International Chrysotile Association

chrysotileassociation.com

SAFETY IN THE USE OF CHRYSOTILE

REQUIREMENTS AND ACHIEVEMENTS

2019

CHRYSOTILE IS MOST EFFICIENT, USEFUL AND AMONG THE LEAST HAZARDOUS INDUSTRIAL FIBRES.

Nowadays technology, work practices and modern production methods make available to the world a unique industrial fibre: The controlled use of chrysotile presents no risk to people's health or to the environment.

CHRYSOTILE

For many decades throughout the whole world, very few, if any, natural or synthetic products or substances have caused such debate and conflict as "Asbestos".

Asbestos has been in the grip of a remarkable and very dangerous psychological phenomenon. Repeatedly we have seen the rise of absolute fear centered on perceived danger to human health. People are told and they faithfully believe that millions of people will suffer and die and this threat of a global disaster has been the springboard of the ban asbestos strategists.

Very few products, substances or minerals, natural or man-made, have been studied as closely as asbestos. Recent progress in understanding the mechanisms of action has been impressive, especially in the past two decades, when technology made it possible to understand how breathable fibres can affect the human body, in particular the size of the fibres, their biopersistence in the lungs and the level of exposure (dose). Research has clearly shown and proven that great differences exist between asbestos fibres and, thus, demonstrated that chrysotile fibres are really safer and can be used safely.

Today, distinction has to be made between chrysotile and the amphiboles varieties of asbestos. Numerous and exhaustive studies provide robust data and underscore the major difference in health risks between chrysotile and amphiboles. With the application of control measures, high-density products and the use of uncontaminated chrysotile fibres, there is no significant health risk for workers, the environment or the general public.

Chrysotile is used only in high-density products were fibres are encapsulated in a matrix and 95% of world use is in cement products.

Even knowing the difference between chrysotile and amphiboles, some persons still refuse to acknowledge their inherent differences and demand a complete ban on all asbestos fibres, including chrysotile. The proposed replacement or alternative fibres in many cases have not been scientifically proven safer, or as safe, as chrysotile.

Over the years, the combined efforts by governments, industry and labour organizations in several countries have successfully promoted and implemented guidelines for the safe and responsible-use of chrysotile fibres. These efforts must continue!

The following documents, which we are pleased to offer you, are not intended to be an exhaustive compendium of the knowledge amassed, as there are thousands of scientific papers written on asbestos and chrysotile.

The objective here is to give readers a comprehensive overview of today's chrysotile world.

THE CONCEPT OF CONTROLLED USE

In the area of occupational health, and specifically regarding the use of chrysotile, regulatory agencies in all countries have the responsibility to set workplace exposure limits that will reduce the risk to workers to the lowest possible level. That this exercise should be based on the most recent scientific assessment available would seem obvious.

Indeed, the latest scientific evidence published strongly supports the following views:

- Chrysotile is truly less hazardous than the amphibole forms of asbestos (e.g. crocidolite and amosite);
- Properly controlled and used, chrysotile in its modern day high-density applications does not present risks of any significance to public and/or worker health;

With regard to the first point, numerous recent published studies have indicated the reasons why chrysotile is so different from the amphibole varieties of asbestos, in particular the very low resistance of inhaled chrysotile fibres when they meet the acid environment in the lungs, and thus, their very low biopersistence and rapid clearance from the lungs. In contrast, the amphiboles are highly resistant to an acid environment and display very long biopersistence.

With regard to the second point, i.e., the concept of controlled-use and safety in the use of chrysotile, what exactly is involved in the concept of controlled use.

A number of scientific investigations from different situations in different parts of the world showing that the concept and the application of “Safety in the Use of Chrysotile” is indeed working, and that workers’ health and that of the general population are not at unacceptable risk, while providing cost-effective and safe applications to Society. Safe use is not a chimera, it is a well known reality nowadays.

TWO SCIENTIFICALLY-BASED PREMISES

1

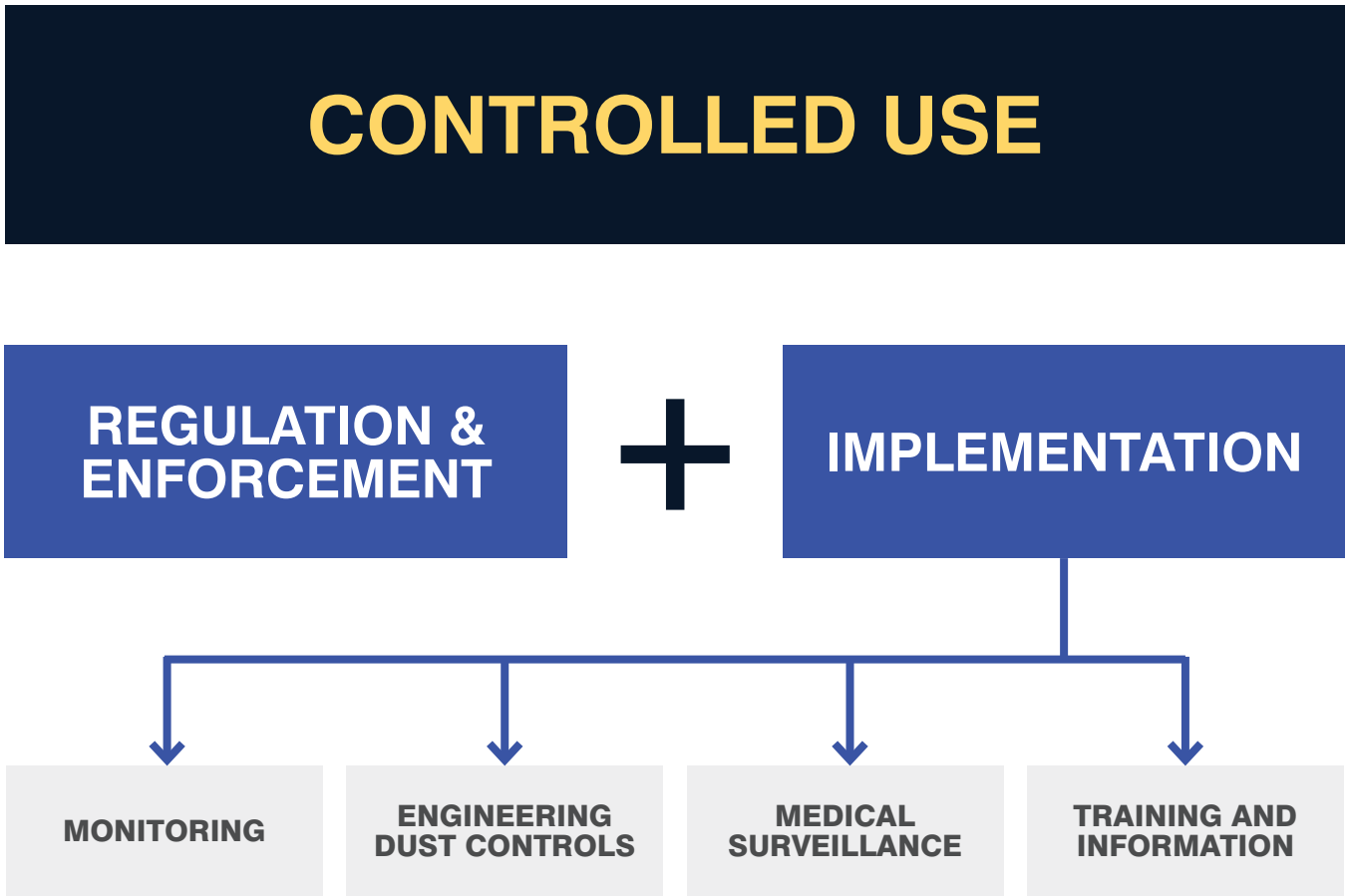
Chrysotile is truly less hazardous than the amphiboles.

2

Properly controlled, chrysotile presents no detectable health risk to the workers and the general public.

WHAT IS INVOLVED IN THE CONCEPT OF CONTROLLED USE

Controlled Use is based on scientific evidence. It involves:



CONTROLLED USE

REGULATION & ENFORCEMENT

The Competent Authority:

- Should offer its full support to stakeholders
- Sets exposure limits based on real science
- Determines measurements methods
- Receives and keeps records of activities
- May order to stop operations when there is negligence or bad faith
- Maintains constant open dialogue with employers, workers and labour unions
- The objective being to provide and maintain the best possible safe workplace and good jobs for people.

Regulation and Enforcement:

The establishment of regulations and their enforcement appears clearly as a government responsibility. A Competent Authority (CA) reporting to the government should have the determination to support objective of safe and responsible approach proposing necessary measures for the safety of workers. This CA shall receive from the employers necessary of the various operations at each work site, namely:

- The nature of the work
- The location of the work site(s)
- The number of employees
- The duration of the work and the protective measures and programs in place

Based on real science, the CA should also be responsible for :

- The establishment of exposure limits
- The establishment of measurement methods
- The collection and record-keeping of the measurement results

With regard to enforcement of the regulations, the CA should assist the employers and workers when exposure limits are exceeded to rapidly correct the situation to ensure compliance with exposure limits.

In the presence of problems, the CA should offer its full cooperation and intervene until safe conditions are re-established.

Thus, enforcement of regulations and compliance with exposure limits requires from the competent authority, good faith, good will based on constant dialogue and interaction between the CA, the employers, the workers and the labor unions in order to ensure that controlled use program is well in place and effective.

A government responsibility through a qualified "Competent Authority"

CONTROLLED USE

IMPLEMENTATION

Monitoring

Monitoring must be carried out by well trained industrial hygienists, using recognized methods of sampling and counting.

Ideally, monitoring of the workplace should be done by a team comprising representatives from both the employers and the workers.

Measurements should be done on a regular basis, and the results should be reported to the employers, and to the workers and their labour organisation, as well as to the CA. This would ensure that corrective actions are taken when needed.

Dust Control

Adequate and efficient dust controls (ventilation; use of wet methods, etc.) should be in place at all sensitive working stations.

Proper functioning of dust controls should be constantly monitored in order to get at all times the best efficiency.

Medical Surveillance

Medical surveillance (MS) is an obvious necessity. It should be a permanent and well-organized activity. MS activities should include:

- Periodic medical examination of the workers, before, during and after cessation of employment;
- Such medical examinations should be established according to internationally recognized protocols (X-rays, lung function test, etc.);
- Workers must be informed of the results of the medical examinations;
- Records of individual workers examinations should be kept by the occupational physician.

Training and Information

Training:
Workers should receive adequate training and info on the safe handling and work practices in the plant and for on-site installations.

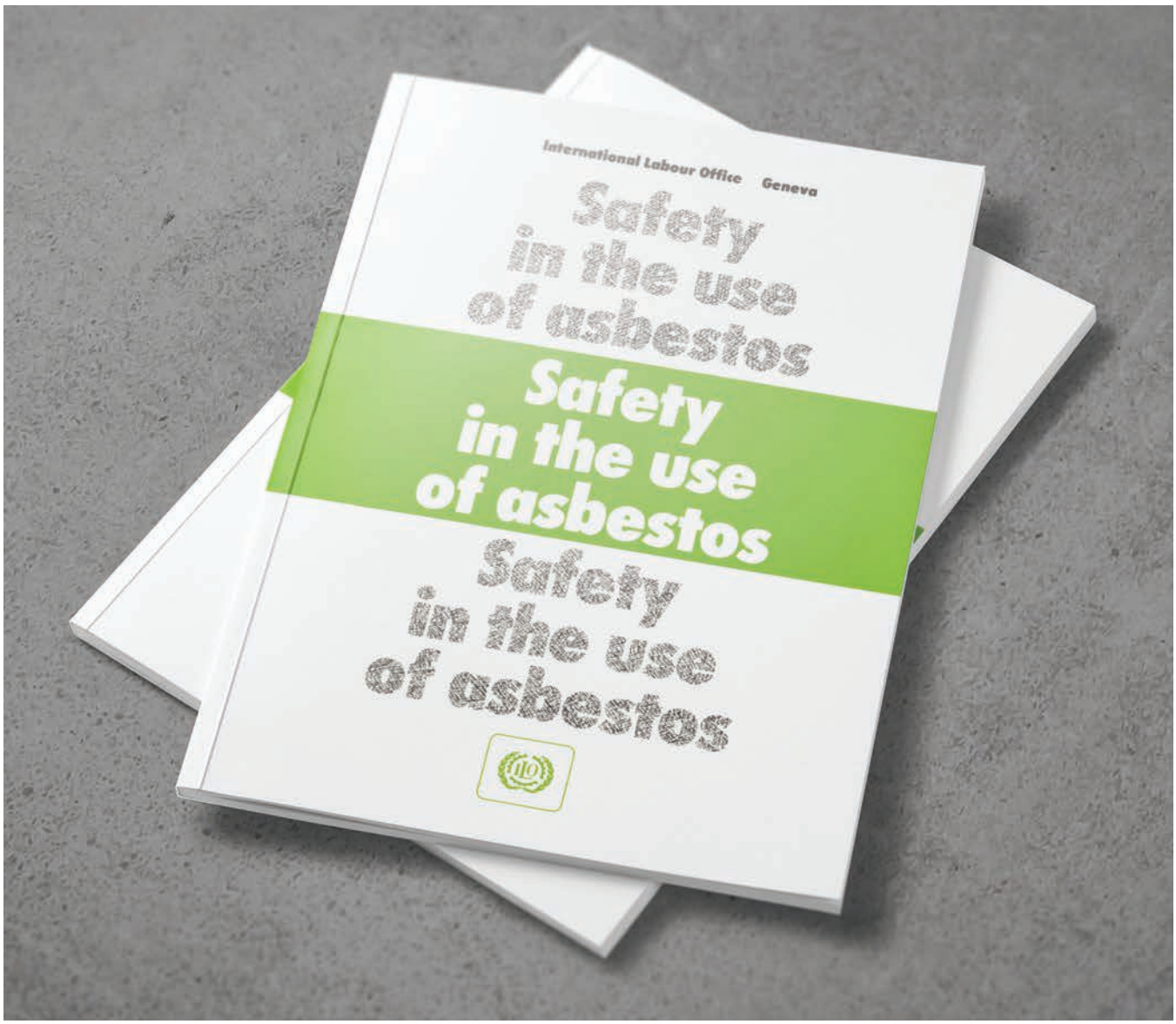
Information:
All starting materials and finished products must be labelled and should be easily accessible. Adequate warning signs, appropriate training and good information should result in a proper handling of the starting materials and the finished products.

CONTROLLED USE

The essential elements are detailed in the International Labour Organization (ILO) publication:

“SAFETY IN THE USE OF ASBESTOS” ILO CODE OF PRACTICE

Adopted by more than 100 membres states.



http://www.ilo.org/public/english/protection/safework/cops/english/download/e841853.pdf

REPLACEMENT PRODUCTS OR FIBERS TO CHRYSOTILE

The safety of replacement fibers and products is a critical subject that the WHO has not chosen as a priority and has not addressed the issue. It is mentioned that many national governments, regional bodies and international organizations have identified alternatives and substitutes for the use of asbestos. But where are the serious scientific published studies on this regard?

In 2005, a WHO/IARC workshop highlighted a worrying lack of research and data pertaining to many substitute products and recommended that serious scientific studies should rapidly be done for robust evaluation, before presenting acceptable recommendation regarding their use. What happened to that recommendation and why is the WHO not concerned about the potential and very real health effects of substitute fibers? Why ignore these risks?

International Convention 162 on the Safe Use of Chrysotile is very clear on this matter. When asbestos has to be replaced, it has to be by a substance, a product or fibers that are scientifically proven being safer and less harmful than asbestos. Nevertheless, the WHO keep silence on this matter on its publication.

INTERNATIONAL LABOUR ORGANISATION CONVENTION 162

2005

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ABOUT USA

IMPORTANT NEWS FROM UNITED STATES REGARDING CHRYSOTILE CEMENT PRODUCTS

EPA has published a final rule that will become effective in 60 days or about June 17, 2019.
This final rule states that **NO BAN** of asbestos cement pipes and skeets will be pursued in USA by EPA (Envinronmental Protection Agency).

SIGNIFICANT NEW USE RULE (SNUR)

It has been clearly indicated that following extensive research within the USA and foreing parties, and by interventions that occured in the USA, EPA has now concluded that asbestos cement pipes and sheets should be included in the SNUR final rule which is a signicicant and realistic outcome.
The essential of the final rule are:

NO BAN of asbestos cement pipes and sheets will be pursued in the USA.

NO RISK EVALUATIONS will be pursued for these pruducts.

FOR THE FUTURE the only requirement which has been the case since 1991, is that to begin again to manufacture or import pipes or sheets permission must be granted by EPA.

This decision his good news for the chrysotile world, for the safe and responsible use programme supported by ICA , for the emerging countries that for many of them are badly in need for an affordable and effective product that can be used safely.

EUROPEAN COMMISSION

DIRECTIVE 1999/77 EC, JULY 26, 1999

Article No. 10: Ban Effective January 1, 2005

"Whereas the scientific knowledge about asbestos and its substitutes is continually developing: whereas ***the Commission will therefore ask the Scientific Committee on Toxicity, Ecotoxicity and the Environment to undertake a further review of any relevant new scientific data on the headline risks of chrysotile asbestos and its substitutes before 1 January 2003****; whereas this review will also consider other aspects of this directive, in particular the derogations, in light of technical progress; whereas, if necessary, the Commission will propose appropriate changes to legislation."*

SCIENTIFIC COMMITTEE ON TOXICITY, ECOTOXICITY AND THE ENVIRONMENT (CSTEE)

DECEMBER 17, 2002

Last conclusion

"The CSTEE also reiterates its recommendation that these conclusions should not be interpreted in the sense that environmental control of the workplaces where the substitute fibres are produced or used can be relaxed. ***Finally, the CSTEE strongly recommends expansion on research in the areas of toxicology and epidemiology of the substitute fibres as well as the technology of development of new, thicker (less respirable) fibres.****"*

INTERNATIONAL AGENCY ON RESEARCH ON CANCER (IARC)

WHO Workshop on Mechanisms of Fibre Carcinogenesis and Assessment of Chrysotile Asbestos Substitutes, IARC, Lyon, France, September 7-10, 2005

Request for data and list of priority alternatives for assessment

Background

The tenth session of the International Negotiation Committee for the Rotterdam Convention on the Prior Informed Consent (PIC Procedure for Certain Hazardous Chemicals and Pesticides in International Trade requested the World Health Organization (WHO) to conduct an assessment of alternatives to chrysotile. At the request of WHO, the Interim Chemical Review Committee (ICRC) for the Rotterdam Convention considered alternatives proposed by governments and developed a priority list of alternatives for consideration by WHO, along with a list of additional alternatives for assessment. These lists appear in Annex I.

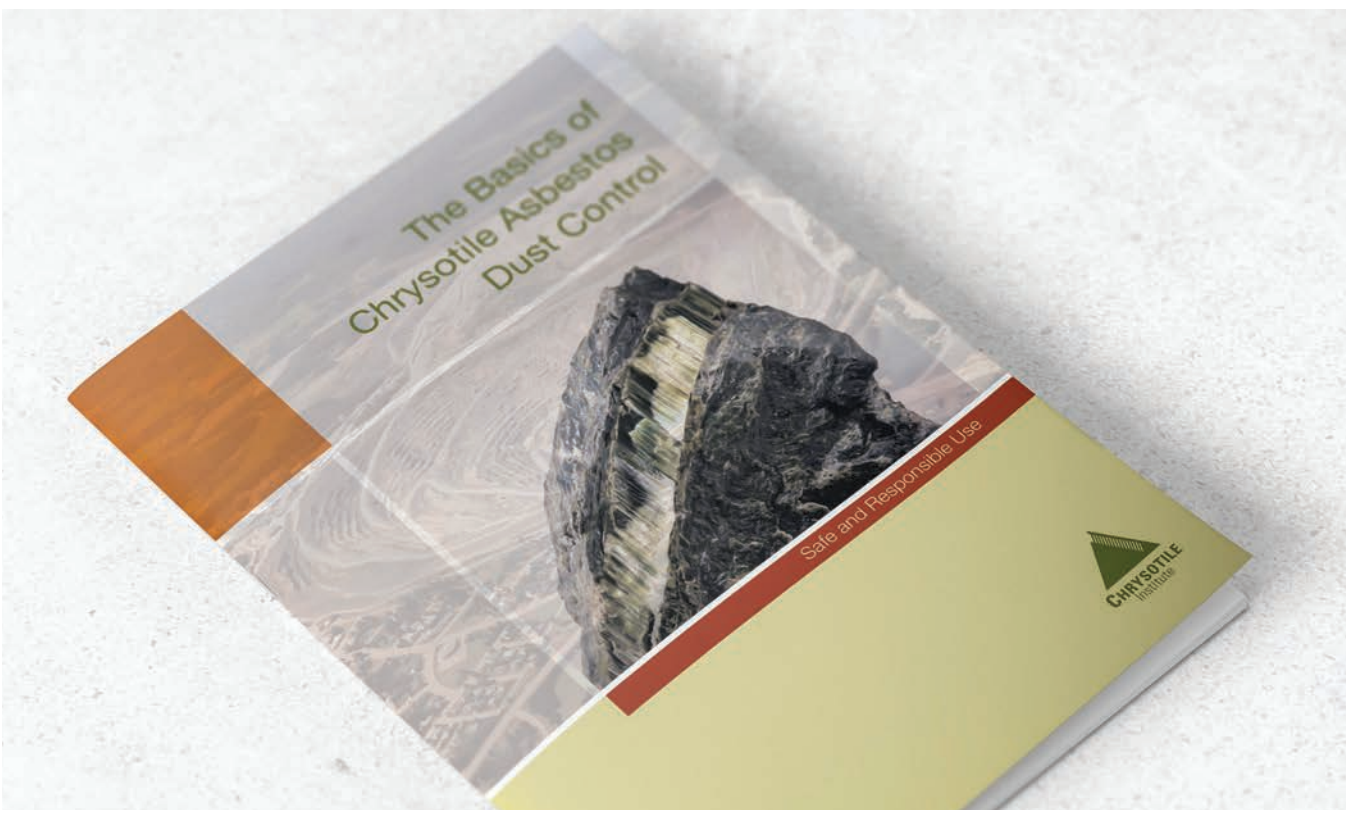
WHO advised the various meetings convened for the Rotterdam Convention that the requested assessment would be conducted as a technical workshop in conjunction with the International Agency for Research on Cancer (IARC), a specialized agency of WHO, and that the workshop would consider the mechanisms of fibre carcinogensis as part of the assessment of the alternatives proposed by the ICRC.

The proceedings of the meeting convened by IARC, November 8-12, 2005, *"Workshop on the Mechanisms of Fibre Carcinogenesis and Assessment of Chrysotile Asbestos Substitutes"* are eloquent. **For the majority of the substitute fibres evaluated by the group of international experts, the report indicates that there still does not exist sufficient data to classify chrysotile substitutes in any of the four categories used by the IARC.** "If there is not sufficient evidence at present to classify agents or activities in Group 1, then there is another category, "Group 3", where a suspected agent or activity is labelled as "not classifiable as to its carcinogenicity to humans."

THE EMERGENCE OF SUBSTITUTES

Over the last few decades, non-asbestos fibrous materials, both man-made and extracted from natural deposits, have been proposed and are presently used as substitutes for chrysotile. In industrialized countries, they can be found in many areas of applications of asbestos. There are wide variations in competitiveness according to price, availability, technical performance, ease of handling and mixing, compatibitity with other materials in composites, durability, etc.

Compared with chrysotile, evidence of biological activity of non-asbestos fibrous materials has been reported. Except for a limited number of materials products and fibres epidemiological scrutiny has yet to be undertaken in order to substantiate possible human health hazards. On the other hand, recently published results from cell, tissue and animal experimentation indicate that fibrous materials of respirable size reviewed display some degree of biological activity. These results suggest that their widespread production and use should be governed by appropriate monitoring and control of dust exposure, especially so for fibres which are long and thin, which display long “in vivo” durability (biopersistence). Thus, safety in the use of chrysotile should apply to all fibrous substitutes as well if one really wanted to protect people's health. **Science must prevail instead of propaganda.**



Today, countries that use chrysotile fibre represent 2/3's of humanity. Many of these countries are in various stages of development and can be classified as emerging countries, which are making great efforts to provide their populations with a better quality of life. To do so, they need high quality, durable products which are affordable and well adapted to local conditions, which include the imperative of job creation.

IS IT WORKING?

No detectable health risks
when chrysotile only is used in compliance with low exposure limits

Numerous scientifics studies have been published in recent years, that support this assertion that exposure to chrysotile that respects the occupational standard of ≤ 1 FCC is safe and in particular that the risk to health at this level of exposure is so low as not to be measurable.

"The challenge today is whether regulatory agencies will utilize current scientific knowledge even though it will necessitate a paradigm shift in long-held views on asbestos exposure and its implication for human health"

ASBESTOS EXPOSURE: HOW RISKY IS IT?
A position paper of the American Council on Science and Health
Ruth Kava, Ph.D. and Eun Hye Choi
October 2007

It is irrational to treat chrysotile differently from other products, fibres and substances that carry a potential risk.

The concept of safe, or controlled, use is well known internationally; it is accepted and applied for a multitude of other dangerous and carcinogenic substances such as wood dust, silica, lead, mercury, but also pesticides, herbicides, poisons of all sorts… how can anyone claim that it is impossible to apply it in the case of chrysotile?

On a daily basis, in all industrial environments and even in offices and residences, numerous substances are used that are potentially deadly or carcinogenic. Rather than ban these products, we have learned to use them safely. Why should it be otherwise with chrysotile?

The International Agency for Research on Cancer (IARC) has prepared a list of human carcinogens that includes more than 100 substances, compounds and activities.

Asbestos is included (without distinguishing among the different types of fibre), as well as silica, oral contraceptives, chromium, nickel compounds, X-Rays, vinyl chloride, alcoholic beverages, tobacco smoke, wood dust, products used in shoe manufacturing and furniture making, emanations from steel founding, the rubber manufacturing industry, aluminum production, etc.

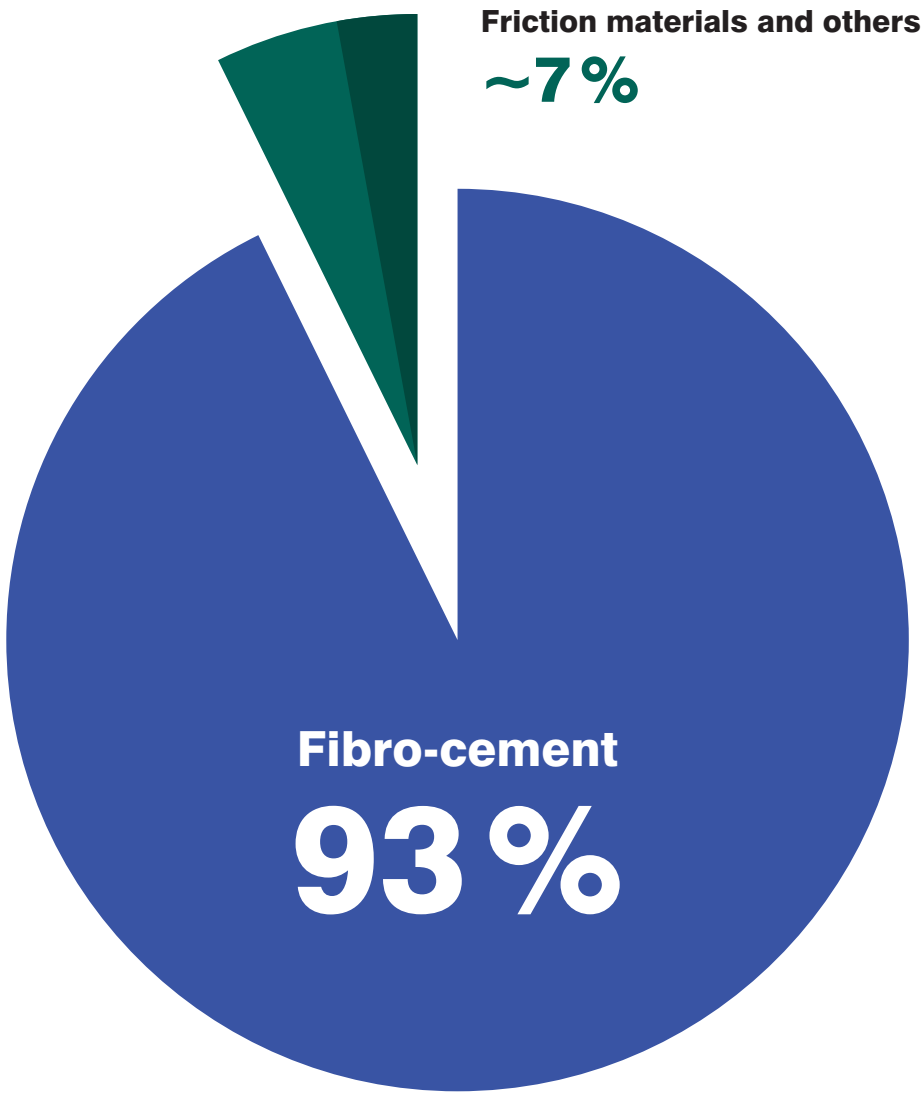
This IARC classification does not mean that these substances should be prohibited, but that they should be used safely and in a controlled manner.

The IARC classification is limited to identifying and characterizing potential. It does not evaluate risk, i.e., the probability that this potential will manifest itself in actual situations.

CHRYSOTILE USE

Nowadays, chrysotile is only used in high density non-brittle products.

Chrysotile fibres are locked in a matrix, therefore not suceptible to be released in the air.
Ex: Concrete, bituminous aggregates, gaskets, brake pads, etc.

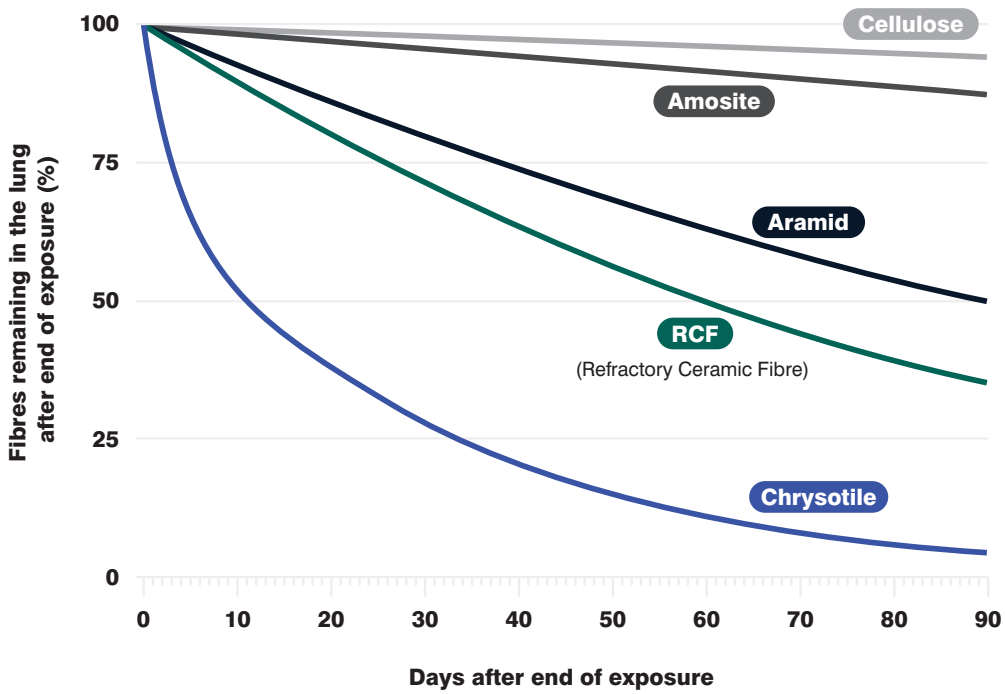


SOURCES: Chrysotile Institute

CHRYSOTILE AND AMPHIBOLES: DO NOT MIX THEM UP

Of all the fibres analyzed, chrysotile is the fibre which is most quickly eliminated from the body.

Biopersistence of several respirable fibres



Biopersistence is the lenght of time for inhaled particles to persist in the lungs and adversely affect surrounding tissues before they are eventually cleared.

Biopersistence studies have been carried out on a number of different respirable particles. It has now become clear that there are vast differences among various respirable particles presently used by industry.

There seems to be a continuum of values for biopersistence of mineral particles, from very short persistence (low durability) to practically indefinite persistence (very high durability).

CONCLUSION

Where are we today

Misinformation about chrysotile asbestos is not the prerogative of the official world but is particularly rife in the public domain. The anti asbestos propaganda trough the media in their constant search for sensationalism have created a climate where the word "asbestos", now causes immediate panic verging on hysteria. As with some other environmental problems, heavy occupational exposure to asbestos is counted equal with very low environmental exposure to chrysotile. It is badly wrong.

Many years ago exposure was high and the level of disease also high. Unfortunately today this legacy is translated by many to a death sentence following the tiniest exposure in public arena. A nonsense interpretation that needs to be redressed Modern studies (Camus, 1998) of the very large population who live near chrysotile mines or on chrysotile ore bodies has shown that there is no excess asbestos-related disease in these areas.

Today chrysotile cement sheeting and other chrysotile reinforced cement and other products are manufactured in a controlled fashion. Fibre levels in the factories are governed by legistlation and strict work practices. The very low levels of exposure to chrysotile industrially have not been shown to produce a significant risk of disease (Wong, 2001; Rodelsperger et al., 1999). The reality today is that chrysotile products may be made safely and used without concerns. The great chrysotile fibre in its used today is a boon to people, for the economy and also for the environment.

Science must prevail.

The international agencies in charge of development should have as a clear priority to provide financial and technical assistance in poor countries to train workers to learn how to implement responsible and safe use techniques in using the chrysotile fiber. This assistance should consist in exchanging information, know how and best practices developed in chrysotile producing and using countries according to international standards elaborated by ILO. Thus it will enhance not only the skills of the workforce but it will build up domestic capacity of production and will add industrial value in those territories where the most vulnerable populations are in great need of housing, water and sanitation.

FOR ENVIRONMENTAL OCCUPATIONAL HEALTH SAFE AND RESPONSIBLE USE

International Chrysotile Association

chrysotileassociation.com