WHO activists are doing very little to support WHA decision

SCIENCE MUST PREVAIL

ICA
International Chrysotile Association

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WHO activists are doing very little to support WHA decision

SCIENCE MUST PREVAIL

1

ANSWERS AND ROBUST SCIENCE
SCIENCE MUST PREVAIL

On November 5, 2013, Dr. Maria Neira, World Health Organization **(WHO)**, Director, Public Health and Environment, gave an interview that was posted on YouTube thereafter.

As always, she supported the anti-asbestos crusade by coming out once again with their old same broken record. Nothing new!

Once again, she evidently refused to recognize the responsible objective established by the World Health Assembly **(WHA) — which is the sole authority over WHO —** in the decision taken in 2007 requesting that a differentiated approach be taken by Competent Authorities when regulating various forms of asbestos fibres types.

She repeated that the sole and unique acceptable approach is to support a global ban of all types of asbestos fibres, opposing then any responsible and controlled use programmes that are in place in numerous countries.

READERS WILL FIND IN ANNEX A THE PUBLISHED TRANSCRIPT OF THE INTERVIEW.

Nothing new has been explained or presented and one has no other choice than admit that this kind of propaganda lacks scientific credibility.

The ICA is pleased to present in this document responsible answers supported by numerous well-known scientific studies published over the recent years.

INTRODUCTION

On May 23, 2007, at the World Health Assembly, the Member States agreed to pursue a Global Action Plan, stating:

"...its activities will include global campaigns for elimination of asbestos-related diseases bearing in mind a differentiated approach to the two forms of asbestos – in line with international legal instruments and the latest evidence for effective interventions and…"

Furthermore, at the same occasion, Assistant General Director for Health and Environment, Mrs. Susan Weber-Mosdorf stated, in response to numerous interventions from representatives of Member States, relating to Asbestos and Health for the Workers, that the WHO strategies " should be considered by countries... according to their needs and conditions."

This is the WHO official policy as far as we understand it.

At the COP IV meetings of the Rotterdam Convention in Rome, Italy, in October 2008, Dr. Maria Neira, Director, Public Health and Environment Department of the WHO, made a presentation entitled: *"Sound chemicals management: relieving the burden on public health."*

Upon reading the comments by Dr. Neira, the WHO authorities have to recognize that they are in direct contradiction with the orientation given by the WHA regarding chrysotile asbestos fibres. It is an important divergence from WHO's official position.

The problem seems to be that some WHO officials have become more campaigners against chrysotile asbestos rather than defending and promoting WHO's officially stated policy, while ignoring many current scientific studies on responsible use of chrysotile.

Many times, concerns have been brought to the attention of WHO authorities related to statements made by some officials within the organization extolling an extreme negative position regarding chrysotile. However, this issue has not received the appropriate response it deserves, nor have necessary steps been taken by WHO authorities to remedy the situation. This is a major concern for a number of interested parties and creates an unfortunate situation.

THE GLOBAL ACTION PLAN

It is important to state clearly that all stakeholders are totally in support for responsible approaches to eliminate asbestos-related diseases in the world. As mentioned, some activists within the WHO have decided the only way possible to implement a national strategy aimed at eliminating asbestos-related diseases is to advocate and claim that a total ban of all forms of asbestos is the current policy. This approach is not reasonable and does not reflect the principles of the WHA decision and is not acknowledging the evidence from the most recently published scientific studies on chrysotile.

As for any product, substance or activity which may represent a potential health risk, the logic is to put in place programs and enforce legislation to ensure their safe and responsible use. Increasingly, there is a concern about the use of many substances and fibres that have not been scientifically well-studied and their innocuousness proven.

Yet, these are recommended and promoted as substitutes for chrysotile. This must be a matter of concern for WHO and must be taken into account in any actions to be taken.

The Global Action Plan must take all these factors into consideration before going ahead. It is more than reasonable that chrysotile producing and consuming countries should be involved in the development and implementation of such an action plan.

There are millions of workers involved in the international chrysotile industries. All these countries together represent more than two-thirds of the total world population. All parties of interest must be involved: workers, their organizations, governments and industry. **It is our firm belief that it is through the above joint process that success will be achieved for an action plan aimed at the elimination of asbestos-diseases in the world.**

The chrysotile world will provide full support, and is convinced that under WHO leadership, this joint process will result in addressing credibly these important issues in order to meet all the aspects of the adopted Global Action Plan by the WHA. All stakeholders will be involved instead of leaving such an important plan of action in the hands of some activists who have in mind no other objective than a global ban of chrysotile asbestos.

Dr. Maria Neira, director of WHO's Public Health and Environment was interviewed recently (February 2, 2014). The interview was posted recently on YouTube:
www.youtube.com/watch?v=8wgWg9bLj48

WHAT DID WE LEARN EXACTLY FROM THIS 16-MINUTE INTERVIEW?

Many organizations and many countries have asked, repeatedly, that the WHO anti-asbestos activists explain how they can confirm, based on reliable scientific data, their assumption that 100,000 deaths occur from asbestos exposure annually. To this day, no reply has been received from these persons and the chrysotile world is awaiting since many years.

Looking into very few given WHO data base of references on methods of estimation from a document entitled *"Health Statistics and Health Information Systems"* nothing new is supportive. Unfortunately, the statistics and the new or more recent publications referred oblige to conclude that they have failed and we believe these arguments widely used and peddled are based not only on science. The references are mostly commentaries, opinions, suggestions, estimates or extrapolations far from pure scientifically based data.

It is important to remember that, at the 95th Session of the ILO in June 2006, the representative from the United States of America asked the following question:

Preambular, Paragraph 3
332. "The Government member of the United States asked if the figure of 100,000 deaths a year could be justified."
www.ilo.org/public/english/standards/relm/ilc/ilc95/pdf/drafrep-css.pdf

The response to this question due to lack of fundamental explanation, lack of scientific serious basis and in no way validates Dr. Neira's ambiguous response. Furthermore, nowhere is it taken into account that there is a difference between the asbestos fibre types (amphiboles & serpentine), yet this difference is widely recognized (Hodgson JT, Darnton A. *The quantitative risks of mesothelioma and lung cancer in relation to asbestos exposure*. Ann. Occup. Hyg. 200 Dec.: 44(8): 565-601).

It appears reasonable to require that the responsible action by the WHO should be to identify the most recent published scientific studies which have been peer reviewed and which demonstrate with precision and exactness the validity of their statistics, taking into account the difference between the amphiboles and serpentine (chrysotile). If the WHO is aware of a study or studies which scientifically prove that a person having an occupational exposure to chrysotile (of 1.00 f/cc and below) and carries a measurable risk for health, they should without hesitation provide and disseminate such information.

Moreover, WHO is well aware that many scientific studies that have been peer reviewed, published, and analyzed indicate that at such a low level of exposure, the risk is so low as to be non-measurable. Since the anti-asbestos movement — including Dr. Neira's actions — is attempting to prove that there is no acceptable level of exposure to asbestos, it is imperative for WHO to make publicly known any genuine scientific recent studies and robust information they may have to substantiate their claims.

One can confirm that the rules established by the adopted International Convention 162 on the safe use of asbestos constitute a whole and unique legal body adopted by the Member States and must be interpreted taking in all embracing views. There is no justification for selective reading and interpretation.

NEW EUROPEAN UNION DIRECTIVE (Let's Recall This Tremendous Twist)

All stakeholders understand that the WHO is responsible, amongst others, to guide or identify better work practices or implement worker safety protection measures in every fields of industrial activities.

On many occasions, and particularly in recent years, the impressive number of replacement alternative fibres and products to chrysotile that are offered nowadays on the international market are a real matter of concern for competent authorities in all countries.

Too often, these replacement products are not severely subject to serious scrutiny and appropriate regulations as it has been the case for many years for chrysotile. For the most important part, they have not always been subject to scientific evaluation regarding their real potential risk for human health. Anti-asbestos leaders and other powerful lobbies are favoring substitute products and fibres but in too many cases, such substitution has not proven to be harmless.

It is important to recall once again an important amendment to Directive 2009/148/EC of the European Parliament and Counsel, on the Protection of workers from the risks related to asbestos exposure. It has to do with the omission of Recital (2) from Directive 2003/18/EEC after the codification procedure, which established the obligation of implementing a preventive approach in the use of asbestos substitutes. This new directive came into force in 27 countries of the European Union in January 2010.

In spite of the many interventions on the part of many interested countries and groups before the European Commission, countries are still waiting for a logical answer to such a change. Also despite the objections raised by the workers and contractors of 27 countries of the European Union and within European Economic and Social Committee (EESC) regarding this important part, it has finally disappeared from the legislative text. To our knowledge, no public notice or objections have been published by the WHO authorities and all anti-asbestos cheer-leaders kept a silence.

Recital (2) from Directive 2003/18/EEC underscores the importance of a preventive approach to the use of asbestos substitutes. This approach is particularly important in that workers who are exposed to substitute fibres and products nowadays, mostly in Europe, should be aware that they could pose health problems. This judicious and necessary warning suddenly disappeared from Directive 2009/148/EEC. The WHO must not, or cannot afford to be insensitive to the potential risks of exposure to substitute products and fibres to which are exposed millions of people worldwide. The world would like to know the fundamental reason which would have motivated such a decision (very surprising), and it should worry the competent occupational health and safety authorities.

This important omission, taking into account that millions of Europeans are presently exposed to substitute products and fibres, cannot leave competent authorities indifferent. In too many instances there are no studies or scientific data demonstrating their innocuousness or even their potential level of health risk. The question being …where does the WHO stand on this crucial issue?…

Considering all the efforts deployed by anti-asbestos lobby and anti-asbestos activists, including the ones working for the WHO against the use of asbestos in the name of health, and considering also the approach taken by the European Union regarding other potential risky replacement fibres and products (for example crystalline silica, the EU permits users to conclude a voluntary accord instead of regulating), it has to be understood that there are two measures: it is evidently incoherent, if not irresponsible. The silence of the anti-asbestos lobby and the evident distance taken by Dr. Maria Neira on this issue speaks for itself.

SCIENCE MUST BE THE GUIDING PRINCIPLE

Vigilance and controls regarding environmental and occupational exposures are needed, but the allocation of diminishing resources for research and the setting of public health priorities should be data-driven, not based on unsubstantiated or exaggerated claims.

In order to establish that a substitute product or substance is safer or less harmful, a genuine comparative risk assessment is necessary. It should cover a systematic review of studies (meta-analysis) in epidemiology and toxicology to evaluate the health effects of chrysotile compared to amphibole fibres and other products found on the market. This evaluation should be undertaken by a well-balanced team of experts in this field. Among other things, this evaluation should take into account contemporary work practices and potential exposures in comparable situations to obtain exact and credible data. This is a fundamental update which will make clear decisions on the use of chrysotile, or replacement fibres or products whose risk must also be scientifically documented.

Society has the responsibility of drawing the best conclusions taking into account risks and needs. It must be accepted that the chrysotile file has truly evolved over the years. Without minimizing the potential risk, its use today is completely different. The present work conditions and practices such as production methods are not at all similar to those of the unfortunate past. Amphiboles are no longer used. Sprayed-on methods are no longer permitted. Chrysotile is the only fibre used in high-density products that are not friable and in which the fibre is locked-in, therefore not airborne.

It is a well-known chrysotile policy for over many years that the work environment in the mines, mills and plants nowadays is well controlled and under constant surveillance. It is not true to say that there is nowhere in the chrysotile industries where its safe use is not possible.

Activists calling for a global ban of chrysotile insist that chrysotile is so dangerous, even if it is a crucial element in the economies of some developing or emerging countries, its production must be stopped as soon as possible. The rhetoric, often with an extremist flavor — like Dr. Neira's claims — setting themselves up as judges of good and evil, may become bad advisors to competent authorities when calling for change of orientation or hasty decisions. Consideration must be given to the lack of studies regarding the evaluation of risk associated with the use of chrysotile on one side and replacement fibres on the other. The approach to be taken to reach appropriate decisions must be dictated by science and not by political pressure or activists' crusade, vested interests or perceptions.

For many, many years various organizations working in the field of occupational health and safety, including some international organizations have asked that new, scientific studies be undertaken on the inherent risk of using chrysotile in comparison with other substitute fibres and products presently available on the international market (see reference).

Numerous international organizations have repeatedly requested for real and robust research, scientific reviews and analyses of substitute products or substances that present a real potential risk for human health. It has not been done.

One can find in the following references numerous demands formulated regarding the need for research and scientific reviews and analyses of substitute products presenting potential risk for human by competent authorities.

REFERENCES

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 FOR RESEARCH ON CANCER (IARC)

WHO Workshop on Mechanisms of Fibre Carcinogenesis and Assessment of Chrysotile Asbestos Substitutes, IARC, Lyon, France, 7-10 September, 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 (CRC) 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 1.

The 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 the WHO, and that the workshop would consider the mechanisms of fibre carcinogenesis as part of the assessment of the alternatives proposed by the IARC.

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.”

REPORT OF THE ROYAL COMMISSION ON MATTERS OF HEALTH AND SAFETY ARISING FROM THE USE OF ASBESTOS IN ONTARIO

1984

EXCERPTS:

"Crocidolite asbestos and amosite asbestos are more hazardous than chrysotile asbestos because fibres of crocidolite and amosite are more likely to conform to the most hazardous dimensions. They are also more likely to become airborne and hence to be respirable. The resulting hazard leads the Commission to recommend that the use of crocidolite and amosite asbestos be prohibited in Ontario."

"While asbestosis, a form of lung fibrosis, has been common among workers exposed to high asbestos concentrations in the past, the Commission believes that under the regulations it has recommended, asbestosis will become a disease of the past."

"Mesothelioma is most likely to result from crocidolite exposure, has a strong association with amosite exposure, and has a weak association with chrysotile exposure."

"There is no evidence of significant health risks to the general public from exposure to asbestos in the ambient air and in buildings unless the person is breathing in the immediate vicinity of loose asbestos that is being disturbed. The health risk posed by asbestos is therefore a workplace health risk rather than a general public health risk."

"The Commission links the health hazards of asbestos to inhalation, not swallowing. Neither biological nor epidemiological evidence indicates that swallowing asbestos creates a health risk."

"On the other hand, the disease risk that the Commission associates with chrysotile asbestos in general manufacturing and mining is much lower, so that here the current control limit of 1 f/cc is appropriate if properly enforced."

PROCEEDINGS OF THE WORLD SYMPOSIUM ON ASBESTOS

May 25, 26 and 27, 1982
Montreal, Québec, Canada

Sponsored by:
- Government of Canada
- Government of Québec
- Commission of the European Communities

Panel-1
QUESTIONS & ANSWERS PERIOD
(Page 77)

Dr. Selikoff, from what you have said this morning, it appears that you have not changed your views from what you once declared in 1976 on the TODAY SHOW of NBC, and I quote from press reports: "If asbestos fibres and other environmental sources of cancer are properly controlled, they do not have to be banned to protect society.

Are you still of the opinion today that asbestos need not be banned if properly controlled?"

SELIKOFF, Dr. Irving (United States)

"In the United States, we have a general policy of control — not banning. We have not banned radiation, we have not banned beryllium, we have not banned nickel, we have not banned dichloromethyl ether, we have not banned vinyl chloride.

WORLD HEALTH ORGANIZATION WORLD HEALTH ASSEMBLY

FINAL RESOLUTIONS – PAGE 86, ITEM 10
2007

"WHO will work with Members States to strengthen the capacities of the ministries of health to provide leadership for activities to workers' health, to formulate and implement policies and action plans, and to stimulate intersectoral collaboration. Its activities will include global campaigns for elimination of asbestos-related diseases; bearing in mind a differentiated approach to regulating its various forms; in line with relevant international legal instruments and the latest evidence for effective interventions."

Furthermore, to find wording about specific needs and conditions in the text of Outline on page 2: **"Countries can use this document according to the specific national and local conditions and available resources."**

WHA http://apps.who.int/gb/ebwha/pdf_files/WHA60-REC3/A60_REC3-en.pdf

INTERNATIONAL LABOUR ORGANIZATION (ILO)

POSITION
Convention 162

June 24, 1986, the ILO Convention 162, "Safety in the Use of Asbestos", was discussed and drafted by the ILO and has since been ratified by many countries, including most of the EU countries, Switzerland and Canada. The Convention is legally binding and in full force.

The key provision of the ILO Convention 162, Article 3, paragraph 1, reads as follows:
"National laws or regulations shall prescribe the measures to be taken for the prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos."

Thus the aim of the ILO Convention 162 is to promote the safe use of chrysotile at the workplace and not its ban. The main concrete measures to be taken to implement the safe use of chrysotile are stated in Article 9:

"The national laws or regulations adopted pursuant to Article 3 of this convention shall provide that exposure to asbestos shall be prevented or controlled by one or more of the following measures:

(a) making work in which exposure to asbestos may occur subject to regulations prescribing adequate engineering controls and work practices, including workplace hygiene;

(b) prescribing special rules and procedures, including authorization, for the use of asbestos or of certain types of asbestos or products containing asbestos or for certain work processes."

DIFFERENCES BETWEEN CHRYSOTILE AND AMPHIBOLE ASBESTOS ARE SCIENTIFICALLY RECOGNIZED

"Asbestos" is not a mineral in itself. It is a collective term given to a group of minerals whose crystals occur in fibrous forms. The term "asbestos" was adopted for commercial identification.

The six minerals commonly referred to as asbestos come from two distinct groups of minerals. One group is known as serpentines (chrysotile, white asbestos), while the other group includes several amphiboles (amosite, brown asbestos; crocidolite, blue asbestos; anthophyllite; tremolite, and actinolite). While both are all silicate minerals, the two groups are chemically and mineralogically distinct.

CHRYSOTILE

Chrysotile is a sheet silicate which is formed as a very thin rolled sheet. The sheet is about 8 angstroms thick (0.8 nanometers thick). It is composed of a sandwich of magnesium and silica. In the lung, the acid environment of the macrophage scavenger cells quickly breaks apart the sheet structure causing the fiber to decompose into small pieces. These pieces can be readily cleared from the lung. If the fiber is swallowed and ingested it is attacked by the even stronger acid environment (hydrochloric acid, pH 2) in the stomach. à

This is in contrast to the amphibole asbestos fibers which are formed as solid rods/fibers. The structure of an amphibole is a double chain of silicate tetrahedral which makes it very strong and durable. The external surface of the crystal structures of the amphiboles is quartz-like, and has the chemical resistance of quartz. The amphibole fibers have negligible solubility at any pH that might be encountered.

THE KEY FACTORS THAT DETERMINE FIBER TOXICITY:

Mineral fiber toxicology has been associated with three key factors:

- DOSE
- DIMENSION AND
- DURABILITY

DOSE

The dose is determined by the fiber's physical characteristics/dimensions, how the fibrous material is used and the control procedures that are implemented. In addition, the thinner and shorter fibers will weigh less and thus can remain suspended in the air longer than thicker and longer fibers. Most asbestos fibers are thinner than commercial insulation fibers, however, they are thicker than the new nano-fibers which are currently being developed.

DIMENSIONS

The fiber dimensions govern two factors: that: of whether the fiber is respirable and secondly, if it is respirable the dimensions are also a factor in determining their response in the lung milieu once inhaled. Shorter fibres of the size which can be fully engulfed by the macrophages will be cleared by mechanisms similar to those for non-fibrous particles. These include clearance through the lymphatics and macrophage phagocytosis and clearance. It is only the longer fibers which the macrophages can not fully engulf which, if they are persistent, can lead to disease.

The importance of fiber length in asbestos toxicity was first addressed in studies by Vorwald et al. (1951). Subsequently, dose, dimension and durability have also been shown to be important determinants for synthetic mineral fibers (Hesterberg et al. 1998 a&b; Miller et al. 1999; Oberdoester, 2000; Bernstein et al. 2001 a&b). The importance of durability in differentiating asbestos fiber toxicity between the serpentine mineral fiber chrysotile and the amphibole mineral fibers such as amosite and crocidolite has been addressed more recently (Bernstein & Hoskins, 2006).

DURABILITY

This leads to the third factor, that of durability. Those fibers whose chemical structure renders them wholly or partially soluble once deposited in the lung are likely to either dissolve completely, or dissolve until they are sufficiently weakened focally to undergo breakage into shorter fibres. The remaining short fibres can then be removed though successful phagocytosis and clearance.

WHA'S OFFICIAL POSITION

Dr. Neira states that the WHA resolution adopted in 2007 by Member States is not referring to any differentiated forms of asbestos. It is in her view a form of "legalistic" approach. Let's refer to some main abstracts of the final records of committees related to the discussion on this issue.

TWELFTH MEETING

The revised paragraphs from the draft global plan of action were as follows:

10. WHO will work with Member States to strengthen the capacities of ministries of health to provide leadership for activities related to workers' health to formulate and implement policies and actions plans, and to stimulate intersectoral collaboration. Its activities will include global campaigns for elimination of asbestos-related diseases **in line with international legal instruments and the latest evidence for effective interventions** and immunization of health-care workers against hepatitis B, and other actions addressing priority work-related health outcomes. **In implementing the global campaign for elimination of asbestos and related diseases, allowance should be made for a differentiated approach to regulating the various forms of asbestos, as laid down in the Rotterdam Convention, on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998).**

Dr. SHEVYREVA (Russian Federation) insisted on retention of the third sentence of paragraph 10 in the annex. Her Government was working actively on the ratification of the Rotterdam Convention and the adoption of provisions that contradicted the Convention would be inappropriate. **Her amendment simply proposed a differentiated approach to regulating asbestos and did not conflict with other countries' interests.**

Professor PEREIRA MIGUEL (Portugal) said that he had proposed the change in paragraph 10 after consulting experts. Could the Russian amendment be incorporated in the preceding sentence?

Mrs. WEBER-MOSDORF (Assistant Director-General) said that the reference in the second sentence to "international legal instruments" was broader; the third sentence would be repetitive and make the paragraph less clear. She asked whether the delegate of the Russian Federation could propose a revised formulation for the second sentence.

Dr. SHEVYREVA (Russian Federation) said that **it was important to reflect the need for a differentiated approach to regulating the various forms of asbestos.**

Mr. AITKEN (Representative of the Director-General) suggested that the words **"bearing in mind a differentiated approach to regulating the various forms of asbestos" could be inserted before the new text in the second sentence.**

Mrs. WEBER-MOSDORF (Assistant Director-General) **said that that wording was still too specific for a global plan aimed at tackling all the risks caused by hazardous chemicals. She would prefer to retain a broader formulation, but the decision rested with the Member States.**

Dr. SHEVYREVA (Russian Federation) said that there was **no need to mention asbestos again. The wording could be: "bearing in mind a differentiated approach to regulating its various forms".**

Mr. AITKEN (Representative of the Director-General) said that there appeared to be a slight majority in favor of the use of "endorses" in preference to "welcomes" in paragraph 1 of the draft resolution.

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC)

CLASSIFICATION SCHEME

Clarification must be made on the exact meaning of the terms "hazard" and "risk" used in the classsification scheme of the IARC

Hazard identification is a necessary but an insufficient component of risk assessment, which comprises also exposure data over time and estimation of the likely risk under actual conditions of use. Because of the conceptual confusion and indiscriminate use of the terms "hazard" and "risk", untoward fear of unwelcome end points, such as cancer, in many sectors of the general public, is driven by hazard data misrepresented as risk data.

Hazard Identification
A source of risk that does not necessarily imply a potential for occurrence. A hazard produces risk only if an exposure pathway exists and if exposures create the possibility of adverse consequences.

Risk Assessment
A process that involves the integration of data, hazard identification, exposure pathways and dose-response relationships to estimate the nature and likelihood of adverse effects.

IN FACT, THE REALITY IS…

It is known that chrysotile and amphiboles have been classified as Category 1 carcinogens (proven carcinogenic agents), such as cadmium, chromium, nickel compounds, silica, the sun's rays, vinyl chloride, alcoholic beverages, salted fish, tobacco smoke, saw dust, the manufacture and repair of shoes, the manufacture of furniture and cabinets, iron and steel foundries and the rubber industry. The International Agency for Research on Cancer (IARC) classification identifies a substance's hazard, not the risk.

Consequently, a substance classified in Group 1 does not mean that we should prohibit its use, only that it should be properly controlled.

Furthermore, there are many studies and an international consensus showing that chrysotile fibres (white asbestos) are definitely less dangerous. This certainty is the foundation of the ILO Convention, as well as of the regulations of most countries in the world. Two significant scientific events recently confirmed this fact:

(1) A group of scientists mandated by the EPA unanimously agreed that available studies on epidemiology indicate that for lung cancer, the carcinogenic potential of amphibole fibres was one hundred times (100 x) higher than that for chrysotile fibres. For mesothelioma, crocidolite would be 300 times higher compared to chrysotile.

(2) An important study on the biological persistence of chrysotile in the lung has shown, taking into account the scientific literature to date, that the report on this study provides solid new data that clearly confirm the difference, from an epidemiological point of view, between chrysotile and amphiboles.

WHAT WHO IS DOING FOR THE ELIMINATION OF ASBESTOS-RELATED DISEASES?

ANSWER

Other than supporting the vested anti-asbestos crusade, some WHO activists are doing very little. They refuse to hear any science that disagrees with their position and ignore the evidence of the "safe use" protocols that are accepted and recognized as effective tools to reduce the risk to workers health and conform in every respect to the ILO International Convention 162.

The World Assembly Resolution 58.22 on cancer prevention urges Member States to pay special attention to cancers for which avoidable exposure is a factor, including exposure to chemicals at the workplace. With Resolution 60.26, the World Health Assembly requested the WHO to carry out a global campaign for the elimination of asbestos-related diseases " …bearing in mind a differentiated approach to regulating its various forms – in line with the relevant international legal instruments and the latest evidence for effective interventions…" .

Let's be crystal-clear here: A ban if necessary, but not necessarily a ban. It is all a matter of the way a product is used and the level of safety offered by the replacement products.

There are many other products, materials and substances offered and used in the world today which present important levels of risk for health and the proposed responsible approach by the international policy is currently "safely produced and used under control".

Chrysotile is considered a valuable natural resource as is the case for many other minerals of worth to society. Its misuse of the past does not change its intrinsically beneficial characteristics. Chrysotile is a substance of significant social and economic value, particularly in emerging countries where it is widely used in highly, cost-effective, infrastructures applications, such as chrysotile-cement pipes for drinking water, irrigation and sewage. No one should forget that chrysotile is not the only substance exhibiting hazardous characteristics. Glass wool, wood dust, crystalline silica and some cellulose are among many other substances that have to be controlled to reduce the risk to an acceptable level.

WHO authorities are well informed that in many countries, users and producers of chrysotile, since many years have made a real effort to assist in drawing up national action programs and appropriate regulations and legislation to protect workers from exposure to chrysotile. The safe and responsible use of the fibres is certainly the appropriate route to take and this approach has often proven be effective. It is the most credible and knowledgeable approach.

Today's products are in proportion of somewhat 95% of chrysotile-cement, in which the fibres are locked-in or encapsulated in a matrix. Airborne fibre concentrations in a controlled use approach in chrysotile-cement manufacturing plants are 1f / cc or less. Such a situation should not present an unacceptable level of risk for people and proves that today chrysotile, when properly controlled, can and is being used safely.

There is conclusive evidence that chrysotile-cement building materials can and are being manufactured, installed and used safely. Unfortunately, the same cannot be said about substitute other fibres used as chrysotile substitutes. The substitute fibres are too often not regulated and furthermore are more expensive, less durable and unlike the minimal risk associated with chrysotile, their potential risk to the health of workers is scientifically unknown. The growing concern regarding chrysotile substitutes has been demonstrated by World Health Organization a "WHO Workshop on Mechanisms of Fibre Carcinogenesis and Assessment of Chrysotile Asbestos Substitutes" which was held at the International Agency for Research on Cancer in Lyon, France, November 9-12, 2005.

A ban of any product, of course, is the most burdensome of regulations and deserves to be weighed carefully. Let's recall for example that the U.S. EPA ban was challenged in the US Court system by a number of interested parties. The ban was overturned completely by the U.S. Court of Appeals for the Fifth Circuit on October 18, 1991. There were a number of reasons for this result, including the fact that the EPA had failed to prove that an unreasonable risk existed from the use of products banned, that such an action would actually "do more harm than good", and the Agency "failed to evaluate the harm that would result from increased risk of substitute products."

As mentioned above, scientific studies published in the very recent years, have consistently demonstrated that it is a fact… chrysotile fibres can be used safely. No one can be allowed to ignore the available scientific data and use factors other than those based on science, to make important decisions such as banning a product. There is a huge difference between certain perceptions maintained and promulgated by anti-asbestos lobbies and the facts dictated by science and the most recent published scientific literature on chrysotile.

It should be recognized however that global public opinion is divided on the issue of chrysotile. On the one side are the industrialized countries in which the majority public opinion leans toward a global ban on all types of asbestos, including chrysotile. These countries have the means to pay for costlier substitute products, even though they consume more energy, and create jobs in their industrialized countries rather than the countries in which they are sold. On the other side are the rapidly developing countries where demand for chrysotile is growing. In these countries, there is an urgent need for infrastructures and affordable housing. Financial resources are limited, and products containing chrysotile in many ways represent a preferable solution in terms of local job creation, energy savings, durability and cost. They know very well how to use chrysotile safely. Rich countries should be very careful not to impose their choices in the name of a morality geared by their vested interests.

Given the scientific knowledge that has been accumulated over the years, for theses countries, a ban would be as costly and poorly adapted to their reality. One thing is clear today, it is that although classified by IARC as carcinogenic — just like many other commonly used substances — chrysotile may be used in a controlled and responsible fashion if it is encased in another substance such as cement, asphalt or certain resins where fibers are not airborne. There are many studies to support this reality, several of which have been published for some time.

It is remarkable to note the extent to which pro-ban groups are increasingly refusing to address the science in this matter, relying instead on moralistic rhetoric. Also deplorable is the tendency of some spokespersons for health organizations, like Dr. Neira, to refute any science that doesn't agree with the anti-asbestos crusade which is not based on the validity of the real science, but on well selected sources of opinion.

Today's often very distressed world is presented as a result of the disparity between the rich and the poor, and a mind-boggling reality where 1.5 billion humans do not have access to potable water and 2.5 billion without access to basic hygienic infrastructures. In South-East Asia and in Africa, diarrhea is responsible for no less than 8.5% and 7.7% of the deaths (UNDP Report 2006). This translates into more that 8 million people who die each year for this reason, including approximately 2 million children. This is no longer poverty, it is great misery.

Today, countries which use chrysotile fibre represent two-thirds of humanity. It is those developing and emerging countries who are making great efforts to provide their populations with a better quality of life. To do this they need quality fibres and products, requiring little energy to produce, durable, well adapted to their reality at an affordable price and creators of jobs. Instead of bashing chrysotile, which answers all these criteria, let's take the most promising approach which is the continuing support in the transmission of expertise in the responsible and safe use methods and good work practices.

To do this, the Chrysotile world has been asking for a long time now and is asking again that the WHO review the most recent science, and notwithstanding the ferocious campaign by the anti-asbestos lobby over the past several years, undertake research, scientific studies and a well balanced evaluation of such science in order to establish the real risks for health of all industrial fibres offered in the market nowadays. Only after this exercise is done can competent authorities have in their possession reliable solutions on which to base their decisions, other than that dictated by propaganda or misperception.

ANNEX A

Transcript of Interview with WHO Director of Public Health and Environment,
Dr. Maria Neira, November 5, 2013

Time	Text / Audio
00:00	**An interview with** **Dr. Maria Neira** **Director, Public Health and Environment** **World Health Organisation**
00:07	**What kind of threat does asbestos pose to the world today?**
00:13	We know very well that asbestos represents a threat to public health. It causes cancer, lung cancer, it will cause mesothelioma, and it will cause chronic respiratory diseases which are very unpleasant for the patients and obviously cause a lot of suffering. And in addition to that we know now from the recent studies conducted by our colleagues at the International Agency for Research on Cancer [IARC] that it can be associated as well with cancer of the ovary and laryngeal cancer. So I think we have enough arguments to say that asbestos represents a major problem for public health.
00:53	**What is the WHO's evidence-based policy on asbestos?**
01:00	WHO has been conducting studies to look at what is the evidence to say that asbestos represents a problem for human health. You know asbestos-related diseases are not new, we have a lot of experience on that, and WHO conducted a comparative risk assessment and from this we know that an estimated 125 million people around the world are exposed to asbestos in the work environment, to all forms of asbestos. And we know as well that this is an underrepresentation [of the actual number of people exposed to asbestos around the world] because in fact we have figures only for people exposed in the working environment but we know that there are other places where they can be exposed. We know as well that there is an estimation of more than 100,000 deaths that can be attributable to exposure to asbestos, all types of asbestos. I think this [evidence] is strong enough to say that it is time to move now to [take] more action related [towards] the elimination of asbestos-related diseases.

02:02	**How does WHO act on World Health Assembly resolutions in practice?**
02:09	WHO has the supreme body for our policy recommendations, which is when the Ministers of Health of 194 countries meet here in Geneva at the World Health Assembly. We have a resolution where they have requested us to do more on cancer control and one of the ways to address cancer control is to look at all types of cancer and one of them is the one caused by asbestos. And since then we have been concentrating on reducing asbestos-related diseases, eliminating asbestos-related diseases, and therefore by doing so reducing the cancer caused by asbestos. We have another resolution: We have a resolution where all member states request the WHO to develop a Global Plan of Action on Workers Health and part of that resolution asks us to go to for a global campaign on elimination of asbestos-related diseases. So we have a very solid basis for conducting our work, plus the fact that people have been suffering from asbestos-related diseases for years now and the evidence now is overwhelming.
03:26	**In WHO's 'Global Plan of Action' could you clarify the meaning of the phrase 'bearing in mind a differentiated approach to regulating its various forms'.**
03:41	WHO has a resolution saying that we need to go for a global campaign to eliminate asbestos-related diseases, and there is a sentence that says 'with a differentiated approach' but this is related to the legal instruments you want to use at country level, but it is certainly not referring to any differentiated forms of asbestos. For us, all forms of asbestos including obviously chrysotile are carcinogenic. And we have the evidence from, the latest one, we have plenty of evidence, comes from the IARC, which is our research cancer agency that belongs to WHO. And that revision, done by a very important number of scientists with an incredible consensus around that, they concluded that all forms of asbestos are carcinogenic, and 'all forms of asbestos' means that chrysotile asbestos is definitely included.

04:47	**In Asia the asbestos industry has claimed that 'WHO certifies that chrysotile is safer than substitutes'. Is this true?**
05:04	Chrysotile is not safe. We concluded that all forms of asbestos are carcinogenic to humans. And not only that, in the latest revision of IARC they concluded that in addition to mesothelioma and lung cancer that are very well-known and for which we have enormous evidence, we can add two other types of cancer – ovarian and laryngeal cancer – and we need to look out for them. So all forms of asbestos including chrysotile asbestos are carcinogenic. There is no ambiguity on WHO's position around that. We have plenty of documents where you can find these statements and we would like to go for a massive elimination of asbestos-related diseases including obviously chrysotile forms.
05:53	**Does WHO support the safe use of chrysotile or the elimination of chrysotile use?**
06:02	For us there is no safe use of chrysotile or any form of asbestos, for different reasons: It will require on the manipulation [use of asbestos], it will require levels of safety that in developing countries cannot be assured. In addition to that when you have to remove or when asbestos or when chrysotile asbestos goes into the waste this will require as well a special manipulation. So for us there is no safety threshold, there is no safe manipulation or use of chrysotile asbestos or any forms of asbestos. Of course the countries need to choose the way they want to handle this major public health issue. In many countries around the world they have banned the use of all forms of asbestos and in other countries they go for regulatory measures that might not go as far as banning asbestos but are still very effective. I think WHO has very, very strong statements about chrysotile – I will refer to our fact sheets, they are available on our webpages, where I don't think there is any ambiguity. WHO very clearly states that based on the results of the monograph on asbestos by IARC, which is our research agency on cancer, all forms of asbestos are carcinogenic, including obviously chrysotile. So I think the information is widely available for member states, for people, for scientists, for general populations, so anyone can have access to these very clear statements about the fact that WHO considers that it will be feasible to go for the elimination of asbestos-related diseases, and obviously the most efficient way to do that will be to eliminate the cause of asbestos-related diseases, so stop the use of asbestos, all types of asbestos.

08:02	**Some asbestos supporters have claimed there is no evidence that chrysotile is harmful to human health. Is this true?**
08:11	The evidence is there, I mean there is extremely solid evidence. It's true that asbestos cancer, asbestos-induced cancer, will take 20 years to appear so it will be difficult to differentiate lung cancer caused by asbestos and by other causes like tobacco for example in countries where you don't have these epidemiological studies linking exposure in the working environment to asbestos to a type of cancer. In developing countries, in many of them we don't even have cancer registries. But we have done these very long epidemiological studies following the entire population exposed and then looking at the results for many years. We have done that in several countries. The evidence is very solid. There are no reasons to think that in Africa it will not happen the same or in Asia. Therefore for us the evidence is there. We know that cancer is happening. And we don't want to wait 20 years until we start to count the number of deaths and to look at the increase in the number of cancers. So I think the time to act is now. We have very solid evidence and more than enough [evidence] to say that we need to eliminate asbestos related-diseases.
09:40	**How do we know that chrysotile causes cancer?**
09:47	The evidence about carcinogenicity comes from our colleagues working at the International Agency for Research on Cancer. They look very much for the environmental causes of cancer. And they have prestige, they have enormous credibility, and their studies are based on a review of the literature and the scientific consensus and then they come up with their recommendations. Their latest revision is from 2009, and since then there is not new evidence or studies, but all the evidence proves that all forms of asbestos are carcinogenic to humans and, in addition to that, until now we knew that asbestos could cause lung cancer and that mesotheliomas are attributable to asbestos, but now we know that there are two other types of cancers that can be attributed to exposure to asbestos as well, which is the ovarian cancer and laryngeal cancer. So we will be looking at that as well. But this is in addition to the evidence that we have until now, that asbestos exposure is carcinogenic to humans.

10:38	**Are there plans to produce a WHO Guideline on chrysotile that incorporates the new evidence since 1998?**
11:12	We have the monograph produced by our colleagues in IARC. We have previous studies in WHO. We have a Fact Sheet that gives all the facts about the evidence that we have on asbestos. And we have at the moment more than 50 countries that officially banned the use of asbestos. I think now with the resolution on worker's health, and the global campaign to eliminate asbestos-related diseases, WHO will be concentrating not on producing more evidence, but now really going to the cause of the disease which will mean promoting the stop of the use of all forms of asbestos because [the use of asbestos] is responsible for cancer.
11:58	**What is the most efficient way to eliminate asbestos-related diseases?**
12:04	Well in public health when you know the cause of the disease, you go and tackle that cause. This is what we call primary prevention. If you are dealing with a cholera outbreak, obviously you will treat the patients, but more importantly you will make sure that the water that people are drinking that is probably the cause of the disease, is clean and safe. So you eliminate the cause of the disease. In the case of mesothelioma and lung cancer caused by asbestos, it is very simple: The way to address the cause of the disease will be to promote the end of the use of all forms of asbestos. So we are working with countries, providing them with the scientific evidence, giving them the facts that we have that are very solid around the end of the use of asbestos, and we tell them that based on evidence there are safe substitutes for asbestos and if they use the right technology and economic arguments it is feasible to stop the use of asbestos, and by doing so protecting the health of their population. The most efficient way to eliminate asbestos-related diseases, the safest way, will be to stop the use of all forms of asbestos and therefore we will be able to stop exposure and therefore we will be able to stop to see the diseases caused by exposure to asbestos. So the most efficient way will be to stop the use of all forms of asbestos.

13:37	**How will WHO carry out the global campaign to eliminate asbestos-related diseases in the countries where asbestos is still being used?**
13:45	For WHO to conduct this global campaign on the elimination of asbestos-related diseases we had to do several things: One, to continue to produce and disseminate the evidence that we have and that's why it's so important that we have opportunities to disseminate and do more advocacy on the work we have done, and on the scientific evidence around the fact that asbestos is carcinogenic; Second, we are working with countries on the way they can phase out the use of asbestos – if they can ban it, it will be even better for us – but at least to stop the use of all forms of asbestos. Obviously we need to work with countries as well on proposing measures for the safe removal of asbestos from those buildings where asbestos is already there, and then obviously conducting very active campaigns at country level, for people to demand more action on stopping the use of asbestos. Obviously for those persons who have already been infected and they are suffering from mesothelioma or lung cancer, we will propose adequate treatment and rehabilitation where possible, and follow-up of the patients.
15:03	**Do you support a global chrysotile ban as the most efficient policy to eliminate chrysotile-related diseases?**
15:12	The most efficient way, as I say, will be to stop the use of all forms of asbestos. Now whether there is a global ban campaign, that will require a negotiated Convention by member states, that's something that maybe goes beyond WHO's capacity to go for a legally binding treaty, but in fact there are more than 50 countries that have already banned the use of asbestos and others are moving [in that direction]. We want countries to move on stopping the use of asbestos, the way they prefer to do it and adapted to their local capacity… but I think it has to be done as soon as possible. The evidence is there and the health of the people is at risk.
15:58	**End**

A Ban If Necessary But Not Necessarily a Ban

SCIENCE MUST PREVAIL

2

INTRODUCTION

AN ANTI-ASBESTOS ACTIVIST WORKING FOR WHO SUPPORTS THE CRUSADE OF POWERFUL LOBBIES

Dr. Maria Neira, director of WHO's Public Health and Environment was interviewed recently (February 2, 2014) and the interview was posted on YouTube:

https://www.youtube.com/watch?v=8wgWg9bLj48

WHAT HAVE WE LEARNED EXACTLY FROM THIS 16-MINUTE INTERVIEW?

In fact, Dr. Neira restated the alleged WHO's position on the need to eliminate asbestos-related diseases, a goal no one should be against. She insisted that in order to reach that goal, there is only one solution: the ban of all varieties of asbestos, including chrysotile. During the interview, Dr. Neira stated that this position and recommendations (ban all future uses of all varieties) was based on a review of evidence gathered by the IARC last analysis, which concluded that all types of asbestos can induce cancers, in particular lung cancer and mesothelioma.

Questioned on what was the "evidence-basis" to support WHO's position, she indicated that WHO had some evidence that all fiber types were carcinogenic, and that this "evidence" was mainly from the IARC recent review.

On the WHO'S Global Action Plan, she was questioned also to explain the meaning of the phrase"... bearing in mind a differentiated approach to regulating its various forms", she replied that this differentiated approach was "legalistic", i.e. to be used at the country level, but for the WHO's point of view, all forms of asbestos are carcinogenic, period.

The rest of this 16-minute interview was the usual and expected propaganda of the WHO in its efforts to reach a global ban of the use of all types of asbestos.

COMMENTARY

Dr. Neira's simplistic appreciation of the need for a differentiated approach to regulate its various forms as "legalistic" was an admission that the scientific consensus on the vast difference in health risk from the amphibole forms (crocidolite and amosite) and chrysotile should be discarded in the face of evidence provided by IARC that all forms of asbestos are carcinogenic.

First, the evidence that there is an enormous difference in risk between the amphiboles and chrysotile was illustrated in a publication in 2000 by Hodgson JT and Darnton A.: The Quantitative Risks of Mesothelioma and Lung Cancer in Relation to Asbestos. Ann. Occup. Hyg. 2000, 44(8): 565-601. From their meta-analysis, Hodgson and Darnton estimated the specific risk for lung cancer and mesothelioma as follows:
For lung cancer: 1:10:50 respectively for chrysotile, amosite and crocidolite.
For mesothelioma: 1: 100: 500 respectively for chrysotile, amosite and crocidolite.

There is thus a science-based evidence for differentiating between chrysotile and the amphiboles. It is not "legalistic" as Dr. Neira would have it.

The second point (all forms of asbestos are carcinogenic) is equally important: What is important is to fully understand the true meaning of the IARC classification of human carcinogens. It should be understood, as the IARC mentions in the “Preamble” to its classification, that the classification is about “hazard”, not about “risk”. A hazard is about the possibility of adverse health effects when exposure intensity and duration reach high enough levels to induce harm. Risk is determined by the intensity above which harm will be manifest.

In the IARC classification of carcinogens, there are presently some hundred substances, mixtures and activities listed as “human carcinogens”. Surely, IARC has never indicated that all these substances, mixtures and activities should be banned globally. IARC’s classification of these “hazards” must be controlled in order for the “risk” to be undetectably low, and practically inexistent.

While the end of the use of amphiboles over the last decade is certainly welcome in terms of risk to workers and the general population, the safe use of chrysotile has been shown to be a reality when mandated maximum exposure levels are observed.

1/ ON THE BIOLOGICAL RESPONSE OF EXPOSURE TO CHRYSOTILE AND THE AMPHIBOLES

The pathogenic differences between asbestos fiber types have been the subject of much research over the last 30 years. Several epidemiological studies on mortality and morbidity have been published. Robust confirmation and coherence was found between epidemiological observations and data from mineral analysis of lung content, supporting the affirmation that there is a vast difference in terms of health risk between chrysotile and the amphiboles.

A. EPIDEMIOLOGICAL STUDIES: MORTALITY AND MORBIDITY DATA

Wagner, J.C., Newhouse, M.L., Corrin, B., Rossiter, C.E. and Griffiths, D.M. (1988). *Correlation between fibre content of the lung and disease in East London asbestos factory workers.* British Journal of Industrial Medicine 45(5):305-308.

The authors state: “We believe therefore that chrysotile is the least harmful form of asbestos in every respect and that more emphasis should be laid on the different biological effects of amphibole and serpentine asbestos fibre”.

Kleinerman, J. (1988). *The pathology of asbestos related lung disease*. Proceedings, The Fleischner Society, Eighteenth Annual Symposium on Chest Disease, Montréal, Canada, 16-18 May, pp. 33-46.

“Most asbestos workers who develop mesothelioma are exposed to amphibole asbestos. Few mesotheliomas are found in workers exposed to chrysotile... The tremolite exposure is considered to play a major role in the development of the mesotheliomas in these cases”.

Dunnigan, J. (1988). *Commentary: Linking chrysotile asbestos with mesothelioma.* American Journal of Industrial Medicine 14: 205-209.

Overview of evidence showing unlikeliness of link of mesothelioma with chrysotile exposure. Epidemiological studies from USA (Weiss, McDonald and Fry, Dement), from Britain (Newhouse, Thomas, Acheson) are analysed, and lung burden studies (Pooley, Wagner, Jones, A.D. McDonald) are also pointed to.

Hughes, J.M., Weill, H. and Hammad, Y.Y. (1987). *Mortality of workers employed in two asbestos cement manufacturing plants.* British Journal of Industrial Medicine 44(3):161-174.

Mortality of 6,931 employees of two asbestos cement factories was studied. In one of them (plant 2), crocidolite was used along with chrysotile. There were 10 cases of mesothelioma in this study, 8 of whom from the plant 2. The case-control analysis found a significant relation between risk of mesothelioma and proportion of time spent in the area of making a/c pipes where crocidolite was used.

Gardner, M.J. and Powell, C.A. (1986). *Mortality of asbestos cement workers using almost exclusively chrysotile fibre.* Journal of the Society of Occupational Medicine 36(4):124-126.

Three studies are reviewed of asbestos-cement workers using almost exclusively chrysotile in Great Britain and in Sweden. No asbestos-related mortality in meaningful excess of expected was found. The authors state: “This is in contrast with most studies of workers making similar products from mixed fibres containing mainly chrysotile but also amphiboles, crocidolite and amosite”.13

Berry, G. and Newhouse, M.L. (1983). *Mortality of workers manufacturing friction materials using asbestos.* British Journal of Industrial Medicine 40(1):1-7.

Study of 13,400 workers (friction materials) showing no mesothelioma when chrysotile only was used, but 10 mesotheliomas when crocidolite was also used.

Thomas, H.F., Benjamin, I.T., Elwood, P.C. and Sweetnam, P.M. (1982). *Further follow-up study of workers from an asbestos cement factory.* British Journal of Industrial Medicine 39(3): 273-276.

Study of 1,970 a/c workers, showing no case of mesothelioma over 40-year period when chrysotile only was used, but 2 mesotheliomas when crocidolite was used during a 2-year period.

McDonald, A.D. and Fry, J. (1982). *Mesothelioma and fibre type in three American asbestos factories - Preliminary report.* Scandinavian Journal of Work, Environment and Health 8 (Supplement 1):53-58.

Study of yarns, cloth and packings, and also gaskets manufacturing, showing only 1 case of mesothelioma / 2,341 workers when almost exclusively chrysotile was used, and 18 cases / 1,429 workers when mixed fibre types were used.

Acheson, E.D., Gardner, M.J., Pippard, E.C. and Grime, L.P. (1982). *Mortality of two groups of women who manufactured gas masks from chrysotile and crocidolite asbestos: a 40-year follow-up.* British Journal of Industrial Medicine 39(4):344-348.

Study of gas mask workers showing no case of mesothelioma when chrysotile only was used, and 5 cases / 757 workers using crocidolite.

McDonald, A.D. and McDonald, J.C. (1978). *Mesothelioma after crocidolite exposure during gas mask manufacture.* Environmental Research 17(3):340-346.

Exposure to crocidolite in making war-time military gas-masks in Québec led to accumulation of 9 cases of mesothelioma out of 56 deaths (16%). High amounts of crocidolite (and some chrysotile) were found in their lungs. This compares with incidence of mesothelioma, 0.26% of deaths in the Québec (chrysotile) mines.

Weiss, W. (1977). *Mortality of a cohort exposed to chrysotile asbestos.* Journal of Occupational Medicine 19(11):737-740.

Study showing no case of mesothelioma in millboard and paper manufacturing when chrysotile only is used.

B. ANALYSIS OF MINERAL LUNG CONTENT

Wagner, J.C., Newhouse, M.L., Corrin, B., Rossiter, C.E.R. and Griffiths, D.M. (1988). *Correlation between fibre content of the lung and disease in East London asbestos factory workers.* British Journal of Industrial Medicine 45(5):305-308.

The lungs from 36 past workers of an asbestos factory using chrysotile, crocidolite, and amosite were examined. Crocidolite and amosite lung contents were strongly associated with asbestosis, and with mesothelioma, whereas no such correlation was evident with chrysotile and mullite.

Wagner, J.C., Moncrieff, C.B., Coles, R., Griffiths, D.M. and Munday, D.E. (1986). *Correlation between fibre content of the lungs and disease in naval dockyard workers.* British Journal of Industrial Medicine 43(6): 391-395.

Study showing increasing amounts of amphiboles in lung tissue with increasing severity of asbestosis, but no increase of chrysotile.

Churg, A. (1985). *Malignant mesothelioma in British Columbia in 1982.* Cancer 55(3):672-674.

Study showing a 300-fold increase of amphiboles in lung tissue of mesothelioma cases, but no difference with general population with regard to chrysotile lung content.

Churg, A. (1988). *Chrysotile, tremolite, and malignant mesothelioma in man.* Chest 93(3):621-628.

Churg maintains that of 53 cases of mesothelioma ever reported as caused by chrysotile, in fact 51 maybe attributed to contamination by tremolite, crocidolite and/or amosite.

Jones, J.S.P., Roberts, G.H., Pooley, F.D., Clark, N.J., Smith, P.G., Owen, W.G., Wagner, J.C., Berry, G. and Pollock, D.J. (1980). *The pathology and mineral content of lungs in cases of mesothelioma in the United Kingdom in 1976.* In Biological Effects of Mineral Fibres, J.C. Wagner Editor, Vol. 1, International Agency for Research on Cancer, IARC Scientific Publications No. 30, Lyon:187-199.

Study in U.K. showing that patients with mesothelioma have a far greater number of amphiboles in their lungs, but same amount of chrysotile when compared to controls.

McDonald, A.D. (1980). *Mineral fibre content of lung in mesothelial tumours: - Preliminary report.* Biological Effects of Mineral Fibres, J.C. Wagner Editor, Vol. 2, InternationalAgency for Research on Cancer, IARC Scientific Publications No. 30, Lyon:681-685.

Same observation as above for patients with mesothelioma in North America.

Churg, A. (1982). *Asbestos fibres and pleural plaques in a general autopsy population.* American Journal of Pathology 109(1):88-96.

Study showing that patients with pleural plaques have a 50-fold increase of amphiboles compared to chrysotile.

Wagner, J.C., Berry, G. and Pooley, F.D. (1982). *Mesothelioma and asbestos type in asbestos textile workers: a study of lung contents.* British Medical Journal 285:603-606.

In an asbestos textile factory that utilized mainly chrysotile with some crocidolite, less chrysotile and more crocidolite fibre were found in the lungs of 12 persons who had died of mesothelioma than in the lungs of controls without mesothelioma.

Wagner, J.C., Pooley, F.D., Berry, G., Seal, R.M.E., Munday, D.E., Morgan, J. and Clark, N.J. (1982). *A pathological and mineralogical study of asbestos-related deaths in the United Kingdom in 1977.* The Annals of Occupational Hygiene, Inhaled Particles V, 26(1-4):423-431.

Study showing a 100 fold increase of amphiboles in lung tissue, but similar amounts of chrysotil in referred pneumoconiosis patients.

Gylseth, B., Mowe, G. and Wannag, A. (1983). *Fibre type and concentration in the lungs of workers in an asbestos cement factory.* British Journal of Industrial Medicine 40(4):375-379.

The predominant asbestos type used in a Norwegian asbestos-cement factory (1942-1980) has been chrysotile (91.7%), with small admixture of amosite (3.1%), crocidolite (4.1%) and anthophyllite (1.1%). In the lungs of workers who had died of mesothelioma (4) or of lung cancer (3), the percentage of chrysotile fibres was 0%-9% whereas the corresponding proportion for the amphiboles was 76% and 99%.

Rowlands, N., Gibbs, G.W. and McDonald, A.D. (1982). *Asbestos fibres in the lungs of chrysotile miners and millers - A preliminary report.* The Annals of Occupational Hygiene, Inhaled Particles V, 26(1-4):411-415.

Lung samples from 47 workers of chrysotile mines in Québec who had died of various causes not related to asbestos were studied. Similar quantities of chrysotile and tremolite were found although tremolite admixture to chrysotile ore is extremely small. It indicates that tremolite persisted in the lungs while chrysotile was dissolved.

McDonald, A.D., McDonald, J.C. and Pooley, F.D. (1982). *Mineral fibre content of lung in mesothelial tumours in North America.* The Annals of Occupational Hygiene, Inhaled Particles V, 26(1-4):417-422.

99 case-control pairs of lung tissue specimens were examined from persons who had died of mesothelioma in North America. High content of amosite was found in 26 cases and 8 controls, and high content of crocidolite in 15 cases and 5 controls, while content of chrysotile was equal in cases and controls.

Gibbs, A.R., Jones, J.S.P., Pooley, F.D., Griffiths, D.M. and Wagner, J.C. (1989). *Non-occupational malignant mesotheliomas.* In Non-Occupational Exposure to Mineral Fibres, Eds. J. Bignon, J. Peto and R. Saracci. WHO/IARC Scientific Publications No. 90, Lyon:219-228.

The mineral content of the lungs from 84 cases of malignant pleural mesothelioma was estimated by electron microscopy and energy-dispersive X-ray analysis. These cases were chosen because the history of asbestos exposure was absent, indirect or ill-defined. The chrysotile counts in the lungs from these mesothelioma cases were similar to those in controls and in a previous series of mesotheliomas in which the majority had had direct exposure to asbestos. These findings confirm those of previous studies indicating that amphiboles are more important than chrysotile in the causation of malignant mesothelioma. The results confirm that some mesotheliomas develop in the absence of asbestos exposure. “It is possible that chrysotile might potentiate the effects of amphiboles, but we believe that it has either no potential (or a very low one) for mesothelioma induction on its own”.

Albin A, Pooley FD, Strömberg U, Attewell R, Mitha R and Welinder H (1994). *Retention patterns of asbestos fibres in lung tissue among asbestos cement workers.*

A study showing different kinetics for amphibole and chrysotile fibres in human lung tissue. Amphibole fibre concentrations increase with duration of exposure, whereas chrysotile concentrations do not. The authors indicate that their study supports a former finding of a possible adaptive clearance of chrysotile, and conclude that their findings “support the hypothesis that adverse effects are associated rather with the fibres that are retained (amphiboles), than with the ones being cleared (largely chrysotile).”

2/ IT IS CLAIMED THAT "ALL FORMS OF ASBESTOS ARE CARCINOGENIC"

WHAT IS THE REAL MEANING OF THE IARC CLASSIFICATION OF HUMAN CARCINOGENS?

The present classification of "human carcinogens" by the International Agency for Research on Cancer (IARC) includes some agents, mixtures and activities, divided into five main groups, as shown here.

GROUP 1	CARCINOGENIC TO HUMANS	108
GROUP 2A	PROBABLY CARCINOGENIC	63
GROUP 2B	POSSIBLY CARCINOGENIC	271
GROUP 3	NOT CLASSIFIABLE	509
GROUP 4	PROBABLY NOT CARCINOGENIC	1

http://monographs.iarc.fr/ENG/Classification/index.php

GROUP 1

The agent is carcinogenic to humans This category is used when there is sufficient evidence of carcinogenicity in humans. Exceptionally, an agent may be placed in this category when evidence of carcinogenicity in humans is less than sufficient but there is sufficient evidence of carcinogenicity in experimental animals and strong evidence in exposed humans that the agent acts through a relevant mechanism of carcinogenicity.

GROUP 2

This category includes agents for which, at one extreme, the degree of evidence of carcinogenicity in humans is almost sufficient, as well as those for which, at the other extreme, there are no human data but for which there is evidence of carcinogenicity in experimental animals. Agents are assigned to either Group 2A (probably carcinogenic to humans) or Group 2B (possibly carcinogenic to humans) on the basis of epidemiological and experimental evidence of carcinogenicity and mechanistic and other relevant data.

GROUP 2A: THE AGENT IS PROBABLY CARCINOGENIC TO HUMANS

This category is used when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals. In some cases, an agent may be classified in this category when there is inadequate evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals and strong evidence that the carcinogenesis is mediated by a mechanism that also operates in humans. Exceptionally, an agent may be classified in this category solely on the basis of limited evidence of carcinogenicity in humans. An agent may be assigned to this category if it clearly belongs, based on mechanistic considerations, to a class of agents for which one or more members have been classified in Group 1 or Group 2A.

GROUP 2B: THE AGENT IS POSSIBLY CARCINOGENIC TO HUMANS

This category is used for agents for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. It may also be used when there is inadequate evidence of carcinogenicity in humans but there is sufficient evidence of carcinogenicity in experimental animals. In some instances, an agent for which there is inadequate evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals together with supporting evidence from mechanistic and other relevant data may be placed in this group. An agent may be classified in this category solely on the basis

of strong evidence from mechanistic and other relevant data.

GROUP 3: THE AGENT IS NOT CLASSIFIABLE AS TO ITS CARCINOGENICITY TO HUMANS.

This category is used most commonly for agents for which the evidence of carcinogenicity is inadequate in humans and inadequate or limited in experimental animals.

GROUP 4: THE AGENT IS PROBABLY NOT CARCINOGENIC TO HUMANS.

This category is used for agents for which there is evidence suggesting lack of carcinogenicity in humans and in experimental animals. In some instances, agents for which there is inadequate evidence of carcinogenicity in humans but evidence suggesting lack of carcinogenicity in experimental animals, consistently and strongly supported by a broad range of mechanistic and other relevant data, may be classified in this group.

THE CASE OF ASBESTOS

Presently, the IARC has classified asbestos (all fiber types, without distinction between chrysotile and the amphiboles) in "GROUP 1" (carcinogenic to human). Currently, some 108 other agents, mixtures and activities are included in this group. It is interesting to examine closely this particular list of Group 1 carcinogens, which includes among others the following:

AGENTS AND GROUPS OF AGENTS:

Asbestos; Benzene; Oestrogen therapy: Oral contraceptive pills; X-radiations and gamma radiation etc;

MIXTURES

Alcoholic beverages; Analgesic mixtures containing phenacetin; Salted fish (Chinese-style); Tobacco smoke; Wood dust; Emissions from diesel motors etc;

EXPOSURE CIRCUMSTANCES

Aluminium production; Boot and shoe manufacture; Furniture and cabinet making; Iron and steel foundry; Painter (occupational exposure); Rubber industry; Solar irradiation; Tobacco smoking etc.

Advocates of the "Zero tolerance to human carcinogens" policy insist that all fiber types of asbestos should be banned due to the fact that the IARC has classified asbestos as a "Group 1 human carcinogen". To be consistent and coherent, these advocates should insist that all agents, mixtures and activities identified as Group1 carcinogens should also be banned! That this would be a misunderstanding and a misrepresentation of the true meaning of the IARC classification will be demonstrated here.

An important distinction between hazard and risk. In the Preamble* to the IARC Monographs amended January 2006, a cancer 'hazard' is an agent that is capable of causing cancer under some circumstances, while a cancer 'risk' is an estimate of the carcinogenic effects expected from exposure to a cancer hazard. The Monographs are an exercise in evaluating cancer hazards, despite the historical presence of the word 'risks' in the title. The distinction between hazard and risk is important, and the Monographs identify cancer hazards even when risks are very low at current exposure levels, because new uses or unforeseen exposures could engender risks that are significantly higher.

**http://monographs.iarc.fr/ENG/Preamble/index.php*

The question then is whether the inclusion of an agent in the Group 1 of the IARC classification implies that it must be banned.

The answer is obviously “NO”. Who would think of banning the use of X-ray examination in clinical investigations? Who would think of banning oestrogen therapy, the contraceptive pill, boot and shoe manufacture and cabinet making, diesel motors etc., simply because they are in the Group 1 classification of potential carcinogens of the IARC ?

As mentioned above, the IARC classification is about hazard, not risk, which is the probability that a person will be harmed or experience an adverse health effect if exposed to a hazard under actual conditions of exposure. For example, we know that the sun’s radiations are a hazard, that is, these rays have the potential to cause harm, but the risk will be minimal or non existant or very high depending on the dose, on the actual conditions of exposure.

The same remark applies to chrysotile asbestos. There is plenty of studies published in peer-reviewed journals showing that at low exposure conditions, chrysotile can be used without demonstrable health effects. Some of these studies are mentioned in the References.

In conclusion, we feel that the WHO should clarify the issue regarding the difference between hazard and risk, and help stop the exploitation and misrepresentation of its classification scheme by various pressure groups who fail to realize the consequences and serious economic and developmental aspects being heaped on the developing world by the environmental imperialism of the pressure groups who perpetuate the misrepresentation of the concepts of hazard and risk.

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3/ SUBSTITUTES: ARE THEY A REALLY SAFE SOLUTION?

In many occasions, and particularly in recent years, the impressive number of replacement alternative fibres and products to chrysotile that are offered nowadays on the international market are a real matter of concerns for each country competent authorities.

Too often, these replacement products are not severely subject to solid regulations as it is the case for chrysotile and, for the most important part, they have not be subject to scientific evaluation regarding their potential risk for human health.

The position of the anti-asbestos leaders and lobbies is favouring substitute fibres but in too many cases, they have not proven to be harmless.

An extraordinary example of this chaotic situation is the New European Union Directive adopted in 2009. The silence of Dr. Maria Neira and the anti-asbestos groups is quite eloquent to that effect.

NEW EUROPEAN UNION DIRECTIVE

All stakeholders understand that the WHO is responsible, amongst others, to guide or identify better work practices or implementing worker safety protection measures in every field of industrial activities.

It is certainly appropriate to take note, once again, of an important amendment to Directive 2009/148/EC of the European Parliament and Counsel, on the Protection of workers from the risks related to asbestos exposure. This is in regard to the omission of Recital (2) from Directive 2003/18/EEC after the codification procedure, which established the obligation of implementing a preventive approach in the use of asbestos substitutes. This new directive came into force in 27 countries of the European Union in January 2010.

In spite of the many interventions on the part of many interested countries and groups before the European Commission, countries are still waiting for a logical answer to such a change. This is particularly striking after the objections raised by the workers and employers of European Union represented in the European Economic and Social Committee (EESC) regarding this important part that has finally disappeared from the legislative text and no public notice or objections have been published by WHO authorities.

Recital (2) from Directive 2003/18/EEC, underscores the importance of a preventive approach to the use of asbestos substitutes. This approach is particularly important that workers who are exposed to substitute fibres and products nowadays, mostly in Europe, should be aware that they could pose health problems. This judicious and necessary warning suddenly disappeared from Directive 2009/148/EEC. The WHO is certainly not, or cannot afford to be insensitive, to the potential risks of exposure to substitute products and fibres to which are exposed millions of people worldwide. The world would like to know the fundamental reason which would have motivated such a decision (very surprising) which should worry the competent occupational health and safety authorities.

A lot of effort can go into hoping to ban asbestos or stopping its use, but it seems very responsible and reasonable to ask that at the same time that all alternative products and fibres carrying a potential health risk should be controlled as strictly as possible. It seems logical that these fibres which do have a potential health risk should be subject to the same regulations as chrysotile in all countries, as well as for European countries, but ones have to understand that the concerns raised by numerous competent authorities and stakeholders have not unfortunately been taken into account.

This important omission, taking into account that millions of Europeans workers are actually exposed to substitute products and fibres, cannot leave competent authorities indifferent. In too many instances there are no studies or scientific data demonstrating their innocuousness or even their potential level of health risk.

Considering all efforts deployed by anti-asbestos lobby and anti-asbestos activists, including the ones working for WHO, against the use of asbestos, in the name of health, and the approach taken by the European Union regarding other potential replacement fibres and products, for example crystalline silica (the EU permits users to conclude a voluntary accord instead of regulating), then it has to be understood that there are two measures: it is evidently incoherent.

4/ CAN CHRYSOTILE BE USED SAFELY? A REALITY CHECK

While the end of the use of amphiboles over the last decade is certainly welcome in terms of risk to workers and the general population, the safe use of chrysotile has been shown to be a reality when mandated maximum exposure levels are observed.

Here are a few examples showing that the safe use of chrysotile is not only possible, but a reality:

OCCUPATIONAL EXPOSURE

Weill, H., Hughes, J. and Waggenspack, C. (1979). ***Influence of dose and fibre type on respiratory malignancy risk in asbestos cement manufacturing.*** American Review of Respiratory Disease 120(2):345-354.

An investigation on 5,645 asbestos-cement manufacturing workers, showing no raised mortality resulting from exposure for 20 years to chrysotile asbestos at exposure levels equal to or less than 100 MPPCF.years (corresponding to approximately 15 fibres/ml.years).

The authors state:"*...However, the demonstration that low cumulative and short-term exposures did not produce a detectable excess risk for respiratory malignancy may be of assistance in the development of regulatory policy, because a scientifically defensible position based on these data is that there are low degrees of exposure not associated with a demonstrable excess risk".*

Thomas, H.F., Benjamin, I.T., Elwood, P.C. and Sweetnam, P.M. (1982). *Further follow-up study of workers from an asbestos cement factory.* British Journal of Industrial Medicine 39(3):273-276.

In an asbestos-cement factory using chrysotile only, 1,970 workers were traced, and their mortality experience was examined. There was no appreciably raised standardised mortality ratio (SMR) for the causes of death investigated, including all causes, all neoplasms, cancer of the lung and pleura, and cancers of the gastrointestinal tract.

The authors indicate: *"Thus the general results of this mortality survey suggest that the population of the chrysotile asbestos-cement factory studied are not at any excess risk in terms of total mortality, all cancer mortality, cancers of the lung and bronchus, or gastrointestinal cancers".*

Gardner, M.J., Winter, P.D., Pannett, B. and Powell, C.A. (1986). *Follow up study of workers manufacturing chrysotile asbestos cement products.* British Journal of Industrial Medicine 43:726-732.

A cohort study carried out on 2,167 subjects employed between 1941 and 1983. **No excess of lung cancers or other asbestos-related excess death is reported, at mean fibre concentrations below 1 f/ml**, although higher levels had probably occurred in certain areas of the asbestos-cement factory.

Ohlson, C.-G. and Hogstedt, C. (1985). *Lung cancer among asbestos cement workers.* A Swedish cohort study and a review. British Journal of Industrial Medicine 42(6): 397-402.

A cohort study of 1,176 A/C workers in a Swedish plant using chrysotile asbestos showing no excess related mortality at exposures of about 10-20 fibres/ml.years.

L. Sichletidis D. Chloros D. Spyratos A.-B. Haidich I. Fourkiotou M. Kakoura, D. Patakas (2008) ***Mortality from occupational Exposure to Relatively Pure Chrysotile: A 39-Year Study.*** Respiration, Published Online: October 9, 2008.
http://content.karger.com/ProdukteDB/produkte.asp?Aktion=AcceptedPapers&ProduktNr=224278

An investigation covering a span of almost 40 years on the mortality rate among workers exposed to relatively pure chrysotile in an asbestos cement factory that opened in 1968 in Greece. The factory used approximately 2,000 tonnes of chrysotile annualy until 2005. Fiber concentration was measured regularly, and was always below permissible levels. Date and cause of death were recorded among all active and retired workers.

No case of mesothelioma was reported. Overall mortality rate was significantly lower than that of the Greek general population. Conclusions of the authors: *"Occupational exposure to relatively pure chrysotile within permissible levels was not associated with a significant increase in lung cancer or with mesothelioma."*

Berry, G. and Newhouse, M.L. (1983). ***Mortality of workers manufacturing friction materials using asbestos.*** British Journal of Industrial Medicine 40(1):1-7.

A mortality (1942-1980) study carried out in a factory producing friction materials, using almost exclusively chrysotile. Compared with national death rates, there were no detectable excess of deaths due to lung cancer, gastrointestinal cancer, or other cancers. The exposure levels were low, with only 5% of men accumulating 100 fibre-years/ml. The authors state: *"The experience at this factory over a 40-year period showed that chrysotile asbestos was processed with no detectable excess mortality".*

Newhouse, M.L. and Sullivan, K.R. (1989). ***A mortality study of workers manufacturing friction materials: 1941-86.*** British Journal of Industrial Medicine 46(3):176-179.

The study referred to in the preceding slide has been extended by seven years. The authors confirm that there was no excess of deaths from lung cancer or other asbestos related tumours, or from chronic respiratory disease. After 1950, hygienic control was progressively improved at this factory, and from 1970, levels of asbestos have not exceeded 0.5-1.0 f/ml. The authors conclude: *"It is concluded that with good environmental control, chrysotile asbestos may be used in manufacture without causing excess mortality"*

Liddell FDK, McDonald JC and McDonald A. Ann. Occup. Hyg. 41:13-35 (1997)
This study is undoubtedly the largest cohort of asbestos workers ever studied and followed for the longest period is that of the miners and millers of the chrysotile mines in Québec.

The cohort, which was established in 1966, comprises some 11,000 workers born between 1891-1920 and has been followed ever since. The authors have updated their study several times, with a total of 9,780 men traced into 1992. Results from exposures below 300 mpcf x years, roughly equivalent to 900 fibres/ml x years - or, say, 45 fibres/ml for 20 years - lead the authors to conclude: *"Thus it is concluded from the point of view of mortality that exposure in this industry to less than 300 mpcf.years has been essentially innocuous".*

Paustenbach D.J., Finley B.L., Lu E.T., Brorby G.P., and Sheehan P.J. (2004). ***Environmental and occupational health hazards associated with the presence of asbestos in brake linings and pads*** (1900 to present): A 'state-of-the-art review'. J Toxicol Environ Health, Part B 7: 33-110

This publication is a "state-of-the-art" review of the risk associated with the use of asbestos in the manufacture of friction materials and their use in the general automotive service industries. This review, covering studies and observations published over several decades, demonstrate that in general, exposures have been minimal and **did not show any demonstrable risk when chrystile was used,** and that the relatively few instances of increased health risks were always associated with the use of amphiboles.

Yarborough C.M. (2006). ***Chrysotile as a Cause of Mesothelioma: An Assessment Based on Epidemiology.*** Critical Reviews in Toxicology 36: 165-187

This is an extensive review of the epidemiological cohort studies undertaken to evaluate the extent of the evidence related to free chrysotile fibers, with particular attention to confounding by other fiber types, job exposure concentrations, and consistency of findings. This review of 71 asbestos cohorts exposed to free asbestos fibers **does not support the hypothesis that chrysotile, uncontaminated by amphibolic substances, causes mesothelioma**.

DJ Paustenbach, BL Finley, ET Lu, GP Brorby, PJ Sheehan (2004)
Environmental and occupational health hazards associated with the presence of asbestos in brake linings and pads (1900 to present): A "state-of-the-art" review. Journal of Toxicology and Environmental Health - Part B - Critical Reviews, 2004, Vol 7, Iss 1, pp 33-110

In this review, the authors covered the **post-1974 time period**, when most of the information on exposure of brake mechanics to airborne asbestos during brake repair was gathered, primarily from a series of sampling surveys conducted by the National Institute of Occupational Safety and Health in the United States. These surveys indicated that the time-weighted average asbestos concentrations (about 1 - 6 h in duration) during brake servicing were between 0.004 and 0.28 fibers per cubic centimeter, and the mean time-weighted average concentration was about 0.05 fibers per cubic centimeter. The data also showed that brake mechanics were not exposed to time-weighted average concentrations above workplace exposure limits in effect at the time of the study.

From 1975 to 2002, more than 25 epidemiology studies were conducted examining the risks of asbestos-related diseases in brake mechanics. These studies clearly indicated that brake mechanics were not at increased risk of adverse health effects due to exposure to asbestos. Specifically, the studies found no increased risk of mesothelioma or asbestosis in brake mechanics, and **no evidence that lung cancer in this occupational group can be attributed to exposure to asbestos during brake repair.**

EXPOSURE IN THE GENERAL ENVIRONMENT

With regard to the risk for the general population, the following quote is of interest:

"The risk of mesothelioma and lung cancer, attributable to asbestos exposure in the general population, is undetectably low; the risk for asbestosis is practically nil" .

(Environ. Health Criteria #53, 1986, WHO, Geneva)

"In 1984, a report by the **Royal Commission on Matters of Health and Safety from the Use of Asbestos in Ontario** had come to similar conclusions. Excerpts:

"While asbestosis, a form of lung fibrosis, has been common among workers exposed to high asbestos concentrations in the past, the Commission believes that under the regulations it has recommended, asbestosis will become a disease of the past."

"There is no evidence of significant health risks to the general public from exposure to asbestos in the ambient air and in buildings unless the person is breathing in the immediate vicinity of loose asbestos that is being disturbed. The health risk posed by asbestos is therefore a workplace health risk rather than a general public health risk."

"On the other hand, the disease risk that the Commission associates with chrysotile asbestos in general manufacturing and mining is much lower, so that here the current control limit of 1 f/cc is appropriate if properly enforced."

In 2013, a study of cancer risk assessment in a population environmentally exposed to asbestos in the Province of Québec was published which indicated that "the estimated lifetime cancer risk for both cancers combined is close to Health Canada's threshold for "negligible" lifetime cancer risks".

Lung cancer and mesothelioma risk assessment for a population environmentally exposed to asbestos.

Bourgault MH, Gagné M, Valcke M.
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Int J Hyg Environ Health 2013 Jul 20. pii: S1438-4639(13)00102-8. doi: 10.1016/j.ijheh,2013.07.08
[Epub ahead of print]

ABSTRACT

Asbestos-related cancer risk is usually a concern restricted to occupational settings. However, recent published data on asbestos environmental concentrations in Thetford Mines, a mining city in Quebec, Canada, provided an opportunity to undertake a prospective cancer risk assessment in the general population exposed to these concentrations.

Using an updated Berman and Crump dose-response model for asbestos exposure, we selected population-specific potency factors for lung cancer and mesothelioma.

These factors were evaluated on the basis of population-specific cancer data attributed to the studied area's past environmental levels of asbestos. We also used more recent population-specific mortality data along with the validated potency factors to generate corresponding inhalation unit risks. These unit risks were then combined with recent environmental measurements made in the mining town to calculate estimated lifetime risk of asbestos-induced lung cancer and mesothelioma.

Depending on the chosen potency factors, the lifetime mortality risks varied between 0.7 and 2.6 per 100,000 for lung cancer and between 0.7 and 2.3 per 100,000 for mesothelioma.

In conclusion, the estimated lifetime cancer risk for both cancers combined is close to Health Canada's threshold for "negligible" lifetime cancer risks. However, the risks estimated are subject to several uncertainties and should be confirmed by future mortality rates attributed to present day asbestos exposure.

The above mentioned study is in line with a major and comprehensive scientific review paper published in 2013, updating the facts on chrysotile usage, comparing the health risk of chrysotile with that of the amphiboles.

Health Risk of Chrysotile Revisited. (2013)
Bernstein et al.Critical Reviews in Toxicology, Vol. 42, No. 2, pp.154-183.

ABSTRACT

This review provides a basis for substantiating both kinetically and pathologically the differences between chrysotile and amphibole asbestos.

Chrysotile, which is rapidly attacked by the acid environment of the macrophage, falls apart in the lung into short fibers and particles, while the amphibole asbestos persist creating a response to the fibrous structure of this mineral.

Inhalation toxicity studies of chrysotile at non-lung overload conditions demonstrate that the long (> 20 μm) fibers are rapidly cleared from the lung, are not translocated to the pleural cavity and do not initiate fibrogenic response. In contrast, long amphibole asbestos fibers persist, are quickly (within 7 d) translocated to the pleural cavity and result in intestinal fibrosis and pleural inflammation.

Quantitative reviews of epidemiological studies of mineral fibers have determined the potency of chrysotile and amphibole asbestos for causing lung cancer and mesothelioma in relation to fiber type and have also differentiated between theses two minerals.

These studies have been reviewed in light of the frequent use of amphibole asbestos. As with other respirable particulates, there is evidence that heavy and prolonged exposure to chrysotile can produce lung cancer.

The importance of the present and other similar reviews is that the studies they report show that low exposures to chrysotile do not present a detectable risk to health. Since total dose over time decides the likelihood of disease occurrence and progression, they also suggest that the risk of an adverse outcome may be low with even high exposures experienced over a short duration.

5/ ON THE CLAIM THAT ABESTOS IS RESPONSIBLE FOR 100,000 DEATHS ANNUALLY

It has been repeatedly claimed that *"an estimated 100,000 workers die every year from diseases caused by exposure to asbestos"*.

Such statistics brought the *"WHO to promote the elimination of future use of all forms of asbestos and asbestos-containing materials in member States"*.

1/ On the number of annual asbestos-related deaths.*" 100,000 deaths every year..."* This oft repeated claim needs to be questionned as to its exact source and credibility. In 1999, on the occasion of the "15th World Congress on Occupational Safety and Health" in Sao Paulo, Jukka Takala, then director of ILO's Health and Safety Program, was quoted in the ILO News as follows:

GENEVA (ILO News) – Over one million work-related deaths occur annually according to ILO estimates and hundreds of millions of workers suffer from workplace accidents and occupational exposure to hazardous substances worldwide. The head of the ILO's Health and Safety programme told delegates assembled in São Paulo at the opening of the 15th World Congress on Occupational Safety and Health... *"asbestos alone kills 100,000 workers every year."*

Another publication from the *Organisation Internationale du Travail (OIT)* in the (*Magazine du Travail*, No, 50, March 2004) repeats the same claim. With time, this claim was repeated abundantly by a number of anti-asbestos lobbies without any verification of the exact source and validity.

Today, the legitimate question to ask is: Where is that number coming from? Is this number real or some extrapolation?

In 2006, at the International Labour Conference, 95th session (Geneva, June 2006), the representative from the USA raised the question regarding the justification of this number in these terms: (*"The Government member of the United States asked if the figure of 100,000 deaths a year could be justified."*, Preambular paragraph 3, 332) http://www.ilo.org/public/english/standards/relm/ilc/ilc95/pdf/drafrep-css.pdf).

A satisfactory response has to this legitimate question has not yet been received.

THE TRUE RESPONSE

In a communication by J. Takala entitled *"ILO's role in the global fight against asbestos"* presented at the conference in Dresden ("Dresden Declaration on the Protection of Workers against Asbestos Conference", http://hesa.etui-rehs.org/uk/dossiers/files/dresden-declarat.pdf), Takala refers to statistics in Finland to generate the number of 100,000 deaths for an extrapolation to the whole world: *"Finland has an estimated 209 lung cancer fatalities caused by asbestos every year and 42 cases of mesothelioma. On average this means 9.9 cases of lung cancer and 2 cases of mesothelioma per 100,000 workers. If we use these rates and apply them to other rather well developed OSH systems and to developing countries, we would come to estimated numbers of death caused by asbestos, shown in the table below: Estimated deaths 100,000"*

Firstly, it is important to note that Takala indicated: *"In total there could be 100,000 work-related deaths caused by asbestos.* ***These figures are not recorded cases but estimates".*** This caveat from the author of this number introduces a serious interrogation as to the validity of this number, which has been repeated and presented as the reality.

A second very important point must be noted: nowhere is there mention of the distinction between the different types of asbestos and their relative pathogenic potential. Takala mentions that his estimate is the result of exposure to 'asbestos'. This is important considering that the difference in pathogenic potentials is at least two orders of magnitude. In short, this number (100,000 deaths a year) is a fabrication *(These figures are not recorded cases...)*

6/ THE OFFICIAL STAND OF THE INTERNATIONAL LABOUR ORGANIZATION (ILO) AND THE WORLD HEALTH ASSEMBLY (WHA)

ILO (CONVENTION 162)

June 24, 1986, the ILO Convention 162, "Safety in the Use of Asbestos", was discussed and drafted by the ILO and has since been ratified by many countries, including most of the EU countries, Switzerland and Canada. The Convention is legally binding and in full force.

The key provision of ILO Convention 162, Article 3, paragraph 1, reads as follows: *"National laws or regulations shall prescribe the measures to be taken for the prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos."*

Thus the aim of ILO Convention 162 is to promote the safe use of chrysotile at the workplace and not its ban. The main concrete measures to be taken to implement the safe use of chrysotile are stated in Article 9:

"The national laws or regulations adopted pursuant to Article 3 of this convention shall provide that exposure to asbestos shall be prevented or controlled by one or more of the following measures:

(a) making work in which exposure to asbestos may occur subject to regulations prescribing adequate engineering controls and work practices, including workplace hygiene;

(b) prescribing special rules and procedures, including authorization, for the use of asbestos or of certain types of asbestos or products containing asbestos or for certain work processes."

WHA (RESOLUTIONS 58.22 AND 6026)

Other than supporting the vested anti-asbestos crusade, some WHO activists are doing very little. They refuse to hear any science that disagrees with their position and ignore the evidence of the "safe use" protocols that are accepted and recognized as effective tool to reduce the risk to workers health and conform in every respect to ILO International Convention 162.

The World Assembly Resolution 58.22 on cancer prevention urges Member States to pay special attention to cancers f60.26 or which avoidable exposure is a factor, including exposure to chemicals at the workplace. With Resolution 60.26, the World Health Assembly requested WHO to carry out a global campaign for the elimination of asbestos-related diseases "**...bearing in mind a differentiated approach to regulating its various forms** – in line with the relevant international legal instruments and the latest evidence for effective interventions..."

WORLD HEALTH ORGANIZATION
WORLD HEALTH ASSEMBLY

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"WHO will work with Members States to strengthen the capacities of the ministries of health to provide leadership for activities to workers' health, to formulate and implement policies and action plans, and to stimulate intersectoral collaboration. Its activities will include global campaigns for elimination of asbestos-related diseases; bearing in mind a differentiated approach to regulating its various forms; in line with relevant international legal instruments and the latest evidence for effective interventions."

"Countries can use this document according to the specific national and local conditions and available resources."

http://apps.who.int/gb/ebwha/pdf_files/WHA60-REC3/A60_REC3-en.pdf

It should be crystal-clear: A ban if necessary, but not necessarily a ban. It is all a matter of the way a product is used and the level of good control and precautions that are taken in order to provide people the best possible health protection.

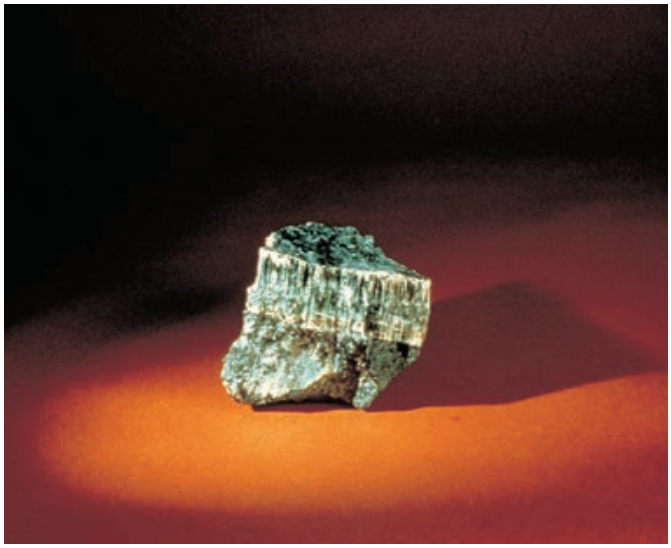
Facing the fact that WHO, Dr. Maria Neira and the anti-asbestos lobby are not responding to numerous questions particularly about real science and having no real access to the WHO data base of references on methods of estimation on their extrapolations regarding chrysotile fibres it is certainly reasonable to insist that the WHO competent authorities take the requisite measures to make publicly known all existing data they may have in hands supporting their pretention based on real science otherwise the world would have the right to talk about a great deception.

WHO has no choice now and has to come across and give all scientific studies and accept to establish a clear difference between commentaries, personal opinions, suggestions, estimates, extrapolations or unhealthy propaganda. WHO competent authorities and all anti-asbestos activists are well inform this kind of crusade is very far too far from real science.

CONCLUSION

Chrysotile is considered a valuable natural resource as is the case for any other mineral of worth to society. Its misuse of the past does not change its intrinsically beneficial characteristics. Chrysotile is a substance of significant social and economic value, particularly in emerging countries where it is widely used in highly, cost-effective, infrastructures applications, such as chrysotile-cement pipes for drinking water, irrigation and sewage.

No one should forget that chrysotile is not the only substance exhibiting hazardous characteristics. Glass wool, crystalline silica and some cellulose are among many other substances that have to be controlled to reduce the risk to an acceptable level.



Few other natural resources have been the subject of more research than chrysotile asbestos. Nevertheless, in spite of all the scientific data accumulated on the health effects of chrysotile and other fibres and in spite of measures taken by the industry, the workers and their labor organizations, a climate of uncertainty persists among the public.

Today, chrysotile is not the devastating threat to the population, to the world and to the workers, as it is widely alleged by some activists who too often manipulate statistics. The chrysotile industry, through the years, has answered and argued with logic and common sense. Rational response and explanations have been given, and the potential risk that this natural fibre may present has been addressed.

Thus, over three decades there has been consistent published evidence that chrysotile under proper control in the workplace can be used safely. Many examples of its control used successfully have been noted. In fact, using chrysotile within the parameters of the regulated exposure limits and respecting the good work practices in place will insure that it is being used safely and the level of a real potential risk for health is almost not measurable as often indicated by scientific published studies.

The good news is that the practical implementation of the safe and controlled use of chrysotile remains simple.

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