

# NEWSLETTER

Newsletter from the Asbestos Institute

For safe and responsible  
use of chrysotile

Number 3, November 2002

## Chrysotile and the catastrophe of the World Trade Center: **Myths, reality and a lesson to be learned**

Amid the general confusion and consternation that followed the collapse of the towers of the World Trade Center (WTC) after the attacks of September 11, 2001, a phenomenal amount of false information circulated regarding how asbestos might affect the New York population. Some organizations, such as the International Ban Asbestos Secretariat, quickly took advantage of the emotional climate to promote their interests without waiting for results from serious studies. They went so far as to say that the asbestos in the WTC building could result in more victims than the attack itself.

Now that U.S. society is slowly recovering from this catastrophe and reports on the fast collapse of the towers are being made available, citizens have a clearer idea of the role chrysotile played in protecting human lives.

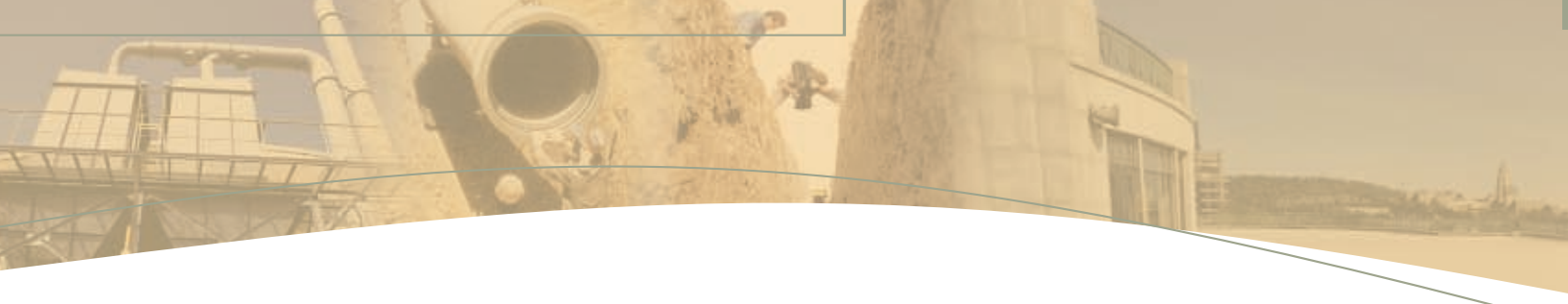
### The Facts

As with all buildings higher than 52 floors, U.S. construction standards require a minimum fire resistance rating of 4 hours for evacuation and setting up emergency measures. To accomplish this, the metallic structure, which acts as the skeleton for the tower, had to be covered with a product that keeps the heat from affecting the solidity of the steel. Steel loses 50% of its resistance at 590°C and melts at 870°C. Unfortunately, the insulation used, that did not contain chrysotile fibres, was unable to meet this requirement since the South tower collapsed 47 minutes after impact, and the North tower collapsed in just under 104 minutes.

Certain assumptions were put forward, in particular that the intense heat resulting from the combustion of the burning aircraft fuel would have melted any type of insulation. However, data from laboratories and companies that deal with similar temperatures show that if the insulation would have stayed in place and had been applied in compliance with the standards, this temperature would not have been sufficient to melt the steel and cause the collapse. Other factors therefore explain the quick weakening of the structure.



The Asbestos Institute



### Three types of thermal insulation were used during the construction of the twin towers:

- 1) A mixture of mineral wool, gypsum and Portland cement, to which a small amount of chrysotile (20%) was added for the first to 36<sup>th</sup> floors of the North tower. This mixture was used on the metallic structures and support beams.
- 2) An aggregate of vermiculite and gypsum was used on the interior surface of the outside wall. This mixture contained 13% chrysotile up to the 37<sup>th</sup> floor of the North tower.
- 3) A mixture of 80% chrysotile and 20% Portland cement was used in several locations where vibrations and air movement were high, such as in the elevator shafts.

We have to remember that in the 1970s, the effects on the health of workers resulting from incorrect use of chrysotile, such as fireproofing, caused some administrations to stop using the product. The use of substitution products that were supposedly just as good was widely promoted. In the case of the WTC, the builder, the *Port Authority of New York and New Jersey*, had issued a directive prohibiting the use of powdered chrysotile in April 1970, when the towers were built. This is why no thermal insulation with this fibre was used above the 37<sup>th</sup> floor of the North tower or in the South tower, except in the elevator shafts. Remember that the airplanes hit above the 70<sup>th</sup> floor.

The fire resulting from the combustion of aircraft fuel could not have exceeded 1020°C, a temperature high enough to melt the steel, but well below the point at which chrysotile crystallizes. Tests carried out by the *American Society of Testing Materials* (ASTM) show that formulas that did not contain chrysotile were applied less uniformly and that their resistance to marring was 10 to 25% lower than those with the fibre. In June 2002, before a U.S. government committee responsible for investigating the causes for the WTC catastrophe, a panel of architects and civil engineers also attributed the fast collapse of the towers to the lack of effectiveness of the insulating material as the main reason.

### Worker Health Considerations

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Use of all forms of powdered asbestos was very extensive in North America and Europe when skyscrapers were being built in the 1950s and 1960s. Unlike cement, which had been used before to protect metallic structures, mixtures containing various asbestos fibres made buildings considerably lighter and made it easier to create more innovative architectural designs. However, this method released significant quantities of breathable dust, which is harmful when inhaled in large quantities over extended periods. For example, Reitze [1972] had estimated that the number of breathable fibres in the work environment were 20 to 100 fibres per millilitre in a radius of 20 metres from workers responsible for pulverization. Furthermore, at that time, there was very little or no respiratory protection for workers on construction sites.





The prohibition of using chrysotile in friable products was certainly a reasonable decision regarding workplace health at the time given the high exposure to breathable fibres. There have been many deaths attributed to exposure to asbestos, amphiboles and serpentine combined among workers responsible for applying asbestos-based insulation. But we do not know the harmfulness of products used as substitutes for chrysotile and whether use of substitutes may have made victims of the workers responsible for installing them. The only facts we have are that, on the one hand, the ineffectiveness of the substitute product is associated with the quick collapse of the towers and high number of victims and, on the other hand, the use of chrysotile as insulation may have been theoretically responsible for the deaths of two workers<sup>1</sup>, but may have actually prevented the towers from collapsing.

## Reflection and Conclusion

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The prohibition of using chrysotile in friable products and therefore its installation, responsible for exposing workers to significant quantities of dust, was certainly a reasonable decision in terms of workplace health. But it appears that this decision was applied too quickly, before substitution products could be proven effective. In light of the tests carried out by the ASTM, if the insulating mixtures respected the safety standards in 1970, it is possible that time deteriorated them to such an extent that they no longer provided effective protection from fire at this temperature. Examinations of insulations with chrysotile in the structures of lower floors showed that they still had their initial characteristics. The decreased performance of substitution products is therefore the main reason for the collapse of the towers which, needless to mention, resulted in the deaths of just over 2,800 people.

The unfortunate experience of the WTC towers brings us to reflect on substitution products. We have participated in an all-out offensive on behalf of multinational manufacturers of substitution products for several years, with the support of interest groups such as the International Ban Asbestos Secretariat, to quickly replace products containing chrysotile asbestos. Substitution is proposed without knowing the quality or innocuousness of substitution materials, based solely on the fact that asbestos is harmful to health. This is clearly an economic war in which business issues come before the health and safety of people. A series of other factors must be considered, based on risk analysis, before confirming that the substitution is a benefit for society. In many countries today, entire populations are deprived of drinking water and decent housing because chrysotile substitution products, that are forcibly imposed, are not of equal quality, cost more and pose health risks. However, contrary to the WTC, this deplorable situation continues in silence.

<sup>1</sup> For a detailed analysis, see article "The World Trade Center Catastrophe: Was the Type of Spray Fire Proofing a Factor in the Collapse of the Twin Towers?" article, *Indoor Built Environment* 2001; 10 : 350-360.





## Vision from the Unions

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Chrysotile workers and their unions have often hoped that the experience they have acquired with the use of chrysotile would be beneficial to colleagues in other industries that use potentially dangerous materials. They insist on implementation of appropriate and efficient work procedures that would help avoid being exposed to dangerous levels of all products and all potentially hazardous particles during work.

In this edition of the newsletter, you will find the position of two important union organizations: the Centrale des syndicats démocratiques (CSD – Canada) and the Russian Chemical and Allied Industries Workers Union (RCWU – Russia). This text was written by Jacqueline de Bruycker and published in the April 2002 edition of *La Base* magazine.

## INTERNATIONAL SOLIDARITY IN ACTION

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by Jacqueline de Bruycker, *La Base* - April 2002

Beyond their differences, Quebec and Russian asbestos industry workers share the same concerns and are fighting the same battle together. They want to keep their jobs and work without risking their health or safety.

As a result of this battle, the Centrale des syndicats démocratiques (CSD) has in recent years formed lasting relationships with the Russian Chemical and Allied Industries Workers Union (RCWU), which has over one million members. These bilateral relationships demonstrate the CSD's willingness to bring all of the support necessary to the Syndicat national de l'amiante d'Asbestos inc. to consolidate existing jobs in Asbestos by promoting the safe use of asbestos.

In Quebec, as in Russia, the asbestos industry faces the ban of this mineral by many countries and the hysteria that is rocking Europe following an extensive anti-asbestos campaign conducted in the name of public health. It must also contend with the strong lobby of manufacturers of substitution products, some of which are already known to be carcinogens. These multinationals are taking advantage of the health debate that monopolizes public opinion to underhandedly wage economic warfare to harm asbestos producers.





"After Russia, Quebec is the largest producer of asbestos in the world. The current controversy surrounding asbestos concerns fibres and applications that have been abandoned or prohibited for decades. Thanks to new technologies and work methods, our workers have learned to extract and handle asbestos safely, without threatening the public or the environment. We want to discuss the battles they fought to keep their jobs, their expertise, and the work methods they developed but, more importantly, we want to share them with workers in other countries," said François Vaudreuil, president of the CSD.

### Lasting Relationships

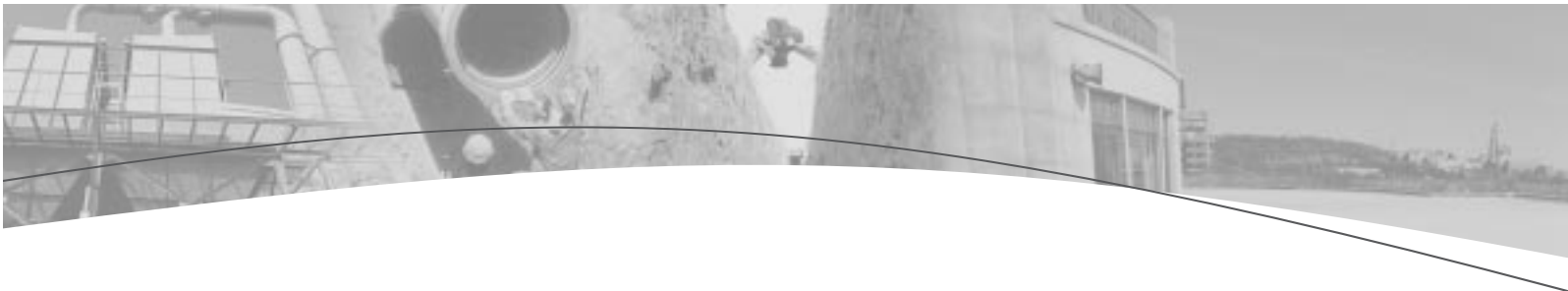
In this context and through The Asbestos Institute, the CSD and the Syndicat des Métallos, which also have representatives on the institution's board of directors, have formed relationships with Russian unionists during their visit to Quebec in February 2000.

A few months later, in July 2000, a delegation of Quebec union leaders, including François Vaudreuil and Rodrigue Chartier, president of the Syndicat national de l'amiante d'Asbestos inc., went to Russia to meet RCWU representatives.

In October 2001, on an invitation from The Asbestos Institute, a delegation of Russian union representatives came to Quebec to learn how jobs in the asbestos industry are saved here, while protecting the health of workers and ensuring their safety.

To this end, they had an opportunity to examine Quebec legislation on social welfare, occupational health and safety and parity, and they saw how this legislation applies to Quebec and in each work environment.





"The Quebec labour movement fought to ensure that workers who work with chrysotile asbestos (white asbestos) can work in a healthy environment. The CSD and the Syndicat national de l'amiante d'Asbestos inc. were actively committed to this battle and we won several cases with the adoption of Bill 52 in 1975, which limits worker exposure to two fibres per cubic centimetre and regulates compensation to victims of industrial diseases. The standard was later changed to one fibre per cubic centimetre. Today, workers at the Jeffrey Mine in Asbestos work in one of the safest work environments with an average exposure of 0.3 fibres per cubic centimetre, one third of the standard. This is the approach we propose throughout the world to ensure that chrysotile asbestos is used safely and responsibly. Thousands of jobs depend on it," said Rodrigue Chartier.

## The Same Battle

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The threat to the industry exists in Russia as well as in Quebec, making it even more important to share experiences and expertise. Defining common strategies for promoting the safe use of asbestos also becomes even more urgent. The decision of the European Community to ban this mineral, without taking the context in which it is used into account, may have a domino effect on the countries it influences.

If the Russians share the same concerns as Quebecers, they are nevertheless faced with specific difficulties related to both sudden fluctuations of the country's economy that resulted in a deterioration of working conditions, and the difficulty with the new division of responsibility between the State, employers and unions following the fall of the old regime.

Operating standards for asbestos are very high in Russia, but many companies are unable to meet them because they lack funding, preventing them from modernizing their plants and acquiring new equipment. Corporate financial problems concern Russian unionists all the more because they interfere with the implementation or tightening of occupational health and safety measures in the plants.

In their opinion, knowledge of a company's financial situation is very important because, in addition to determining their ability to invest, it lets them orient their strategies and bargaining demands and describe the purpose of their union. "It is important for the shop committee to be well-informed of the company's financial situation. With more information, we can do more. The work plan or collective agreement is based on this. The agreement becomes increasingly important, but for it to be applied, management must often be pressured using all of the facilities of the union and State," explained Nina Koulyguina, regional health and safety secretary.







## Divergent Interests

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While employers and labour organizations in Quebec and Russia are working to promote the safe use of asbestos, their interests often diverge when it comes to improving working conditions in the field and ensuring they are applied.

This is an even greater challenge for Russian union leaders because the era of state-owned companies and unions whose roles were restricted to organizing social events is gone. Under the old regime, salary issues and working conditions were decided by the general committee of unions and the central government. Local unions were not involved in negotiations and their scope of concern was different since they handled community needs, such as housing, recreation, sports and vacations.

For Tatiana Likhacheva, a union leader, training union managers in health and safety matters is another priority, similar to worker involvement. In her opinion, workers do not get involved enough. They do not share their concerns about work safety as much as their union leaders would like, but she is aware that, given the current economic situation, workers are focusing on keeping their jobs and the advantages they worked hard to gain. This is why they are willing to fight.

To promote greater involvement by workers in matters of health and safety and provide each person with the methods and give them the ability to work in an environment that respects the workers bodily integrity, Russian unions are relying on information and democratization strategies. They also expect to benefit from events such as the one on May 1 to create meeting places where workers can exchange ideas and debate.

## Solidarity is the Key

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However, solidarity is the real key. Through solidarity, Russian and Quebec workers will win the battle on the safe use of asbestos. Born in the mines, mills and plants, solidarity today has crossed borders and has cemented solid relationships between workers from other continents.

"What we learned during our stay opened new channels for us and helped us think about how we go about our trade. The fight led by Quebec workers on health and safety issues and the results they obtained are incentives for us. But we must work together to defend our trade. We can do this by increasing the number of meetings and exchanges, and by working with international organizations such as the International Labour Organization (ILO) and World Health Organization (WHO). We must make things happen and solidarity will help us". This is the short version of the message delivered by Yuri Gritsenko, leader of the delegation, secretary of the RCWU, responsible for health and safety.





## The Quebec government adopts policy for a more widespread and safe use of chrysotile asbestos

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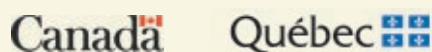
In Quebec, which is the only chrysotile producing province of Canada, the government introduced in June 2002 a policy aiming at the more widespread and safe use of chrysotile asbestos. This policy is part of a maintained effort of the Quebec government regarding the chrysotile asbestos industry and should allow in the medium-term to appreciably increase the domestic demand for asbestos and assure the safe use of chrysotile asbestos products. These products are known for their unique physical chemistry, durability and competitive cost while being safe for the workers handling it.

According to the Minister of Natural Resources, François Gendron, this policy of accrued and safe use of chrysotile asbestos in Quebec aims to support the industry by encouraging the use of products containing chrysotile and continues to promote it abroad. It supports the future of chrysotile asbestos and proves once more that products containing this fibre can play an important role in many activity sectors without causing unacceptable risks either for the workers or the general population.

Minister Gendron indicated that the policy targets non-friable products such as chrysotile cement or bitumen coated chrysotile asbestos where it is difficult for the asbestos fibre to escape. Particularly, the policy aims at pursuing the evaluation of chrysotile asbestos bitumen-coated material for use on Quebec roads; it obliges the ministries and important work organizations to authorize products containing chrysotile asbestos and considers them on the same footing as their competitors. It also includes the establishment of an assistance program for the research, development and marketing of new products of chrysotile asbestos.

This Newsletter is available in English, French and Spanish.

The publication of this document was made possible with the help of our financial partners :



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