in support of this appeal and in order to alert decision-makers and all the social partners to the devastating consequences, both human and economic, which policies based on short term interests would have in coming decades.[1] In fact, although asbestos may still be seen as a "magic mineral" by some, it is above all a "time bomb" and its prohibition is inevitable in the long run.

The Special Commission on Prevention is not alone in taking this stand. A number of international organizations, particularly the World Health Organization (WHO) and the International Labour Office (ILO), non-governmental organizations and other institutions have issued similar warnings, called for a rapid end to the use of all forms of asbestos, or even urged governments to ban it.

[1] International Social Security Association, http://www.issa.int/fren/domact/prev/prev.htm.

Whilst a ban on asbestos is needed to preserve the future, we also have to deal with the consequences of the past, in other words eliminate the asbestos which is in place or provide protection against it. This asbestos removal policy is often seen as an essential part of the measures surrounding a ban, although its implementation could be postponed. Emphasizing the costs and difficulties connected with asbestos removal may delay a decision to ban it. The most urgent priority is to stop introducing more asbestos. The next step is to design and implement a plan for the asbestos management, but this can be done later as resources become available. Implementation of these different stages can thus be staggered over time.

The international scientific consensus

The international scientific community has reached a clear consensus, based on numerous toxicological and epidemiological studies, that all types of asbestos are carcinogenic, even in small doses: there is no such thing as "good asbestos". The International Agency for Research on Cancer (IARC) classified the amphibole minerals as carcinogenic substances in 1973, before including all types of asbestos among the Group 1 carcinogens ("substances which are carcinogenic for humans") in 1977. Since this classification, further scientific research has confirmed the dangerousness of this substance. WHO confirmed the carcinogenicity of asbestos, including chrysotile, in its most recent publication on the subject (Elimination of asbestos-related diseases, September 2006).[2] There is no evidence of a threshold concerning the carcinogenic effect of asbestos and the risk of cancer has been observed among populations with very low exposures; as a result, WHO has underlined that "the most effective way to eliminate asbestos-related diseases is to stop the use of all types of asbestos".

The need for urgent action

Although once hailed as a miracle product, asbestos has in fact created an international health crisis and is directly responsible for thousands of deaths throughout the world. In many industrialized countries, asbestos-related mortality is higher than the total number of deaths from work accidents. The compensation systems in these countries have found themselves facing financial difficulties in recent years purely as a result of this issue. All the countries which use asbestos will inevitably have to pay high bills because of its impact on health and the economy. Although until now the number of cases of asbestos-related illness has remained low in certain countries, this can be explained by two major factors. Firstly, they have not yet reached the peak caused by the latency period (15-30 years or more). In addition, it is important to remember that the worldwide demographic evolution and longer life expectancy are likely to lead to an increase in the frequency of cancers related to asbestos exposure in all the countries using it, as indicated in particular by the European experience. Secondly, not all cases are notified. Certain countries do not have a surveillance system for

[2] World Health Organisation - Elimination of asbestos-related diseases, http://www.who.int/occupational_health/publications/asbestosrelateddisease/en/index.html

occupational diseases (or have a system which is not very effective); others do not recognize asbestos-related diseases, so the link between diseases and asbestos is not always indicated in the diagnosis. The fact that few or no cases of asbestos-related diseases are reported in a country, therefore, does not necessarily mean that there is no latent problem.

Sooner or later all countries which have produced and/or used asbestos will find themselves facing the same problems that others have been facing for years. At the national level, many European countries introduced a ban on asbestos in the 1980s. In July 1999, the European Union adopted a directive (1999/77/CE) instructing all its members to ban the trade and use of asbestos fibres and products to which they had deliberately been added, before 1 January 2005.[3] Up to now, approximately 40 countries throughout the world have banned all forms of asbestos (Annex 2).

It should be emphasized that exposure to asbestos is not restricted to the working environment; it affects the whole of society. Products containing asbestos can be found in many existing buildings (sprayed coatings, insulation, false ceilings, partitions...), particularly public and industrial buildings; it is also found in road surfaces, ships, airplanes, cars, lorries and in a multitude of professional as well as domestic appliances such as ovens, boilers, irons, work surfaces, taps, refrigerators, water heaters, electrical appliances; and these are only a few of the many examples. It thus affects the entire population.

The chrysotile issue

In spite of consensus within the international scientific community on the carcinogenicity of all types of asbestos, and contrary to the advice and recommendations of the international bodies some associations and lobbies, including the governments of certain asbestos-producing countries, continue to support the use of chrysotile (white asbestos); their arguments need to be critically examined.

The main argument is that chrysotile is less carcinogenic and therefore less dangerous than the amphiboles, including blue asbestos. The scientific argument is based on studies which indicate that the chrysotile is less biopersistant (persistence of the fibres in the lungs after their deposit) than other types of asbestos. This ignores the well-proven scientific fact that biopersistance is not the only factor affecting carcinogenicity.

Another argument concerns the harmful effects of certain fibres used as a substitute for asbestos. This argument is not groundless; the IARC has indeed classified type E and

[3] *Commission Directive* 1999/77/EC of 26 July 1999 adapting to technical progress (asbestos) of Annex I to *Council Directive* 76/769/EEC on the approximation of the laws regulations and administrative measures of the member States relating to restrictions on the trading and utilization of certain dangerous substances and preparations (text of interest to the *Espace Économique Européen* (EEE)). *Journal officiel* No. L 207 dated 6 August 1999, pp. 0018-0020. http://eur-lex.europa.eu/JOIndex.do?ihmlang=fr

475 refractory cement fibres and glass fibres for special uses in group 2B ("substances which may be carcinogenic for humans"). It is worth noting that the use of these particular fibres is limited, mainly because of their high cost. Furthermore, it is a criticism which cannot be applied to the vast majority of substitute products in widespread use.

Finally, while recognizing that chrysotile can produce lung cancer following high exposure over long periods, its defenders invoke the fact that studies on low exposure to pure chrysotile have not detected any effects on health and thus recommend its "secure and responsible" utilization. This ignores the evidence concerning the failure of this type of controlled use policy implemented in the past by many industrialized countries which have since chosen a ban on asbestos as the only effective preventive measure. It is also important to bear in mind that asbestos is exported on a large scale towards developing countries were prevention is often less effective and where economic conditions are difficult; under these conditions an approach based on the "safe and responsible" use of chrysotile is even more illusory. It seems paradoxical to say the least, that those who recommend its "safe and responsible" use are also those who refuse to include chrysotile in the PIC list of dangerous chemical products (Prior Informed Consent Procedure) under the Rotterdam Convention, the aim of which is transparency and the sharing of information on the potential health and environmental risks between exporting and importing countries[4].

Substitution

There is no substitute product or fibre which combines all the qualities and technical performances of asbestos. Nevertheless, there is always a possible substitute for asbestos. The experience of those countries which banned asbestos twenty years ago provides ample proof of this. For example asbestos cement, which accounted for over 90 per cent of the asbestos market in the 1990s, is replaced nowadays by fibre cements - a mix of cement and fibres which may be cellulose, polypropylene, polyvinyl alcohol or aramide fibres. Manufacturing companies have adapted themselves. They have transferred to new products, and fears concerning possible closures and lay-offs have not been realized. New economic activities have been developed: asbestos removal, the manufacture of substitute products and fibres. The main alternatives to the traditional uses of asbestos are summarized in Annex 3.
It is true that substitute products, particularly fibres, are often more expensive than asbestos. However, this will not necessarily remain the case for certain substitute products once the so-called "security" measures recommended by its defenders for the continued use of chrysotile, have been implemented. In any case, this additional cost must be considered in the light of the enormous cost of asbestos-related diseases to society.

[4] Rotterdam Convention: Share responsibility. Prior Informed Consent Procedure, http://www.pic.int/home.php

The carcinogenicity of certain substitute fibres remains under close surveillance and the development of substitute products continues. Doubts remain as regards the health effects of certain fibres which up to now have not been fully examined, because seldom used.

The management of asbestos already in place

The ban and the removal of asbestos are two different stages which can be carried out at different times and must be addressed separately. Nevertheless, measures need to be taken as regards the asbestos which is already in place. A number of countries banned asbestos as long as twenty years ago and they have acquired experience in this area. Nowadays, it is in the developing countries that the management of this risk may present difficulties, for reasons that are both technical and financial. However, even where the necessary resources are lacking, relatively simple solutions can be adopted, at least temporarily, to reduce exposure. The examples provided can be extrapolated to other asbestos exposure situations.

In all countries whatever their level of development, the processing industries have sufficient technical skills to enable the good practices developed in the period 1980-1990 to be used for the removal of existing asbestos (removal of insulation, replacement of joints…). The same is true of high-rise buildings, although their decontamination poses the problems of cost and of the treatment of the asbestos waste. In such circumstances it may be better to maintain the asbestos in place for as long as possible (depending on the state of the spray coating) perhaps by sealing it off. If the latter solution is chosen, special preventive measures will have to be used to treat these substances at a later date.

It is better to avoid treating false ceilings and flooring whenever possible. In the case of damaged materials, wet removal is preferable and the asbestos must be permanently removed from circulation. The use of the term "removal" rather than "destruction" is underlined, because the aim is to maintain the integrity of the substance. However, it is impossible to carrying out cabling tasks under acceptable conditions of security in the presence of false ceilings containing asbestos.

Asbestos cement pipes for drinking water or sewerage should also be left alone. If action is absolutely necessary, only manual or slow rotation tools should be used to cut them. If they must be replaced, a material should be used which does not contain asbestos and the asbestos pipes should be permanently disposed of in secure landfill sites.

The ideal solution for cladding and roofing materials (corrugated or flat sheeting) is to dispose of it permanently after removal. If prevailing practices and economic conditions prevent it, then possible re-users should be warned of the risks and provided with information on the practices which present the least danger: removal, use of manual or slow rotation tools, humification. The need to prohibit the use of all rapid rotation tools must be underlined in all cases.

Asbestos can also be found in brake linings and clutch assemblies in old cars, particularly imported vehicles. The use of blowers must be prohibited in work on this type of equipment, the best possible respiratory protection must be worn, and humid decontamination processes should be applied. Non-asbestos substances should be used to replace brake couplings and drums, and precautions should be taken with certain imitations from countries which use asbestos.

The situations listed are not exhaustive, but these recommendations can be used as a basis for dealing with other articles containing asbestos. They can help to reduce the risk of exposure to asbestos when resources are limited. These recommendations are not entirely satisfactory and cannot equal the good practices described elsewhere. They can only provide temporary solutions.

Generally speaking, care should be taken in all sectors of activity (industry, structural and finishing works, transport, outfitting …) to ensure that the products used no longer contain asbestos; in case of doubt, the supplier should be asked to certify its absence.

Secure landfill sites for the permanent disposal of asbestos are essential if asbestos removal measures are to be effective, whatever the asbestos-containing substance. The creation of these landfill sites must be among the first steps taken when implementing a policy for the management of asbestos in place in the environment.

Conclusion

Both the health and economic effects of asbestos use, plead in favour of its prohibition. A ban is inevitable in the long run and this decision should be taken as soon as possible in order to preserve the future. Experience shows that there is always a possible alternative. The management of asbestos in place is the next step. This management of the past can be introduced gradually depending on the technical and financial resources available. In order to do so, secure landfills need to be rapidly created for the permanent disposal of asbestos.

Based on the foregoing, the ISSA Special Prevention Commission feels that it must continue to issue warnings on the devastating consequences, both now and for the future, of the use of all types of asbestos. It will renew its warnings and repeat its call for a ban for as long as is necessary.

Annex 1

Declaration on Asbestos, Beijing 2004

The *Special Commission on Prevention* of the International Social Security Association (ISSA), assembled in Beijing on 16 September on the occasion of the 28th General Assembly of the Association, issues the following appeal to governments in asbestos-producing countries:

- Asbestos is a natural mineral. Epidemiological findings show that all forms of asbestos fibre dust formed during extraction, transformation and utilization of all forms of asbestos, including chrysotil, are carcinogenic to humans. According to extrapolations of statistics on asbestos-related illnesses (asbestosis, lung and larynx cancer, mesothelioma), it is estimated that hundreds of thousands people around the world fall ill each year as a result of asbestos exposure in the workplace. To date, thousands of people die as a result of these diseases.

- Throughout the 20th century, asbestos has been used for the manufacturing of the most diverse products. Whatever the different transformation this material has gone through, its dangerous characteristics still remain latent.

- Several hundred million US dollars have already been spent for compensation payments. A number of companies have filed for bankruptcy after being faced with overwhelming compensation claims.

- Despite the devastating effect it has on the lives and health of people and the looming economic threat it poses, approximately 2.5 million tonnes of asbestos are still manufactured each year.

- It took three decades of protracted efforts and the emergence of suitable alternatives for a comprehensive ban on the manufacture and use of asbestos and asbestos-containing products to be adopted in a number of industrialized countries. These countries now permit the handling of asbestos only during demolition, renovation and maintenance work.

- Decades may pass between initial exposure to asbestos and the appearance of related disease symptoms, triggering a public health time bomb in all countries where asbestos has not been banned.

The ISSA *Special Commission on Prevention* urges all asbestos-producing countries to ban the manufacture, trade and use of all types of asbestos and asbestos-containing products as soon as possible.

Annex 2

List of countries where asbestos is banned (May 2006)

Argentina	Japan
Australia	Kuwait
Austria	Latvia
Belgium	Lithuania
Chile	Luxembourg
Croatia	Malta
Czech Republic	Norway
Cyprus	Netherlands
Denmark	Poland
Estonia	Portugal
Finland	Seychelles
France	Slovakia
Gabon	Slovenia
Germany	South Africa
Greece	Saudi Arabia
Honduras	Spain
Hungary	Sweden
Iceland	Switzerland
Ireland	United Kingdom
Italy	Uruguay

Annex 3

Main substitutes

Asbestos category	Types of use	Substitute methods/materials
I. Raw asbestos in bulk	wadding, sprayed insulation, heat- and soundproofing	• mineral wools (glass, rock, slag) and ceramic fibres (never in sprayed insulation) • coatings, plaster lagging with vermiculite, mica, etc. as additive • panels, lagging using various silicates • cellulose
II. Asbestos in powders, mineral products (except asbestos cement)	coatings, façade coatings, fire resistant plaster coatings, mortars, adhesives, fire resistant mortars, refractory mortars, grinding powders	• various non-fibrous mineral products: • carbonates, silicates, perlite, vermiculite, mica, etc.
III. Asbestos in liquids or pastes	adhesives, coatings, putties, foams, sealant pastes, paints	• limestone or clay additives • cellulose • mica
IV. Asbestos sheet or board	• partitions, false ceilings, sheet, felts, filters, papers • card, lagging, panels, board	• MMMF (panels, underlays) • clay and silicate foams, vermiculite aggregates • above-mentioned materials plus
V. Woven or braided asbestos	tape, cushions, rope, blankets, mattresses, stuffing boxes, curtains, ribbon, textiles, packings, fire-resistant clothing	• PE, PP, PA, PTFE plastics (for low temperatures) • carbon, aramide and steel fibres • glass fibres • rock fibres • RCF
VI. Asbestos in a resin or plastic matrix	• clutch assemblies, brake linings, electrical insulators, gaskets • plastics • wall coverings, floor coverings as tiles or rolls	• MMMF, aramides, carbon fibres, PTFE, steel, copper, non-fibrous materials • idem II or III • alternative technologies
VII. Asbestos cement	containers, weather-boarding, pipes, partitions, roofing and sheathing materials, boards, roof boards, windowsills, ducts, claddings	• cellulose, PP, polyvinyl alcool fibres • aramides • glass fibres (rare) • sometimes cotton, sisal, jute in some countries
VIII. Asbestos in "black products" (asphalt and bitumen)	weatherboarding with a bitumen finish, bitumen, bitumen adhesives, anti-corrosion coatings, sealant coatings, roof sealants, putties, road surfacings	• limestone additives • glass and rock fibres and wools except in road surfacings

Abbrevations used in the table:
MMMF: man-made mineral fibres; PE: polyethylene fibres; PP: polypropylene fibres; PA: polyamide fibres; PTFE: polytetrafluoroethylene fibres; RCF: refractory ceramic fibres.