

NEWSLETTER

Newsletter from the Chrysotile Institute

For safe and responsible
use of chrysotile

Number 7, August 2004

Rotterdam Convention All countries have the right to vote in September 2004

The vote on the inclusion of chrysotile to the Prior Informed Consent procedure (PIC procedure) of the Rotterdam Convention will be held on the occasion of the meeting of the Intergovernmental Negotiating Committee, in Geneva from September 18 to 24, 2004. All the countries present, regardless of whether they are signatories of the Convention, will have the right to vote on this important issue for the future of chrysotile imports to developing countries. It is imperative that the governments of the countries concerned participate in this meeting and vote against the inclusion of chrysotile to this procedure of the Convention. The Committee's decision will be made by consensus.

Canada against the inclusion of chrysotile

After consultation during the election campaign, the Liberal Party forming the government of Canada announced, on June 6, its position against the inclusion of chrysotile in the Convention's PIC procedure. The Government of Québec is especially delighted, given that the National Assembly, made up of parliamentarians of all political parties, had unanimously adopted a motion last April, calling on the Government of Canada to take such a position in the interests of the industry, the workers and the chrysotile-consuming countries.

The President of the Privy Council, the Honourable Denis Coderre, guaranteed, at press conferences attended by the elected members from the producing regions and municipal authorities of Asbestos and Thetford Mines, that a liberal government, once re-elected would be against the inclusion of chrysotile on the PIC list. The Liberal Party was re-elected on June 28th, 2004. Pleased

that the chrysotile-producing industry in Canada has assumed its responsibilities in terms of occupational health and safety and controlled use of the product, he assured them that the Government of Canada would take its own responsibilities in supporting and defending the industry and the jobs that depend on it.

You will recall that at the November 2003 meeting of the participating countries in the Rotterdam Convention, the Chemical Review Committee recommended that five forms of asbestos (amosite, actinolite, anthophyllite, tremolite and chrysotile) be added to the PIC procedure, in addition to crocidolite, which has been included since 1998. All the countries declared that they were in favour of adding the four forms of asbestos amphiboles to this procedure. A number of countries, including Canada and Russia, objected and requested that a decision regarding chrysotile be put off until September 2004 so that the required consultations could be held with the stakeholders concerned.

The consultations were held and the Canadian position is totally consistent with the recommendations of the Government



program, which has proven its effectiveness and enabled the consuming countries and exporters to apply efficient prevention programs. The Chrysotile Institute can claim credit for thousands of hours of training, manuals and practical information sessions given on site to the people who have to handle the product. Clear labeling in accordance with the regulations is also applied.

This notion of effectiveness is crucial, because the information and training mechanisms prescribed in the Rotterdam Convention impose heavy bureaucratic procedures and delays. There is good reason to expect that the addition of chrysotile to the PIC program would force the importing countries to turn to substitute industrial fibres, as they would be easier to procure because they are not covered by the Convention, but the risks of their use increasingly give cause for concern. This deception must be denounced.

The obligations imposed on the listed products are essentially bureaucratic and seek exchanges of information between the exporting and importing countries. This exchange already exists, flexibly and productively, in the safe and responsible use programs which the chrysotile industry voluntarily applies in its relations with its customers. But everyone, especially the substitute fibre producers, know that bureaucracy can kill trade. This explains their zeal in having chrysotile included in the PIC procedure, even though it is not a hazardous chemical compound or a pesticide. The proof is that three quarters of the products listed in the Rotterdam Convention are already banned.

Is it necessary to recall that most of the world's chrysotile consumers have the option of turning to various industrial fibres? Chrysotile containing products manufacturing facilities are often small or medium-sized businesses and do not have enough personnel to deal with a heavy bureaucracy, and remain competitive in their field.

The chrysotile-cement industry in Mexico is currently facing almost insurmountable obstacles intended to prevent the use of this product. The anti-chrysotile

argument is simple: do not use it because it's dangerous – the proof is that it will soon be put on the PIC list. In the same sense, the Government of Peru, which supports the chrysotile safe-use and controlled-use policy, was the focus of undue pressure by the anti-asbestos lobby, supported by the substitute products industry, when there was discussion of including chrysotile in the PIC procedure at the same level as hazardous chemicals.

Acting responsibly by voting against the inclusion of chrysotile

All countries that consider chrysotile is a product with unique properties, allowing the production, at competitive costs, of infrastructures essential to their population's life and health, should **vote against its inclusion** in the PIC procedure. By doing so, they will choose the effectiveness and protection the controlled-use and safe-use program implemented for years. They will also reaffirm their confidence in the International Labour Organization Convention 162, which provides for safe use in the occupational setting, and will act responsibly on the environment and public health.



The Rotterdam Convention

The issues in brief

Some good reasons to oppose the inclusion of chrysotile in the PIC procedure of the Rotterdam Convention

- 1-This inclusion is not based on any proven scientific or medical reason.
- 2-The Convention targets toxic pesticides and hazardous chemicals which constitute a threat to the environment. This is not true of chrysotile.
- 3-The current use of chrysotile does not constitute a public health hazard. The risks, if any, are only found occupationally and are controlled under the International Labour Organization (ILO) Convention 162 and by the safe and responsible use policies voluntarily adopted by the industry, which are recognized by governments, including the Government of Canada.
- 4-The purpose of the PIC procedure is the exchange of information between countries. Yet the chrysotile industry is already subject to a responsible use policy for users of its products that is extremely rigorous and demanding. The industry has invested in the production of training manuals and information seminars, etc. to ensure safe work practices and methods are applied with the use of chrysotile.
- 5-Recent studies prove that the biopersistence of chrysotile in the body is about a dozen days compared to over 1000 days for some celluloses, popular substitute fibres which are not subject to the PIC procedure.
- 6-Recent studies also prove that high-density chrysotile products do not cause lung cancer or mesothelioma.
- 7-The PIC procedure is an invitation to ban. (Three quarters of the products on the list are already banned.) Yet chrysotile is a product for which the risks are well known, subject to precautions at every stage of the product's life cycle, while its outstanding qualities allow production of sanitary infrastructures essential to the development of emerging countries at competitive cost.

In waging the battle to have chrysotile included in the PIC procedure of the Rotterdam Convention, Chile and the European Union are taking their economic battle to the bureaucratic front, knowing very well that it can kill the chrysotile trade.

The countries that want to have chrysotile included in the Convention are major producers of substitute fibres such as cellulose. The Ban Asbestos movement supports and plays their game and defends the uncontrolled use of products that are potentially more hazardous, have harmful health effects and not governed by safe handling methods.

It is to counter this that Canada and about a dozen other countries have taken a strong position, announcing their intention to vote against the inclusion of chrysotile in the PIC procedure. They hope to convince other countries to join them and thus avoid committing a gross error regarding health and safety.





GOOD NEWS FROM BRAZIL LOW BIOPERSTENCE CHRYSOTILE:

THE CONSISTENCY OF EVIDENCE LEADS TO COMPELLING CONCLUSIONS

In the No.6 issue of our NEWSLETTER, (April 2004), we had indicated that a third study on the biopersistence of Brazilian chrysotile following inhalation using the same protocol as in the first two was not yet published. It will be recalled that the first study, using Canadian chrysotile, and the second one using chrysotile from California, had been published in the November 2003 and December 2003 issues of the journal *Inhalation Toxicology*. We have now received confirmation that the manuscript reporting the results of this third study by David M. Bernstein, Richard Rogers and Paul Smith has been accepted for publication in Volume 16, Nos.11-12, 2004 of the same journal under the title "The biopersistence of Brazilian chrysotile asbestos following inhalation". It shows that Brazilian chrysotile also appears to be cleared from the lung in a matter of days.

In the world of scientific publication, when new results are published for the first time, as was the case with the study on the biopersistence of Canadian chrysotile, scientists usually take notice, but wait for signs of "consistency of evidence" coming from other experiments. With this third study confirming the very low biopersistence of chrysotile asbestos, the conclusions are compelling: chrysotile clears very rapidly from the lungs, in contrast with the amphiboles and some synthetic fibres which are retained much longer. Thus we think it is most appropriate that we repeat here our comments made in our April 2004 issue:

- 1-The differences on human health from exposure to chrysotile vs amphiboles are so important that it becomes necessary to abandon the term 'asbestos' when referring to toxicological or epidemiological questions.
- 2-Chrysotile is in the same range of biopersistence as other industrial fibres which are the least damageable to human health. If chrysotile had

always been used in a controlled environment and if it had not been mixed with amphiboles, the consequences to human health would have been virtually non-existent.

- 3-Taking into account the long durability of tremolite, chrysotile fibres tested (from Brazil, Canada and the United States) have demonstrated such a low biopersistence, and none showed any sign of tissue damage which was evident with tremolite. It is now demonstrated that the allegation that chrysotile cannot be mined without tremolite contamination is unfounded.

Summary:

The mineralogy of the serpentine chrysotile fibers and amphiboles fibers shows distinct differences in the structure and chemistry of these two minerals. In contrast to the curled layered construction of chrysotile which appears to result in greater susceptibility to degradation, the amphibole fibers are rigid impermeable structures which are resistant to degradation. These differences are reflected in the inhalation biopersistence studies which clearly differentiate chrysotile from the amphiboles and show that longer chrysotile fibers are rapidly eliminated from the lung while the longer amphiboles once deposited remain. Due to the difficulties in study design and the large particle/fiber exposure concentrations used, the chronic inhalation studies with asbestos are difficult to interpret due in part to the non-specific effects of such large particle concentrations used in these studies.

Recent quantitative reviews which analyzed the data of available epidemiological studies to determine potency of asbestos for causing lung cancer and mesothelioma in relation to fiber type also differentiated between chrysotile and amphibole asbestos (Hodgson and Darnton, 2000; Berman &



of Québec, the industry and the labour unions. This good news reflects the continuity of the Canadian position reiterated on many occasions in favour of the responsible use of chrysotile. Based on the fact that chrysotile is radically different from the amphibole forms, that the scientific evidence of its safe use is clear, and that the long-term effects of chrysotile substitutes could turn out to be more harmful, we:

- 1-Consider that chrysotile does not represent a risk for the environment;
- 2-Recognize the effectiveness of the efforts of the industry and the unions regarding safe and responsible use at every stage of the product's life cycle (extraction, processing, product manufacturing, shipping and handling);
- 3-Consider that the International Labour Organization (ILO) Convention 162 on the use of chrysotile in the work environment is sufficient to assure the safety of the people who handle it; and,
- 4-Feel it is completely legitimate to defend chrysotile, which is faced with a trade war from countries producing substitute fibres.

Reminder of the issues

The Rotterdam Convention was ratified by nearly sixty countries, including Canada. This agreement seeks to regulate the international trade of toxic pesticides and other hazardous chemicals listed in the PIC procedure. Specifically, this means that the countries exporting these substances will be bound to obtain the importer's prior informed consent before shipping. To date, the PIC procedure applies to 29 pesticides and nine hazardous chemicals.

Missing the target

The Convention's objectives are to encourage the sharing of information and responsibilities, promote cooperation among the parties in the field of international trade of certain chemicals hazardous to

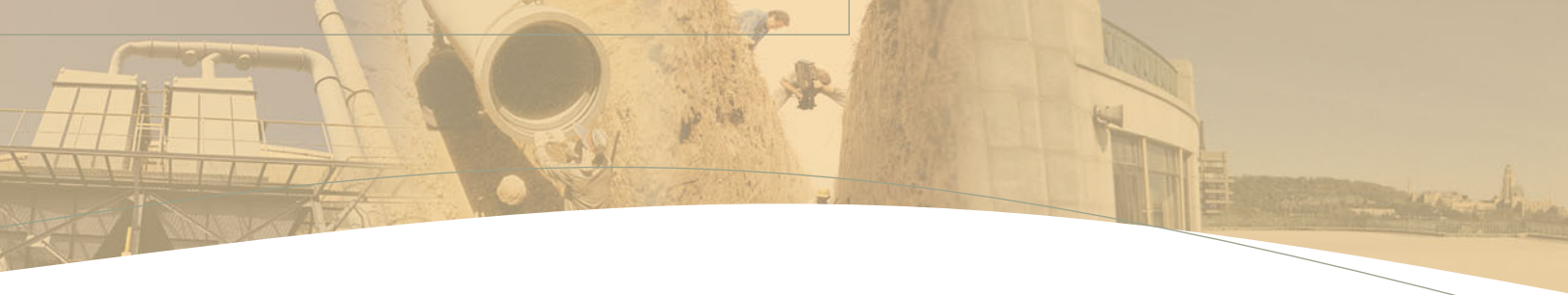
human health and the environment, and contribute to the ecologically rational use of these products. They are praiseworthy in principle but should not apply to chrysotile, which poses no environmental problems and involves low risks limited to the occupational setting. An international Convention already exists, that of the International Labour Organization, which governs the principles of its safe use occupationally. Moreover, in the case of Canada and the other consuming countries, the controlled-use and safe-use program is already implemented.

By targeting chrysotile as a threat to the environment, the countries requesting the inclusion of chrysotile are missing the target, unless they are more interested in a trade war than in concern for public health and the environment. It must not be forgotten that the European Union and Chile, which requested the Convention Secretariat to study the possibility of including chrysotile in the prior informed consent (PIC) procedure, have a strong substitute fibre industry. Very fortunately, the probability of countering this attack is improved, given that the position of non-inclusion is in line with that of about a dozen other countries, which have already announced their objections.

From the standpoint of health and the environment, no scientific basis justifies the application to chrysotile of the extremely severe measures set out in the Convention. The recent results of the biopersistence studies show that some replacement fibres, like some celluloses, remain in the body for over 1000 days, while chrysotile fibres disappear in about two weeks. Yet these replacement fibres do not appear on the list covered by the PIC procedure and neither Chile nor the European Union is calling for their inclusion. This is understandable, since they are the major suppliers.

Chrysotile is already under the jurisdiction of an international convention and an industrial controlled-use program

Contrary to the replacement products, chrysotile has long been governed by a safe and responsible use



Crump, 2004). The most recent analyses also concluded that it is the longer thinner fibers which have the greatest potency.

Brazilian chrysotile was found to be rapidly removed from the lung. Fibers longer than 20 μm were cleared with a half-time of 1,3 days, most likely by dissolution and breakage into shorter fibers. Shorter fibers were also rapidly cleared from the lung with fibers 5-20 μm clearing even faster ($T_{1/2} = 2,4$ days) than those $< 5 \mu\text{m}$ in length. The remaining short fibers were never found clumped together but appeared as separate, fine fibrils, occasionally unwound at one end. Short free fibers appeared in the corners of alveolar septa, and fibers or their fragments were found within alveolar macrophages. The same was

true of fibers in lymphatics, as they appeared free or within phagocytic lymphocytes. These results further support the evidence that the chrysotile fibers are rapidly cleared from the lung in marked contrast to amphibole fibers which persist.

Accepted for publication in the Journal Inhalation Toxicology, Vol., 16, Nos. 11-12, 2004

The biopersistence of Brazilian chrysotile asbestos following inhalation.

David M. Bernstein, Consultant in Toxicology, Geneva, Switzerland; Rick Rogers, Rogers Imaging Corporation, Needham, Massachusetts; Paul Smith, Research & Consulting Company Ltd., Füllinsdorf, Switzerland.

Safety of chrysotile products confirmed yet again

Two independent researchers, J.A. Hoskins, a consultant in the United Kingdom, and J.H. Lange of EnviroSAFE in Pittsburgh, USA, have just published a study on the health issues related to the production and use of chrysotile.

This very well documented research recalls that the asbestos-related diseases known today are the result of the unregulated practices of the past and the use of all types of fibres indiscriminately and in uncontrolled circumstances. After studying over 60 years of research on the issue, which establishes that the health risks vary according to the type of fibres and the precautions taken during handling, the authors conclude that the production and use of chrysotile under the current conditions do not constitute a demonstrable health risk.

Their study focuses on products manufactured and used in the past 50 years, 90% of which are high-density products (chrysotile-cement, friction

products). They conclude that, based on the available data, these high-density products do not cause lung cancer.

Their review of the literature regarding these questions leads them to denounce the sensationalism surrounding the issue. This is created both by supporters of an indiscriminate ban of all asbestos fibres, including chrysotile, and by the media, which often do not take the trouble to verify the scientific nature of certain anti-chrysotile assertions before stirring up public opinion.

They add that the European regulations are based on case studies involving mixed exposures to both amphiboles and chrysotile. However, relying only on the data concerning exposure to chrysotile-cement, which accounts for 90% of the current industry, the results for the workers' health would have been radically different.



Same name, totally different characteristics

Six categories of fibres are covered by the name asbestos, five of them from the amphibole family and the sixth from the serpentine family, chrysotile. Many detractors of asbestos intentionally maintain the confusion regarding all these fibres to achieve their economic and commercial, and sometimes even ideological goal, which is to eliminate chrysotile from the market to the benefit of substitute fibres.

This study presents an impressive and complete overview of the state of science on this subject, which confirms that chrysotile has chemical and crystallographic properties radically different from the other forms of asbestos. Chrysotile fibre has an outer structure that does not resist the natural acidity of the human body, contrary to amphibole fibres, which have an outer structure that is similar to quartz and is not destroyed in the body, remaining in particular in the lung tissues. Chrysotile, on the other hand, is rapidly eliminated by the body.

Long-lasting myths

The study also attacks three pervasive myths frequently passed along by the media, fueling a climate of fear in the populations concerned. The first aberration is the claim that all asbestos fibres, including chrysotile, have the same level of dangerousness and are responsible for the same pathologies. The second myth implies that any exposure to any type of asbestos, even in very minimal quantities, can cause serious illness, even cancer. Finally, the third myth is that asbestos is the sole cause of mesothelioma, a particularly virulent form of lung cancer. We should mention in this regard that many scientific opinions on the subject indicate that mesothelioma is attributable to amphiboles, a form of asbestos banned for years, and that it is not found in cases of exposure to chrysotile only.

Moreover, the data currently available indicate that the cases of disease are systematically found in situations where chrysotile was mixed with amphibole fibres.

Data confirming the success of safe chrysotile use

This study provides extremely well-researched data concerning the fact that chrysotile exposure does not present a detectable risk of mesothelioma and, incidentally, gastro-intestinal cancer. It also demonstrates that the risk of asbestosis and lung cancer, after exposure throughout a working life of 40 years, only appears at exposure levels 40 times greater than the permitted level in the United Kingdom and 100 times greater than enforced in the United States.

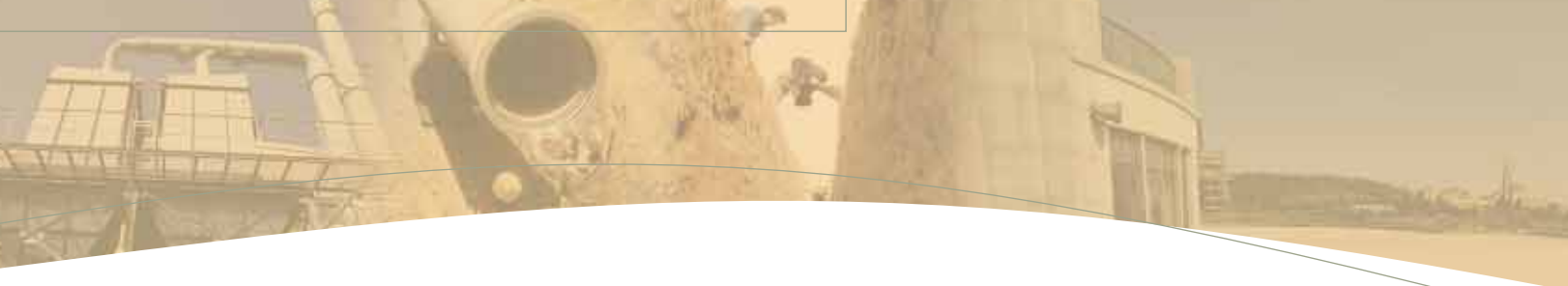
For more information on this study, visit the Web site at www.chrysotile.com

Conclusion (Excerpt):

Over the past 20 years or so enormous advances in our knowledge and understanding of asbestos-related disease have been made. Unfortunately, governments and regulatory agencies have largely ignored these findings. Lawyers and pressure groups vigorously resist them. Pressure groups once launched are not open to having their minds changed by new evidence, particularly when they are supported by manufacturers of substitutes for asbestos having their own vested interests in getting all asbestos, including chrysotile, banned. Lawyers do not want anything that makes their pleas more difficult and may reduce their earning potential. Governments and regulators are always very reluctant to admit that they have been wrong, particularly when much of the evidence comes from other countries.

In summary the facts are:

- 1-Chrysotile differs markedly from all other commercial asbestos: It is not acid-resistant, it is readily broken down in the lung and removed while amphiboles persist;
- 2-Early mortality studies which led to the regulations we have today were concerned mainly with industries using mixtures of fibre types;



3-All studies of industries where only chrysotile was used show that, even at high exposures, its toxicity is relatively low.

4-Animal experiments confirm the conclusions from human studies.

Regarding Thresholds:

For manufacturing industries, (excluding textiles for which a small doubt remains) there is good evidence that after exposure to chrysotile there is no epidemiologically detectable risk for mesothelioma and, incidentally, gastro-intestinal cancer. The risk of asbestosis and lung cancer after exposure throughout a working life of 40 years only appears where exposures were in excess of 20 f/ml. This level is 40 times greater than the permitted level in the UK and 100 times that for the USA.

Authors:

J. Hoskins, UK; J.H. Lange, USA.



The Sunday Times engages in anti-chrysotile propaganda

In its May 16, 2004 edition, *The Sunday Times* of London published a nine-page article of pure anti-chrysotile propaganda. Its author did not proceed with any verification or obtain the version of any independent expert, choosing to publish a pathetic recital of the case of a person suffering from mesothelioma and sowing his article with totally unfounded figures.

For example, he forecasts that 185,000 deaths will be caused by asbestos without any scientific basis other than a home-made multiplication of dubious data from two statisticians of the British Health and Safety Executive (HSE). Moreover, like all the activists of total banning, he makes no distinction between the different types of fibres, amphiboles or chrysotile.

As for the cited case of mesothelioma, does it really exist? The readers will never know, because no independent authority attests to its veracity. Is it linked to asbestos exposure? The readers cannot be certain, since in 25% of mesothelioma cases, asbestos is not involved, which the author does not take the trouble to mention. However, one verified fact, not found in the article, is that the responsibility for this disease cannot be ascribed to controlled chrysotile exposure alone (see the article on page 6). Yet 97% of the fibre extracted, processed and marketed on the planet is used in manufacturing these high-density products (chrysotile-cement, friction products). There is no certified case of cancer caused by high-density products, which constitute the current market. Once again, the article does not bother with the nuances!



It is also important to have a clear understanding of who stands to gain the most from this propaganda. In the United Kingdom, there is a thriving industry for removing products containing asbestos, born out of regulations calling for its total eradication. For the adherents of this thesis, the confusion created by alarmist articles like the one published in *The Sunday Times* provides more grist for the mill and a contingent

of worried customers. The less adequately they are informed, the less they make the necessary distinctions between real risks and unfounded insinuations, especially when they read them in media with a reputation for credibility. In most cases they will resort to needless removal of high-density products, an expensive solution too often proposed by the asbestos removal industry.

We've read it for you

The precautionary principle: health protection or demagogical drift?

Given the misunderstanding, disinformation and complexity of the debate surrounding the use of chrysotile, some regulators have opted for an approach based on the "precautionary principle" to justify a restrictive attitude to this natural fibre. This approach, which would prohibit any product with unknown risks, may seem wise, but some critics are beginning to ask themselves serious questions about the dangerous precedents to which its thoughtless application can lead. In brief, should the precautionary principle lead to the prohibition of products rather than their control? Doesn't this principle lead to overregulation, which ultimately has harmful effects on the public's quality of life? The following article attempts to answer these questions.

A lively debate on the precautionary principle has been raging in France ever since President Jacques Chirac announced in 2002 his intention to include this principle in the Constitution on the same basis as the Declaration of the Rights of Man and the Citizen. The French magazine *L'Express* dedicated its dossier of the week to this issue last March.

The precautionary principle is a philosophical concept born in Germany in the 1970s, which is defined in environment and human health as "a prudent attitude to adopt regarding unknown dangers". It

has made headway in European law and has even imposed itself as a legal standard in certain international agreements.

Opinions are split on this issue because, depending on its formulation, the bodies responsible for arbitrating its application and the related powers, it can give free rein to the worst abuses in the name of protecting the public against badly documented and shortsighted dangers. The greatest defenders of the most rigid possible application of this principle are ecologists, who see it as a means to compel the State to intervene in support of their demands on all hypothetical or real dangers, ranging from global warming to avian flu, including mad cow disease, GMOs or asbestos.

On the other hand, some scientists and a growing number of elected representatives fear that the adoption of this principle will hinder freedom of research and free enterprise, while giving any alarmist inordinate power, regardless of whether the concern has any foundation. The mere fact of invoking the precautionary principle and alerting the public through the media would be sufficient to trigger a spiral that can kill a product commercially without any independent scientific verification of its alleged dangers. If we can be permitted an analogy,



this is somewhat like a return to the Middle Ages, when faction leaders fed the superstitions of uneducated populations to better control them!

An expert opinion

In a major interview, *l'Express* discussed these questions with philosopher François Ewald, a professor at the *Conservatoire national des arts et métiers*, President of the *École nationale d'assurances*, who was a member of a commission mandated to lay the foundations of a future environmental charter. He mentioned the reasons why he is opposed to the "sanctification of the precautionary principle and his concerns as to the possible deviations in its use".

First concern: uncertainty and conditionality

The precautionary principle that would be included in the preamble to the French Constitution requires the authorities to avoid "doing damage which, although uncertain given the state of scientific knowledge, could affect the environment".

Second concern: the immense power devolving on the media

If it is unnecessary to provide rigorous scientific proof to call on the State to intervene, it is easy to imagine that the full gamut of research and precautions won't be applied in producing the lead story in the media!

Third concern: long term versus crisis management

In preference to the precautionary principle, the philosopher favours an approach based on anticipating long-term risks through reclamation programs, instead of crisis management dictated by panic-stricken public opinion. In his opinion, the latter approach should not be included in a national Constitution.

Fourth uncertainty: power to the courts

Since the precautionary principle will be included in the Constitution, the issues raised in its name will probably be arbitrated by the courts, which will take precedence over the elected representatives. François Ewald considers that Parliament should play this role instead.

Chrysotile and the precautionary principle?

With the application of such a principle, even products involving known, documented and controlled risks, such as chrysotile, would be wiped off the map in the name of precaution. This means that without considering scientific research, responsible use programs, and the product's benefits – which in the case of chrysotile allow the realization, at competitive costs, of sanitary infrastructures essential to the development of emerging countries – the State would ban it in the name of precaution alone and to satisfy public opinion stirred up by activists. These activists do not seem to fear substitutes for chrysotile, such as cellulose fibres, although more dangerous.

Since France has already banned chrysotile, including such a principle will not alter the situation. However, this trend should be monitored closely, especially since the ecological activists are making this a key issue.



On the Use and Misuse of the IARC "Classification of Carcinogenic Substances"

The International Agency for Research on Cancer (IARC) is part of the World Health Organization (WHO). IARC's mission is to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control. The Agency is involved in both epidemiological and laboratory research and disseminates scientific information through publications, meetings, courses, and fellowships.

The IARC has several research units, one of them: the "Carcinogen Identification and Evaluation Unit". This research unit works on the rationale that authoritative information about proven and possible human carcinogens is needed to assess the hazards posed by exposure to chemical, physical and biological factors. The sources of such exposures are varied: the workplace, the environment or the individual lifestyles (alcohol drinking, tobacco smoking). Independent scientific evaluations of the carcinogenicity of such exposures can be used as a basis for information, regulation and legislation by the research community, national authorities and international organizations.

The main work of the Unit is production of the prestigious IARC "Monographs" series on the Evaluation of Carcinogenic Risks to Humans, which has published authoritative reports on the hazards posed by more than 885 agents. Since its inception in 1972, the "Programme" has reviewed more than 885 agents, and IARC Monographs have become well-known for their thoroughness, accuracy and integrity. The Monographs are invaluable sources of information both for researchers and for national and international authorities.

Misconception of terminology:

Use and misuse of the "Overall Evaluation of Carcinogenicity to Humans".

As evaluated in the IARC Monographs Volumes 1-83, a list contains all agents, mixtures and exposures circumstances evaluated to date as being

in "Group 1" (carcinogenic to humans) (<http://193.51.164.11/monoeval/crthgr01.html>).

The list was last updated April 28, 2004. It now contains some 90 agents, mixtures and activities classified in "Group 1". The 90 entries are divided into three sections: "Agents and groups of agents"; "Mixtures"; "Exposure circumstances". From each of these three sections, some are indicated below for illustrative purposes.

Agents and groups of agents:

Asbestos
Benzene
Cadmium
Oestrogen therapy, post-menopausal
Oestrogens, both steroidal and non-steroidal
Oral contraceptives, sequential
Silica (crystalline, inhaled in the form of cristobalite)
Vinyl chloride
X-radiation and gamma radiation

Mixtures:

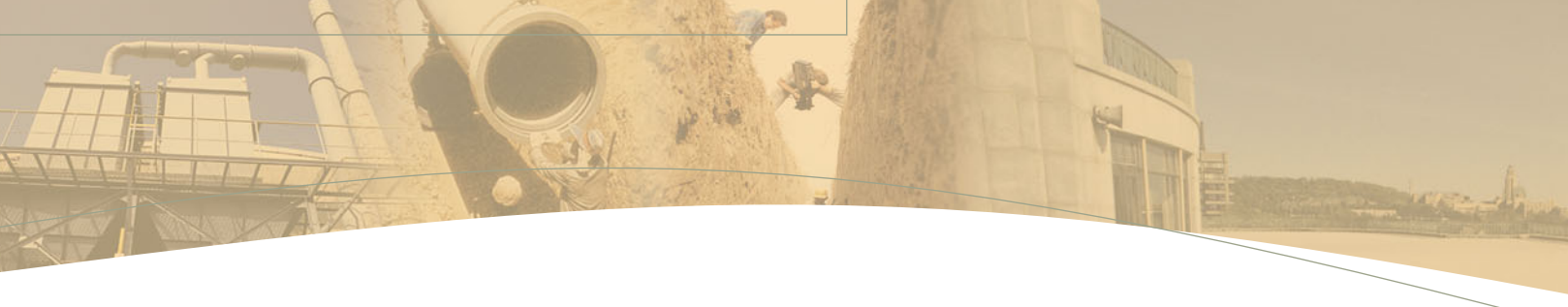
Alcoholic beverages
Analgesic mixtures containing phenacetin
Salted fish (Chinese-style)
Tobacco smoke
Wood dust

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

Question: Does the presence on the IARC list of "Group 1" of Agents, Mixtures and Activities imply that these must be banned?

The answer is obviously NO. The reason is because



the IARC classification covers only the **identification and characterization (hazard)** of these substances, mixtures and activities. It does not include the **assessment of risk**, i.e.: the probability of toxic manifestations **under actual conditions of use**. This is an important distinction: “hazard” is not “risk”. The IARC classification is about hazard, not risk. Indeed, characterizing a hazardous substance is not equal to assessing its true risk.

Hazard identification is an essential but 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. This misperception often results in political response to perceived fear, sometimes nurtured by media taste for sensationalism, pushing regulatory action to extremes.

When dealing with potentially harmful substances, the classical three-pronged approach is used:

- 1-hazard identification (characterization);
- 2-risk assessment;
- 3-risk management.

It must be re-emphasized that the IARC classification scheme refers only to “hazard identification”. It does not refer to “risk assessment” which, as already mentioned, must include the various components of dose and duration of exposure. Therefore, the IARC classification is not meant to be used as a “risk management” instrument for regulatory action, without the proper risk assessment step.

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.



The special case of asbestos

First, it must be recognized that there is a need to adapt the current classification

rules originally designed for chemical entities to encompass a group of materials whose effect is also determined by their physical form. It is generally accepted that the carcinogenic effects of mineral fibres depend on the dose of “long, thin, durable” fibres reaching the alveolar region of the lungs. It must also be realized that the word “asbestos” is a generic, commercial term which encompasses two very different families of fibrous silicates: the serpentine and the amphiboles. With the growing body of recent evidence regarding the distinct “hazard characterization” of chrysotile asbestos vs that of the amphiboles varieties of asbestos, the time has come to better differentiate the characteristic hazards associated with the two families of asbestos. While the current IARC classification does not make this distinction for the different varieties of asbestos, the various exercises of “risk assessment” carried over several years of investigation between the two families of asbestos have confirmed that the risk associated with the use of chrysotile asbestos is quite different from that of the amphiboles.



For instance, it is now generally accepted that the much longer residence time (biopersistence) in the lung of inhaled amphibole fibers is a key factor for their much higher pathogenicity than that of chrysotile (1,2). This fact has recently received strong support from experimental biopersistence studies (3,4). Additionally, many epidemiological studies (5) have shown no evidence of increased cancer risk from chrysotile exposure at low (~1 f/ml, 8-hour time weighted average), presently regulated occupational exposure levels, recommended by the Group of Experts convened by the WHO in Oxford (1989). Surely the time has come for the IARC to revisit its present identification criteria for the classification of human carcinogens.

REFERENCES

1- *"...the importance of selective retention of fibers has been discussed in a recent paper. We are convinced that those diseases associated with exposure to mineral fibers are due to fibers retained in the lungs".*

Wagner, JC and Pooley FD (1986) Thorax 41: 161-166

2- *"The findings thus support the hypothesis that adverse effects are associated rather with the fibers*

that are retained (amphiboles), than with the ones being cleared (largely chrysotile)"

Albin et al (1994) Occup Environ Med 51: 205-211

3- *"Taken in context with the scientific literature to date, this report provides new robust data which clearly supports the difference seen epidemiologically between chrysotile and amphibole asbestos."*

Bernstein D, Rogers R, Smith P (2003). Inhalation Toxicology 15 : 1247-1274

4- *"These findings provide an important basis for substantiating both kinetically and pathologically the differences between chrysotile and the amphibole tremolite"*

Bernstein D, Chevalier J, Smith P (2003) Inhalation Toxicology 15 : 1387-1419

5- *"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".*
(* about 40f/ml for 20 years)

Liddell FDK, McDonald JC and McDonald A (1997) Ann. Occup. Hyg. 41:13-35



Setting the record straight on vermiculite: Ban Asbestos spreads panic... to serve its cause

A recent edition of the newsletter of the International Ban Asbestos Secretariat claims that "Canadian asbestos has killed U.S. citizens". The author, Laurie Kazan-Allen, well known for the war she has waged at great expense against the international chrysotile industry, refers to the mining of vermiculite in Montana (USA), which naturally contains tremolite, a fibrous form of amphibole. Having repeatedly shown bad faith on the chrysotile issue, particularly by refusing to recognize the difference in toxicity between chrysotile and amphiboles, Kazan-Allen this time displays her fanaticism by seeking at any price to associate a product naturally containing an asbestiform fibre with the Canadian chrysotile industry. The Canadian and American health authorities, who cannot be claimed to be in the pay of any industry, have clearly indicated the source of contamination of this vermiculite and the low risks its presence could involve under normal exposure conditions. The Chrysotile Institute considered it necessary to issue a reminder of the facts on this issue. It continues to warn the regulators and the public against the propaganda of the anti-asbestos movements, determined to ban chrysotile worldwide. These movements are implicitly promoting a lucrative industry of lawsuits, asbestos removal and the sale of substitute materials, which is not synonymous with a real concern for protection of human health.

It is especially important to have a clear understanding of the issues related to the vermiculite insulation issue. The propagandists of the *Ban Asbestos* movement are engaging in deception to create needless fear among consumers and put undue pressure on governments, particularly to vote in favour of the inclusion of chrysotile in the Rotterdam Convention (see article on page 1).

Tremolite is not chrysotile

In April 2004, Health Canada issued a warning against a vermiculite insulation containing tremolite, an asbestos of the amphibole family, one of the fibres most harmful to health. Its physicochemical properties and biopersistence are radically different from those of chrysotile. Vermiculite is a natural ore,

which resembles mica, mined around the world. Because of its insulating and fire-resistant properties, it has been used in a variety of commercial products and consumer goods, including since the 1920s, insulation materials.

The product that poses a problem and justifies the Health Canada warning was extracted from the Libby Mine in Montana (USA), which was in operation from 1920 to 1990 and which was naturally contaminated with tremolite. This product was sold in Canada from 1963 to 1984 under the brand name *Zonelite Attic Insulation*. Health Canada estimates that 200,000 homes in Canada contain this insulation, which was taken off the market about ten years ago. However, it is important to know that the vermiculite produced before 1990 does not necessarily contain tremolite.





Don't move the insulation

Even though the overall percentage of tremolite in the vermiculite is minimal, the percentage in the air may increase if the material is moved. The danger therefore occurs during maintenance, renovation and demolition. When the fibres are integrated or sealed into a product such as wall cladding or floor covering, there is no major health risk. Thus, if the insulation is contained and absent from the home's ambient air, the risk is minimal. The best way to reduce the risk of tremolite exposure is to avoid moving the insulation in any way. If necessary, call on removal contractors specialized for this type of product.

If bad faith could kill ...

Ban Asbestos uses the only recorded case, a family of four living on a First Nations reserve northeast of Winnipeg, who possibly contracted mesothelioma, a lung cancer associated with amphiboles, due to

vermiculite insulation contaminated by tremolite. On this basis, it demands that governments ban chrysotile, a fibre with radically different properties. Remember that this unfortunate case is linked to tremolite, an asbestos of the amphibole family banned for decades. Chrysotile is not involved in any way.

Ban Asbestos is using this sad case to call for an end to regulated production of chrysotile in high-density products, as if this could make them disappear by magic. They must be really short of arguments to twist the truth and make up stories, floating the rumor that chrysotile involves the same dangers as amphiboles or that encapsulated products or chrysotile-cement involves the same risks as asbestos flocking used to represent for workers.





ERRATUM

We would like to thank one reader of our Newsletter for informing us that there were some inaccuracies in our commentary which appeared in the last NEWSLETTER (No 6, April 2004: **"A New Study confirms the difference between chrysotile and amphiboles"**) regarding the many studies that have demonstrated that chrysotile is eliminated from the lungs more rapidly than the amphiboles, and is far less damageable to human health. We had indicated that *"The study group, (Eastern Research Group, Lexington, MA) convened by the U.S. Environmental Protection Agency, has unanimously endorsed this scientific fact"*. This needs to be corrected.

First, the Eastern Research Group is not a scientific body per se. Rather it is simply the consulting company that EPA had hired to organize and manage the peer review conference.

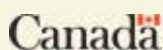
With regard to the opinions of the expert panel (and the broader scientific community), most in the field agree that, on the whole, chrysotile fibers are less persistent in the body than amphibole fibers, and it is also generally accepted as a hypothesis that the

overall lack of persistence of chrysotile in the lungs may be among the reasons that chrysotile appears to be so much less potent toward the induction of mesothelioma.

For those readers who would prefer to consult the exact transcript of the Executive Summary of the peer review report, please note that you can do so, as we have indicated earlier in our "News" section (July 8, 2003) under the title: **"Report on the Peer Consultation Workshop to Discuss a Proposed Protocol to Assess Asbestos Related Risk"**.

This Newsletter is available in English, French and Spanish.

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