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EUROPEAN COMMUNITIES – MEASURES AFFECTING ASBESTOS AND ASBESTOS – CONTAINING PRODUCTS

Report of the Panel

The report of the Panel on *European Communities – Measures Affecting Asbestos and Asbestos – Containing Products* is being circulated to all Members, pursuant to the DSU. The report is being circulated as an unrestricted document from 18 September 2000 pursuant to the Procedures for the Circulation and Derestriction of WTO Documents (WT/L/160/Rev.1). Members are reminded that in accordance with the DSU only parties to the dispute may appeal a panel report. An appeal shall be limited to issues of law covered in the Panel report and legal interpretations developed by the Panel. There shall be no *ex parte* communications with the Panel or Appellate Body concerning matters under consideration by the Panel or Appellate Body.

Note by the Secretariat: This Panel Report shall be adopted by the Dispute Settlement Body (DSB) within 60 days after the date of its circulation unless a party to the dispute decides to appeal or the DSB decides by consensus not to adopt the report. If the Panel Report is appealed to the Appellate Body, it shall not be considered for adoption by the DSB until after the completion of the appeal. Information on the current status of the Panel Report is available from the WTO Secretariat.

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I. INTRODUCTION

1.1 In a communication dated 28 May 1998, Canada requested consultations with the European Communities (EC) pursuant to Article XXII of the General Agreement on Tariffs and Trade (GATT), Article 11 of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and Article 14 of the Agreement on Technical Barriers to Trade (TBT Agreement), concerning certain measures taken by France for the prohibition of asbestos and products containing asbestos (WT/DS135/1 – G/SPS/GEN/72 – G/TBT/D/15). Canada's request states that these measures include, but are not limited to, Decree No. 96-1133 of 24 December 1996 (the "Decree") banning asbestos, issued pursuant to the Labour Code and the Consumer Code, as amended. On 12 June 1998, Brazil asked to take part in the consultations because of its substantial trade interest (WT/DS/135/2).

1.2 In a communication dated 8 October 1998, Canada informed the Dispute Settlement Body (DSB) that the consultations held with the EC had failed to resolve the dispute satisfactorily. Consequently, Canada requested the DSB to establish a panel to examine the French measure concerning the prohibition of asbestos and products containing asbestos. In its communication, Canada claimed that the Decree, as well as any other measure which Canada might indicate, were inconsistent with Articles 2 and 5 of the SPS Agreement, Article 2 of the TBT Agreement, Articles III and XI of the GATT 1994, and, under Article XXIII:1(b) of the GATT 1994, nullified or impaired one or several advantages accruing to Canada directly or indirectly under the WTO Agreement or impeded the attainment of an objective of the Agreement owing to the fact that the banning of asbestos by France was applied whether or not it conflicted with the Agreement (WT/DS/135/3).

1.3 At its meeting held on 25 November 1998, the DSB established a panel pursuant to Canada's request. At that meeting, the parties to the dispute agreed that the Panel should have the following terms of reference:

> "To examine, in the light of the relevant provisions of the covered agreements cited by Canada in document WT/DS135/3, the matter referred to the DSB by Canada in that document and to make such findings as will assist the DSB in making the recommendations or in giving the rulings provided for in those agreements".

1.4 On 29 March 1999, the parties to the dispute agreed that the Panel would be constituted as follows (WT/DS135/4):

Chairman: Mr. Adrian Macey;
Members: Mr. William Ehlers;
Mr. Åke Lindén.

1.5 Brazil, the United States and Zimbabwe reserved their rights as third parties to the dispute, in accordance with Article 10 of the Dispute Settlement Understanding.

1.6 The Panel met with the parties on 1 and 2 June 1999 and with third parties on 2 June 1999. A meeting with scientific experts was held on 17 January 2000. The second substantive meeting with the parties was held on 20 January 2000.

1.7 In a communication dated 27 September 1999, the Chairman of the Panel informed the DSB that the Panel was unable to present its report within the six-month period provided in Article 12.8 of the Memorandum of Understanding. The reasons for the delay are set out in document WT/DS/135/5. In two subsequent communications dated 7 March 2000 and 28 June 2000 respectively, the Chairman of the Panel informed the DSB that the Panel would require more time to complete its report (WT/DS135/6 and WT/DS135/7).

1.8 The Panel transmitted its interim report to the parties on 13 June 2000. Its final report was submitted to the parties on 25 July 2000.

II. FACTUAL ASPECTS

A. BASIC DATA CONCERNING ASBESTOS

2.1 Asbestos is a "fibrous mineral of hydrated silicates"[1] which can be divided into two groups: amphiboles and serpentine. There are five varieties of asbestos within the amphibole group: anthophyllite, amosite (or brown asbestos), crocidolite (or blue asbestos), actinolite, and tremolite. The serpentine group comprises only chrysotile (or white asbestos). These varieties of asbestos have different physical and chemical properties.

2.2 It is mainly amosite, crocidolite and chrysolite which are exploited for industrial and commercial purposes. The special qualities of asbestos fibres (for example, resistance to very high temperatures and to different types of chemical attack) due to their particular physical and chemical properties have meant that they have been put to many uses, for example, for the manufacture of industrial and consumer products and in the building industry.

B. DECREE NO. 96-1133 OF 24 DECEMBER 1996 BANNING ASBESTOS

2.3 On 24 December 1996, the French Government adopted Decree No. 96-1133 banning asbestos, issued pursuant to the Labour Code and the Consumer Code (*décret no. 96-1133 relatif à l'interdiction de l'amiante, pris en application du code de travail et du code de la consommation*) (hereinafter "the Decree")[2]. The Decree entered into force on 1 January 1997. The following are its principal provisions:

2.4 Article 1 provides for a ban on asbestos in the following terms:

> "I. – For the purpose of protecting workers, […] the manufacture, processing, sale, import, placing on the domestic market and transfer under any title whatsoever of all varieties of asbestos fibres shall be prohibited, regardless of whether these substances have been incorporated into materials, products or devices.
>
> II. – For the purpose of protecting consumers, […] the manufacture, import, domestic marketing, exportation, possession for sale, offer, sale and transfer under any title whatsoever of all varieties of asbestos fibres or product containing asbestos fibres shall be prohibited […]."

2.5 Article 2 of the Decree allows some exceptions to the ban in Article 1.

> "I. – On an exceptional and temporary basis, the bans instituted under Article 1 shall not apply to certain existing materials, products or devices containing chrysotile fibre when, to perform an equivalent function, no substitute for that fibre is available which:
>
> - On the one hand, in the present state of scientific knowledge, poses a lesser occupational health risk than chrysotile fibre to workers handling those materials, products or devices;
>
> - on the other, provides all technical guarantees of safety corresponding to the ultimate purpose of the use […]."

2.6 The exceptions allowed are the subject of an exhaustive list prescribed by the French authorities and reviewed annually (Article 2.II). Any exception under Article 2 must be the subject of a declaration by the head of the business establishment, the importer or the party responsible for domestic marketing of a product covered by Article 2; the purpose of the declaration is to be able to

[1] *Petit Robert 1*, Dictionary of the French language.
[2] *Journal officiel* of 26 December 1996. See Annex I to this report.

determine that the activity to which it refers meets the criteria set out in the first paragraph of the Article, taking into account scientific and technological progress (Article 3).

2.7 Article 4 contains requirements on the levels of exposure to be respected when manufacturing or processing products covered by Article 2[3], as well as their labelling and marking.[4] Article 5 lays down penalties (fines) for breaches of the Decree's provisions.

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[3] In connection with this aspect, Article 4 refers back to Decree No. 96-98 of 7 February 1996 on the protection of workers against risks linked to inhaling asbestos dust (*Journal officiel* of 8 February 1996).

[4] In connection with this aspect, Article 4 refers back to Decree No. 88-146 of 28 April 1988 on products containing asbestos (*Journal officiel* of 30 April 1988).

III. ARGUMENTS OF THE PARTIES

A. CLAIMS BY THE PARTIES

3.1 In view of the facts and arguments put forward, **Canada** requests the Panel to find that:

(a) Decree No. 96-1133 of 24 December 1996 banning asbestos is incompatible with the Agreement on Technical Barriers to Trade insofar as it is a technical regulation that:

(i) Creates an unnecessary obstacle to international trade contrary to the provisions of Article 2.2;

(ii) is not based on effective and appropriate international standards – nor is it in compliance with them – contrary to the provisions of Article 2.4;

(iii) is not based on orders relating to chrysotile and chrysotile-containing products with respect to the product performance of chrysotile, contrary to the provisions of Article 2.8; and

(iv) violates the national treatment disciplines and the most-favoured-nation clause of Article 2.1.

(b) In addition, the Decree is incompatible with the GATT 1994 in that it:

(i) Creates a prohibition or a restriction on the import of chrysotile and chrysotile-containing products, contrary to the provisions of Article XI.1; and

(ii) favours the national industry of products like chrysotile fibre and chrysotile-cement products, contrary to the national treatment disciplines of Article III:4.

3.2 In the event that the Panel is unable to find a violation of Article XXIII.1(a) of the GATT 1994, Canada requests that the Panel find a violation of Article XXIII.1(b) of the GATT 1994.

3.3 In view of the foregoing, Canada requests that the Panel recommend to France that it make the Decree compatible with its obligations under the Agreement on Technical Barriers to Trade and the GATT 1994.

3.4 In view of the facts and legal arguments, the **European Communities** (hereinafter the "EC") ask the Panel to confirm that, in light of the rules of the GATT 1994, Decree No. 96-1133 of 24 December 1996 banning asbestos:

(i) Should not be examined in relation to the scope of Article XI of the GATT 1994;

(ii) does not establish less favourable treatment for similar imported products than for domestic products, within the meaning of Article III:4 of the GATT 1994;

(iii) is necessary in any event, to protect human health, within the meaning of Article XX(b) of the GATT 1994.

3.5 The EC also ask the Panel to find that:

(i) The Decree is not covered by the Agreement on Technical Barriers to Trade and that, in any case, it complies with the relevant provisions of that Agreement.

3.6 Finally, the EC further ask the Panel to find that:

(i) Article XXIII.1(b) of the GATT 1994 does not apply.

3.7 Consequently, the EC ask the Panel to reject all the arguments put forward by Canada.

B. FACTUAL ARGUMENTS

1. Introductory remarks

3.8 **Canada** recalls that, since 1 January 1997, France has prohibited the manufacture, processing, sale, importation, exportation, domestic marketing, possession for sale, offer and transfer of all varieties of asbestos fibres, regardless of whether these substances have been incorporated into materials, products or devices. There are four temporary exceptions to this general ban. The ban will become total on 1 January 2002. Canada is challenging the ban on chrysotile fibre and products containing it. Before the ban, France imported 20,000 to 40,000 tonnes of chrysotile fibre from Canada each year, equivalent to over two thirds of the total quantity imported into France. After the French Government announced its intention to ban asbestos in July 1996, imports of Canadian chrysotile dropped to under 15,000 tonnes. In 1997, the year the ban took effect, just 18 tonnes were imported. At present, for all practical purposes, they have disappeared.

3.9 Canada asserts that, unlike amphibole fibres – the asbestos most hazardous to health, which was previously used widely in France – chrysotile fibres can be used without incurring any detectable risk. Chrysotile fibres are found today in a limited number of products, where they are encapsulated in an inert matrix. These products do not pose any risk to businesses, the general public, or the environment. Exclusive use of chrysotile fibre and the adoption of effective methods for reducing dust creation are sufficient health-protection guarantees. Before banning asbestos, France had been applying controlled use practices. It is past uses, especially the spraying of brittle asbestos in fireproofing, which are the main causes of asbestos-related health problems in France. Given the long latency period between exposure to asbestos and the onset of any related diseases, workers who were victims of heavy exposure with virtually no protection 30 years ago are experiencing serious health problems today. People are currently being exposed to asbestos dust released by fireproofing that is disintegrating. The use of materials containing brittle asbestos was prohibited when the Decree that is being challenged by Canada was adopted.

3.10 According to Canada, the ban on asbestos does nothing to correct the problems resulting from past asbestos use. The ban was adopted at a time of heavy media coverage of diseases caused by uncontrolled use of asbestos in France. Alarmist campaigns condemned all forms of asbestos use and there was pressure on public officials to take action. Spurred by courts that were concurrently examining the liability of political leaders in the "tainted blood" affair, the French Government chose to prohibit chrysotile and all its uses in the hopes of assuaging public opinion, which had been badly shaken. The ban on asbestos is nothing but a political reaction on the part of the French Government to anti-asbestos propaganda. In many respects, the French reaction is identical to the reaction of the United States Environmental Protection Agency (EPA) in 1989, when it prohibited asbestos under pressure from panicked United States public opinion. Unable to justify its ban scientifically, the EPA had to reverse its decision in 1992 and acknowledge that modern products containing chrysotile enclosed in a matrix of cement or resin do not pose any detectable risk to public health. Today, although amphiboles are prohibited in the United States, a number of products containing non-brittle chrysotile are permitted.

3.11 Canada notes that France claims that its measure is based on a report from the *Institut National de la Science et de la Recherche Médicale* (INSERM).[1] Yet several experts who have analysed the report have sharply criticized the methods of the INSERM researchers. They have also very severely criticized the findings of their report. Those experts are of the opinion that the INSERM report is not a credible basis for justifying a total ban on all varieties and all uses of asbestos for public health purposes. In the justification of the measure given by Directorate General III (Industry) of the European Commission, it was admitted that application of a practice of controlled use of asbestos in industry enabled true control of the risk of diseases attributable to occupational exposure, in the case of workers involved in the mining and processing of chrysotile.[2] The practice of controlled use also applies to other possible situations of exposure to asbestos. The ban on chrysotile involves using substitute products whose effects on human health are, by INSERM's own admission, unknown. The use of substitute products is not covered by clearly-established standards, yet the INSERM researchers state how important it is to evaluate the potential risks involved. Permitting the use of these products without taking the requisite precautions may cause a repeat of the mistakes that were made at the time when the risks associated with asbestos use were unknown or poorly controlled. The undetectable risk from chrysotile is thus replaced by the unknown risk from substitutes. This results in inconsistencies in the regulation of potentially hazardous products in France.

3.12 Canada is not challenging the right of the Members of the WTO to take whatever measures are necessary to protect the health and safety of their populations. That right, however, must be exercised in compliance with the obligations that a Member has under the WTO Agreements. In that respect, France was not entitled to adopt a total ban on asbestos, with no distinctions concerning fibres and products, in the absence of scientific proof of the health risks posed by modern products containing chrysotile. Yet, one thing needs to be said: the total ban is both irrational and disproportionate considering the fact that the manufacture and use of modern chrysotile asbestos products do not pose any detectable health risks. In Canada's view, the scientific data on which France has based its case do not justify such a radical measure as the ban on chrysotile fibres and the prohibition of all uses that can be made of them. Moreover, Canada affirms that the ban does nothing to correct the problem of past exposure to asbestos, nor does it solve the problem of managing the asbestos already in use in France. Ultimately, the total ban on chrysotile fibre and chrysotile-containing products is an excessive measure. Other measures that are less restrictive on international trade and thus compatible with France's international obligations were available and would have enabled France to achieve its aim just as well as a ban. Accepting France's approach would give each Member the option of completely banning potentially hazardous natural products rather than adopting a reasonable approach of risk management based on their use. In terms of international trade, the total ban on asbestos creates a barrier to importation of chrysotile fibre and chrysotile-containing products into the French market. It is also an internal measure that upsets the competitive relationship between chrysotile fibre and chrysotile-containing products and like products of French or foreign origin: it is therefore a discriminatory measure.

3.13 The **European Communities** respond that the Canadian statement that amphiboles are "the asbestos most hazardous to health" is only recognized for the risk of mesothelioma (as explained in the INSERM report); it is accepted, however, that chrysotile has a carcinogenic potential at least comparable to amphiboles for lung cancer, as claimed below by the EC. This confusion is systematic in the Canadian arguments, as though it was less serious and less dangerous for health to suffer lung cancer than mesothelioma. It is also inaccurate to state, as Canada does, that amphibole fibres "were used widely in France". Between 1945 and 1988, some 97 per cent of the asbestos consumed by

[1] INSERM, *Rapport sur les effets sur la santé des principaux types d'exposition à l'amiante* (Report on the health effects of the main types of exposure to asbestos), INSERM joint report, Paris, INSERM publications, 1997 (hereinafter the "INSERM report").

[2] European Commission (G. Lohan, DG III), European Justification of Decree No. 96-1133 to the Canadian authorities (15 April 1997) following the French Notification (G/TBT/Notif.97.55).

France was chrysotile asbestos and since 1988 it has represented the totality. Regarding the methods which Canada deems "effective for reducing dust creation", the EC note that the dust levels created through the use of some materials that comply with the standard ISO 7337 are very much higher than the limit values allowed in France and even than the limit values recommended by the WHO group mentioned by Canada. Canada confines its analysis to the processing of raw asbestos and deliberately disregards users of material containing asbestos working on building sites or carrying out servicing or maintenance work. The dust elimination techniques cited in the standard ISO 7337 have shown their ineffectiveness for this type of changeable and mobile work; the dust levels regularly measured greatly exceed the thresholds adopted by France and many countries for which it has been proved that there is an excessive risk.

3.14 According to the EC, it is incorrect to state, as Canada does, that the use of materials containing brittle asbestos was banned in France prior to 1996. Before 1996, France authorized the use of all types of brittle asbestos, except for certain specifically prohibited uses such as fireproofing. It cannot be asserted either that "The main causes of asbestos-related health problems in France are past uses, especially the spraying of brittle asbestos in fireproofing". In fact, the increase in asbestos-related diseases precedes the practice of fireproofing: it started in the 1950s, whereas fireproofing only really started to be practised from the 1960s onwards; the very long latency period for cancer caused by asbestos means that cancer cases can only be attributed to fireproofing since the 1990s, whereas the mesothelioma mortality rate in France has for a long time shown a rapidly ascending curve. Furthermore, this increase in disease concerns workers in very different industrial sectors.

3.15 The EC point out that, when Canada claims that the prohibition imposed by France in summer 1996 was "a political reaction … to anti-asbestos propaganda", its interpretation of the decisions by a country's Government is wrong; the EC explain below all the restrictive measures taken by France for a long time and gradually. The statement does not take into account the fact that seven other European countries took an identical measure some years ago, without Canada accusing them of having taken their decisions for "political" reasons or attacking them, as far as the EC know.

3.16 The EC note that it also subjective to state that several experts who analysed the INSERM report "sharply criticized" the methods used and "very severely criticized" its findings. The report by the Expert Panel of the Royal Society of Canada[3] appointed by the Canadian Government contains praise for the work of the INSERM experts, even if certain points are raised, as is the rule for complex scientific problems. Some pages of the report of the Royal Society of Canada formally contradict Canada's statement: for example, pp. 4-7 of the English text of the report, which list the important points on which the Panel agrees with INSERM's findings, and the comments on pp. 9-18. It seems that, on the major points of INSERM's conclusions, the Canadian experts agree or make comments which are a matter of scientific discussion without questioning INSERM's findings. The EC also note that the Panel of the Royal Society of Canada worked too quickly, as is recognized in several instances (see, for example, page 15 of the English text), that it was unable to reach a consensus (page 15 of the English text), and that it worked on the basis of an incomplete document whose translation had not been reviewed (page 1), which clearly accounts for certain incorrect interpretations due to misunderstandings. This last aspect calls for a comment: Canada in fact obtained a copy of the pre-publication text of the INSERM report, without making a request to INSERM or to the French Government; it translated this into English without having the translation revised by the authors, who were not informed of the existence of the Panel and still less of its composition. At no time (neither during the examination of the INSERM report nor afterwards) did the Government of Canada or the Royal Society of Canada request explanations or comments from the French experts who participated in the INSERM report, which would no doubt have helped to remove certain ambiguities. It is absolutely alien to the tradition of scientific discussion to proceed in this way: scientific debate is

[3] Royal Society of Canada, *A Review of the INSERM Report on the Health Effects of Exposure to Asbestos*, Ottawa, 1996.

obviously necessary, but it is usually based on contradictory discussions to which each may contribute arguments and not on procedures from which one of the parties is excluded.[4]

3.17 The EC reject several of Canada's statements concerning substitute products. It is incorrect to state that "the use of substitute products is not covered under clearly established standards". The products used as substitutes for asbestos differ according to the use to which they are to be put. They are all chemical products. As such, they are subject to the regulations applicable to chemical substances for the purposes of risk prevention, and where appropriate to the regulations on carcinogenic substances if there is an established or suspected risk of carcinogenicity. Regarding the Canadian statement that "The undetectable risk from chrysotile is thus replaced by the unknown risk from substitutes", the EC point out that undetectable risk is not the same as absence of risk, contrary to what Canada seeks to claim. On this point, the INSERM report showed clearly and in detail that the low risks associated with low levels of exposure (either due to chrysotile or any other substance) are indeed undetectable for methodological reasons that are explained in detail.[5] It is therefore quite unacceptable to try to "absolve" chrysotile on the pretext that if it is inhaled in very low doses there will be an undetectable risk: if one followed this reasoning, it could be concluded that no substance is carcinogenic on the pretext that the corresponding risks are undetectable at very low levels of exposure (for example, it is clear that the risk of cancer from tobacco is undetectable if one inhales tiny quantities of cigarette smoke). The truth is that the risks from chrysotile are not only detectable, but have been detected for a long time because they are so great if there is a high level of exposure; the EC assert that this is still the case today, even with "modern" products.

3.18 The EC also emphasize that the majority of substitute products for asbestos are substances which have been used regularly for other purposes for decades without any risk associated with their use being detected, unlike the scientifically proven risk associated with the use of asbestos. No substitute product for chrysotile in fibro-cement is recognized as carcinogenic at the international level. Some fibrous substitute products used in a number of very limited cases may be suspected of being carcinogenic, but in any case their carcinogenicity for humans has not been proven scientifically at the international level. This scale of risk has been known since June 1996, the date of the French decision. It cannot be asserted that there is an "absence of scientific proof of the health risks posed by modern products containing chrysotile". The EC reject this statement, based on international authorities such as the WHO and the ILO. To France's knowledge, the methods of manufacturing asbestos-cement have not developed to any significant degree for several years. Furthermore, the fibre emissions are much higher than the limit values allowed for the servicing and maintenance of buildings, which Canada does not mention. Consequently, the concept of "modern" products does not have any meaning. The aim of the French regulation contested by Canada is to prevent the extension of the existing risk by halting the dissemination of this product, which is scientifically recognized as dangerous. Other measures have been taken by the Government in order to deal with problems due to past exposure and the management of asbestos already in place.

3.19 The EC reject the Canadian statement that "Accepting France's approach would give each Member the option of completely banning potentially hazardous natural products rather than adopting a reasonable approach of risk management based on their use". Contrary to Canada's assertion, the risks of chrysotile are not potential but proven, as the WHO declared in 1998. Moreover, the WTO Agreements give each Member the sovereign right to choose the level of protection it wishes to adopt. Confronted with such a diffuse risk that is impossible to control in such divergent exposed populations, no country can state that it has been able to establish a responsible approach to the management of a carcinogenic risk other than by replacing the incriminated substance. Contrary to Canada's claim, the effect of the French measure is not to favour products like asbestos of French origin. France does not manufacture the substitute products mainly used to replace asbestos in

[4] B. Terracini, *Review of Technical and Scientific Documents annexed by Canada to its Submission of April 26*, 19 May 1999 (document transmitted to the Panel by the EC).

[5] See pp.24-230 of the INSERM report.

asbestos-cement, but imports them from other countries. For example, PVA, an asbestos-cement substitute, is produced in only two plants worldwide, one in China and one in Japan. Moreover, substitute products are not like products because they are less dangerous and their chemical composition differs.

2. Economic and trade data

3.20 **Canada** indicates that, in 1997, global production of chrysotile was about 2 million tonnes. The Commonwealth of Independent States is the number one producer, followed by Canada. Then come China, Brazil and Zimbabwe. International trade in chrysotile is of special importance to Canada, which is the world's number one exporter. Canadian exports to the five continents totalled 430,000 tonnes in 1997.[6] Before the Decree took effect, more than two thirds of French imports of chrysotile came from Canada. The effect of the Decree was felt as of 1996 due to the announcement of the intention to ban asbestos: French imports of chrysotile from Canada dropped by more than half compared to 1995, from approximately 32,000 tonnes to about 14,000 tonnes. Once the ban took effect in early 1997, imports, for all practical purposes, disappeared. For 1997, imports were just 18 tonnes of Canadian chrysotile fibres. The Decree has eliminated the French market for chrysotile. All Canadian mines are located in Quebec Province. With annual production valued at Can$ 225 million, the chrysotile mining industry currently provides about 1,300 direct jobs and as many indirect jobs in Quebec. Moreover, the chrysotile processing industry provides about 1,500 jobs in friction product, composite material and asbestos textile companies, mainly located in Quebec. More than 4,000 Canadian jobs depend directly or indirectly on the chrysotile industry.

3.21 Canada explains that there are up to 3,000 commercial applications for asbestos, the most important of which are the following: (i) as a reinforcement material for cement, plastic or rubber; (ii) as part of brake linings or clutches; (iii) in the form of spun fibres for the protection of insulating woven fabrics or cords; (iv) in the past, it was applied by spraying in order to give boats, structural beams, pipes and boilers fire-resistant finishes; (v) in the past, it was used as a thermal insulation on pipes and boilers. Throughout the world, the most important current application is the manufacture of chrysotile products.[7] The worldwide production and use of amphiboles (amosite and crocidolite) comprise less than 3 per cent of the total amount of asbestos produced and continue to decline. Therefore, chrysotile is now the only type of asbestos used. Furthermore, modern asbestos products are not brittle and fibre emissions during their transportation, installation[8] and use (including subsequent losses due to alteration and abrasion) have been reduced to an absolute minimum, unlike earlier products which released much larger amounts of fibres into the environment.

3.22 The **European Communities** explain that, in 1973, world production of asbestos reached a peak of 5.2 million tonnes.[9] Since then, production has steadily declined, falling to 1.92 million tonnes in 1997[10], some 60 per cent of which is produced by Canada and Russia. Canada is a major producer of chrysotile asbestos. It consumes little asbestos and thus exports the bulk of its

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[6] Natural Resources Canada, *Chrysotile 1997*, chapter taken from the *Canadian Minerals Yearbook*, minerals and metals sector, Natural Resources Canada, 1998.

[7] Canada notes that, until the adoption of the Decree, 90 per cent or more of French imports of chrysotile fibres were used to produce chrysotile cement (see Le Déaut, J.-Y. and Revol, H., *L'amiante dans l'environnement de l'homme: ses conséquences et son avenir*, Office parlementaire d'évaluation des choix scientifiques et technologiques, National Assembly no. 329/Senate no. 41, 1997). According to the INSERM report, in 1984, for example, French production of chrysotile cement was 600,000 tonnes. In 1991, eight French factories produced 540,000 tonnes (see INSERM, *Rapport sur les effets sur la santé des principaux types d'exposition à l'amiante*, INSERM joint report, Paris, INSERM publications, 1997, p.21).

[8] See in particular Baujon and Authier, *Détermination des concentrations de fibres d'amiante dans l'atmosphère lors de la pose sur chantier de plaques ondulées et d'ardoises en amiante-ciment*, Laboratoire d'hygiène et de contrôle des fibres minérales, Paris, July 1993.

[9] Source: Association Française de l'Amiante (A.F.A.).

[10] Canadian Ministry of Natural Resources.

production. It should be noted that Canada produces and exports only chrysotile asbestos. Canada is thus exporting to other countries the "public health risk" associated with chrysotile. The EC emphasize that, since asbestos was first used for industrial purposes, some 95 per cent of the asbestos consumed worldwide has been chrysotile asbestos. Between 1945 and 1980, some 97 per cent of the asbestos consumed by France was chrysotile asbestos. From 1988, onwards, all the asbestos consumed in France has been chrysotile asbestos.

3.23 The EC indicate that, given the many uses of asbestos, the range of asbestos-containing products is extremely wide. Depending on their physical appearance, there are five main categories: (i) bulk asbestos: asbestos wadding for the thermal insulation of ovens, boilers, fire-doors, refrigerating equipment, flocked asbestos for the underside of concrete slabs and for steel frames for the fireproofing and soundproofing of buildings; (ii) asbestos sheets or boards: asbestos paper and board for thermal insulation, for the protection of welded joints (plumbing) and for the protection of work surfaces (glass industry), boards for the fitting of false ceilings, fireproof surfaces, partitions, etc.; (iii) textile asbestos: asbestos cord (sealing of oven doors, laboratory applications), buffer strips (to protect against heat), fireproof coverings and curtains, air, gas and liquid filters, insulation of electrical equipment; (iv) asbestos incorporated in cement products (asbestos-cement): roof tiles, roof cladding, window sills, facing of buildings, interior partitions and false ceilings, other forms of panelling, flues, ventilation shafts, rainwater pipes, plant tubs and gardening equipment; (v) asbestos in binding or bonding agents (resins, bitumens): friction linings (brake linings, clutch linings, linings for presses, winches, gantries, lifts, engines), road surfaces, flooring, decorative shingles, sealants, plaster-based finishes and coatings, glues and gums and asbestos-based paints. Asbestos-cement accounts for 90 per cent of all asbestos used.

3.24 As far as the EC know, the production methods for asbestos-cement have not developed significantly in recent years. Canada cannot therefore claim that "modern asbestos products are not brittle and fibre emissions during their transportation, installation and use … have been reduced to an absolute minimum, unlike earlier products". Furthermore, fibre emissions greatly exceed the limit values permitted for all building servicing and maintenance activities, which Canada does not mention.

3.25 **Canada** states that, since the pathogenic potential of amphiboles is greater than that of chrysotile – this is true both for mesotheliomas and for lung cancer – a review of how amphibole asbestos has been used in France in the past is necessary. Here again, the data advanced by the EC must be corrected. According to Canada, it is incorrect to state, as the EC claim, that from 1945 to 1988 only 3 per cent of asbestos used came from the amphibole family; this is in complete contradiction with the studies reviewed by INSERM, which reveal that of the samples taken after 1990 in buildings containing asbestos in France, 18 per cent of the samples contained amphibole fibres, including 13 per cent which contained only amphibole fibres.[11] It is also incorrect to claim that the use of amphiboles in France ceased in 1988; the INSERM data contradict these claims by the EC, clearly stating that the use of amphiboles continued well beyond 1988, i.e. at least until 1992.[12] Given the much higher pathogenic potential of amphiboles compared to chrysotile and the fact that amphiboles are present in nearly 20 per cent of more than 1,000 exposures to asbestos recorded and measured in France, it is quite plausible to attribute the problem of asbestos in France to past situations. While amphiboles have been banned in France since 1994, along with the use of friable materials, the significant risks associated with their presence remain. For instance, according to the WHO, building maintenance personnel are today exposed to high risks, not because of the current uses of chrysotile, but particularly because of the large quantities of "mixed in-place friable asbestos fibres".[13] Similarly, Canada seeks to refute the French argument that, since 95 per cent of the asbestos used in the world today is chrysotile asbestos, the proportion of diseases that is attributable to it is

[11] INSERM report, p.387.
[12] *Id*. Table *Importations d'amiante entre 1938 et 1992*, p.189.
[13] *Chrysotile asbestos evaluated by health experts*, Press communique (51), WHO, 26 July 1996.

"quite indisputably" of the same magnitude.[14] This reasoning, dubious at best, denies the entire heritage of past uses of amphibole fibres, the existence of a latency period, as well as the greater pathogenicity of amphibole asbestos.

3. French legislation in its context

3.26 **Canada** considers that special attention should be paid to social and political climate in which the French ban was adopted. This climate is very revealing as concerns the factors that motivated France's action and, in large part, explains the severity of that action: the political need to assuage an alarmed French population – what France's Minister for Education, Mr. Claude Allègre, then called "*un phénomène de psychose collective*" (mass psychosis). Alarmed political leaders were evidently afraid of being held criminally liable if they were not seen to be doing something about the problem. In recent years in France, media coverage of several cases of diseases linked to occupational exposure to asbestos has inflamed public opinion. That, obviously, contributed to the adoption of the Decree.[15] Indeed, since the spring of 1995, the media in France have presented alarmist articles and reports on the risks of asbestos to a public that was already shaken by two other public health cases: the "mad cow" and "tainted blood" crises. Those controversies led to the examination of the liability of political leaders in criminal courts. In the summer of 1995, with public outcry centred on Jussieu University as backdrop, the French Government commissioned a report from INSERM. INSERM was asked to study the health effects of the main types of exposure to asbestos. In late 1995, France presented an oversight programme to reduce the risks associated with asbestos. A ban did not seem to be under consideration at that time. On 21 June 1996, INSERM submitted an executive summary of its report to the French Government. On 25 June 1996, the filing of a complaint by the *Association nationale de défense des victimes de l'amiante* (ANDEVA) (National Association for the Protection of Asbestos Victims), specifically accusing the Government of inaction, reportedly helped to move France towards the ban. Seven days later, on 2 July 1996, INSERM published the summary of its report on the health effects of the main types of exposure to asbestos. The next day, 3 July 1996, France announced its intent to declare a ban on asbestos.

3.27 Canada asks why the great haste? Why was the ban announced less than two weeks after the French Government first obtained the summary of the INSERM report? Is it credible that in only two weeks the French Government could review and analyse the scientific, social and economic considerations related to such an important decision? And all this some 16 months before the final report – as opposed to the executive summary – saw the light of day! And why was the ban announced only one week after a legal action for poisoning was filed? The timing suggests that the ban was politically motivated and that the INSERM report merely provided the *ex post facto* scientific rationale. On 31 July 1996, yet another complaint for asbestos poisoning was filed, this time against eight former French ministers. All this took place during the contemporaneous examination of French political leaders' criminal liability in the tainted blood scandal. According to Canada, French political leaders were evidently under tremendous pressure to take action, any action, to be seen to be remedying a situation blown out of all proportion by the media. French parliamentarians have themselves acknowledged the pressure from public opinion and the media. In a joint report on asbestos, the Senate and the National Assembly stated: "It is because a definitive

[14] See paragraph 3.78 below.

[15] For a chronology of facts (from June to September 1996), see Info-Science <http//www.infoscience.fr/travaux/amiante/chrono.html> (access date: 4 April 1999). According to Canada, the controversy over asbestos in France results, in large part, from the situation at the University of Jussieu, where a group has led a very active fight against asbestos use for several years. On the topic of the situation in Jussieu, Claude Allègre, who was Minister for Education, Research and Technology in the Jospin Government, said: "The psychosis of those demanding that asbestos be cleared from all buildings is irrational and hazardous. The radical solution that has been chosen is going to shut down, for four years, France's foremost research centre (the University of Jussieu). That university is being wrecked for a figment of the imagination … I do not know whether asbestos at low doses causes cancer. It is not impossible, but no one has proven it scientifically." (*Le Point*, 12 October 1996. See also *Le Figaro*, 26 December 1996.)

response was so late in coming that the asbestos issue is today drawing so much media attention and political opinion is being diverted."[16]

3.28 Canada notes that, in July 1996, thus at the same time as it was preparing to prohibit asbestos, the French Government called for research proposals aimed specifically at developing fibres to replace asbestos. This specific effort on the part of the French Government was designed to accelerate the conversion of industrial groups to substitute fibres and to enable France to become a leader in substitute fibres in the global market. According to Canada, it was in that climate, when a panic had overtaken public opinion and commercial interests in French industry were moving toward the development of substitute products and fibres, that the Decree banning asbestos was adopted.

3.29 The **European Communities** note that Canada criticizes the rapidity with which the French Government announced that it was going to ban asbestos after the publication of the executive summary of the INSERM report, as well as the time taken by the French authorities to publish the final report. According to the EC, these arguments show that, on the one hand, Canada appears to ignore what constitutes a risk assessment and, on the other, how much time it takes to produce a formal publication of the results of a risk assessment. It is not uncommon practice for governments to act on the basis of unpublished results of a risk assessment. It takes on average more than one, if not two, years before formal publication in the form of a book or otherwise because the documents need careful editing and all bibliographical references must be checked. This is normal procedure also for similar publications by the WHO, the IARC and other international bodies such as the Joint FAO/WHO Expert Committee on Food Additives (JECFA) or the Joint FAO/WHO Meeting on Pesticide Residues (JNPR), whose formal publications frequently take more than a year to be published. It would be unreasonable if governments were to be prevented from taking action quickly on the basis of the substantive results which they have in the form of an executive summary as protection of health should be given priority over formalities prior to publishing results. The EC also emphasize that the interim results and the executive summary were immediately made available to Canada for comments. The only criticism which Canada was able to make against the INSERM report is the critique made in the report by the Royal Society of Canada. But by looking at the text of that report, it can be seen that the authors' criticisms were not all unanimous; moreover, this report, which criticizes meticulous scientific work by 11 scientists, was adopted within the space of two weeks. The EC also consider that Canada's attempt to convey the impression that the Canadian scientists who reviewed the INSERM report are "better" than the French scientists who prepared the report is unacceptable. This suggestion has no foundation in fact nor in science. Canada is of course entitled to employ the scientists it wishes to assess asbestos-related risks in Canada in the past. The EC do not criticize the quality of their report. Nevertheless, the EC expect Canada to show equal respect for the French scientists who prepared the INSERM report, bearing in mind that this report conforms to the great majority (if not all) of the views of the scientific community on the risks posed by asbestos and that its findings have even been confirmed subsequently in reports by international bodies such as the WHO report 203.[17]

3.30 The EC state that, contrary to Canada's assertions, France's ban on asbestos is not an isolated and irrational act arising out of a wave of panic. During the 1970s and early 1980s, scientific evidence showed that all types of asbestos were likely to cause asbestosis, lung cancer and mesothelioma. In response to these public health concerns, many European countries began to introduce national legislation restricting, and ultimately prohibiting, the marketing and use of asbestos. Rules designed to control the use of asbestos in the workplace and ultimately to limit the release of asbestos into the atmosphere were also introduced. It cannot be asserted, as Canada does, that in spring 1995 French public opinion was shaken by the "mad cow" crisis: the events to which Canada refers occurred in 1996. Likewise, it is incorrect to state that "In late 1995, France presented

[16] *L'amiante dans l'environnement: ses conséquences et son avenir*, Office parlementaire d'évaluation des choix scientifiques et technologiques, National Assembly no. 329/Senate no. 41, p.57.

[17] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998.

an oversight program to reduce the risks associated with asbestos … [and that a] ban did not seem to be under consideration at that time." A total ban was one of the measures envisaged by the French Government as of 1995. A decision was finally taken not because of the filing of complaints by a victims' association but as a result of the findings in the INSERM report given to the ministers concerned in June 1996.

3.31 The EC point out that a number of countries have either introduced bans on asbestos or plan to do so. The health authorities of many more are looking in detail at the dangers which the various forms of asbestos represent. As early as 1983, Iceland introduced a ban (with some limited exceptions) on all types of asbestos (updated in 1996). In 1984, Norway introduced a ban (with some limited exceptions) on all types of asbestos (revised in 1991). Since 1989, Switzerland has in principle prohibited the use of asbestos, including chrysotile asbestos, in accordance with an amendment to the law on environmentally harmful substances. In only two types of situation may an exception be granted to this principle, subject to the express authorization of the Federal Office for the Protection of the Environment: (i) where technology has not yet identified an asbestos-free substitute and where the amount of asbestos used does not exceed what is necessary to attain the desired objective; or (ii) where the technical characteristics of the product or object are such that it is impossible to use alternative components which do not contain asbestos (Annex 3.3 to the Order of 11 January 1989 amending the Order of 9 June 1986). An exemption may also be granted "on grounds of national defence" for material used in carrying out defence-related tasks, although only with the agreement of several ministerial departments. In New Zealand, the Asbestos Regulations 1983 ban the use of asbestos in the construction of new buildings. The ban applies to all types of asbestos: chrysotile, crocidolite, tremolite, actinolite, anthophyllite and amosite. In January 1999, a new amendment to the Asbestos Regulations of 1983 was published, providing for: (i) a ban on the import of chrysotile asbestos; (ii) amendments to the law relating to the recycling of asbestos-containing products; (iii) more rigorous and more systematic health checks; and (iv) a higher level of protection for workers who handle asbestos. Since 1 January 1999, the Czech Republic no longer imports nor processes asbestos, in whatever form. Asbestos is on its list of dangerous (carcinogenic) substances. In Australia**,** asbestos legislation falls within the remit of each of the federal states. However, there is a government agency, the National Occupational Health and Safety Commission (NOHCS), which is responsible for promoting health and safety at work throughout the country. The research division of the NOHCS recently published a report on the health risks posed by the use of chrysotile asbestos.

3.32 The EC point out that, with a view to ensuring a high level of health protection in the European Community and preserving the unity of the single market, numerous legislative acts have been adopted at Community level since 1980. On 4 May 1999, it was decided to introduce a total ban on all types of asbestos with effect from 1 January 2005. As early as 1972, Denmark introduced a ban on applying asbestos by the spraying process and on using it for insulation. It would appear to have been the first such ban anywhere in the world. In 1986, Denmark placed a total ban on asbestos, allowing some limited exceptions up to 1993. In 1972, the United Kingdom banned imports of crocidolite (blue asbestos). This decision was supplemented by the setting of limit values for exposure to asbestos dust at the workplace. In 1975, Sweden banned the marketing and use of crocidolite, and in 1976 the use of asbestos-cement products. In 1986, it introduced a total ban on asbestos with a few exceptions. In 1977, France set initial limit values for asbestos dust and in 1978 it banned the spraying of asbestos fibres. In 1996, France imposed a total ban on asbestos, with some limited exceptions. In 1977, the Netherlands banned crocidolite and the use of asbestos for spraying. In 1991, it introduced a total ban on asbestos, with exceptions which applied until 1997. In 1990, Austria banned the use of chrysotile asbestos, with some limited exceptions. In 1992, Finland and Italy imposed a total ban on asbestos, with exceptions which applied until 1993. In 1993, Germany imposed a total ban on asbestos, with some limited exceptions. In 1998, Belgium imposed a total ban on asbestos, with some limited exceptions.

3.33 The EC recall that, at the beginning of the 1980s, it became clear that there was a need for harmonization at European Community level. Two key Community directives[18] were adopted: Directive 83/477/EEC[19] and Directive 83/478/EEC.[20] Under Directive 83/477/EEC, the Member States of the European Community must require employers to assess the risks to workers of exposure to asbestos; they must also take the necessary preventive measures. The Directive prohibits the application of asbestos by means of the spraying process and sets limit values for exposure. It also lays down a range of preventive measures such as medical surveillance of workers and appropriate cleaning of the place of work. Lastly, it lays down specific measures to be taken to protect workers involved in removing asbestos. Directive 83/478/EEC laid down the first Community measures in respect of the marketing of asbestos. It prohibits the marketing and use of crocidolite (with some exceptions) and introduces compulsory labelling for all asbestos-containing products. Directive 85/610/EEC extends this prohibition to all other types of asbestos for certain specific uses.[21] During the same period, Council Directives 78/319/EEC[22] and 87/217/EEC[23] were adopted, laying down measures to prevent and reduce environmental pollution, including the control of asbestos-containing waste. Both these Directives were updated by Directive 91/689/EEC.[24]

3.34 The EC also recall that, at the beginning of the 1990s, a good deal of scientific evidence concerning the risks from asbestos became available and safer substitute products were developed to replace asbestos in many applications. European legislation evolved rapidly so as to achieve tighter control of the risks. In 1991,[25] for example, all types of asbestos were classed as category I carcinogens under Directive 67/548/EEC.[26] T he Directive defines category I as comprising substances known to be carcinogenic to man. Then in 1991, Directive 91/382/EEC,[27] amending Directive 83/477/EEC on the protection of workers (see above), lowered the limit values for exposure to 0.6 fibres per cm^3 for chrysotile asbestos and 0.3 fibres per cm^3 for all other forms of asbestos. One

[18] Pursuant to Article 249 (formerly Article 189) of the Treaty establishing the European Community, a directive "is binding, as to the result to be achieved, upon each Member State to which it is addressed", while leaving to the national authorities the choice of form and methods.

[19] Council Directive 83/477/EEC of 19 September 1983 on the protection of workers from the risks related to exposure to asbestos at work (Official Journal of the European Communities (hereinafter "OJ" 1983 L 263, p.25). Directive 83/477/EEC is the second individual directive adopted on the basis of Council Directive 80/1107/EEC of 27 November 1980 on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work (OJ 1980 L 327, p. 8).

[20] Council Directive 83/478/EEC of 19 September 1983 amending for the fifth time (asbestos) Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (OJ 1983 L 263, p. 33).

[21] Council Directive 85/610/EEC of 20 December 1985 amending for the seventh time (asbestos) Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (OJ 1985 L 375, p. 1).

[22] Council Directive 78/319/EEC of 20 March 1978 on toxic and dangerous waste (OJ 1978 L 84, p. 43).

[23] Council Directive 87/217/EEC of 19 March 1987 on the prevention and reduction of environmental pollution by asbestos (OJ 1987 L 85, p. 40).

[24] Council Directive 91/689/EEC of 12 December 1991 on hazardous waste (OJ 1991 L 377, p. 20).

[25] Commission Directive 91/325/EEC of 1 March 1991 adapting to technical progress for the twelfth time Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (OJ 1991 L 180, p. 1).

[26] Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (OJ 1967 L 196, p. 1).

[27] Council Directive 91/382/EEC of 25 June 1991 amending Directive 83/477/EEC on the protection of workers from the risks related to exposure to asbestos at work (second individual Directive within the meaning of Article 8 of Directive 80/1107/EEC (OJ 1991 L 206, p. 16).

year previously, Directive 90/394/EEC[28], which deals with the protection of workers from exposure to all carcinogens, had introduced the principle of replacement. Under this principle, employers are required, where this is technically possible, to replace carcinogens used at work with substances which are not dangerous or which are less dangerous. As regards the placing of asbestos on the market, Directive 91/659/EEC[29] introduced a total ban on the marketing and use of all forms of asbestos fibre, except chrysotile asbestos, whose use was nonetheless prohibited for fourteen specific categories of product. Other chrysotile-containing products (e.g. asbestos-cement) remained outside the Directive's scope of application.

3.35 The EC point out that, as there is sufficient scientific evidence to justify a ban, the Commission of the European Communities has decided to propose a directive banning the marketing and use of chrysotile asbestos, with one exception and some transitional arrangements. On 4 May 1999, the proposed directive received a favourable vote from the Member States meeting within the Standing Committee set up by Directive 76/769/EEC.[30] It is due to be finally adopted by the Commission in the near future. Under the new directive, the ban on chrysotile asbestos is to be implemented throughout the European Union by 1 January 2005 at the latest. Each Member State may choose the pace at which it wishes to move towards this harmonized position. Decisions will have to be adopted in the light of the situation within the domestic industry and in accordance with the legal procedures applicable in each country. The new directive would extend the current ban to all remaining applications of chrysotile asbestos, with one exception. Only diaphragms used for electrolysis in certain chlorine plants may be exempted from the prohibition. Diaphragms constitute a special case since they represent the only current application of chrysotile asbestos for which it is not technically possible to use a substitute product without creating a safety risk (i.e. the risk of an explosion). Diaphragms are not placed on the market. Under the directive, the exemption applied to diaphragms will be reviewed (on the basis of an independent scientific risk assessment), both as part of the general review of the directive in 2003 and specifically in 2008. The directive recognizes that scientific knowledge about asbestos and substitute products is continually developing. It therefore stipulates that the relevant scientific issues and derogations be reviewed before 2003, in order to decide whether further legislative measures are necessary in this field.

3.36 The EC note that, in France, the first preventive rules on health and safety at work go back to the beginning of the century. For about a decade, French legislation has been based on the European directives on health and safety at work. All regulatory provisions are the subject of consultations with the social partners, i.e. the representatives of employer and employee associations within the Senior Council for the Prevention of Occupational Hazards. In addition to specific legislation covering certain particularly harmful substances, France has general rules on health and safety (risk assessment, informing and protecting workers, etc.). As regards the prevention of chemical hazards, France has incorporated into its Labour Code both the EC Directive on chemical agents (Articles R231-55 *et seq*.) and EC Directive 90/394/EEC on carcinogens (Articles R231-56 *et seq*.). Since 1977, France has had specific legislation on asbestos, designed to protect workers from inhaling asbestos dust. Following the example of other European countries, this legislation was progressively tightened up as knowledge developed until, finally, it was decided to impose a ban in 1996. It should be pointed out that, in France, the number of illnesses linked to the inhalation of asbestos dust which are recognized

[28] Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ 1990 L 196, p. 1).

[29] Commission Directive 91/659/EEC of 3 December 1991 adapting to technical progress Annex I to Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (asbestos) (OJ 1991 L 363, p. 36).

[30] Commission Directive .../.../EC adapting to technical progress for the sixth time Annex I to Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (asbestos).

as being of occupational origin and for which compensation is paid has been rising constantly for several years. For example, between 1985 and 1995, the number of asbestos-linked occupational diseases for which compensation was paid (mesothelioma, lung cancer, asbestosis, pleural abnormalities) increased fourfold. The cost of such illnesses ran to F1.08 billion in 1997, or almost 40 per cent of the compensation budget for all diseases recognized as being of occupational origin in France. By way of comparison, musculoskeletal problems, which are very widespread and are at the top of the list in numerical terms, account for only 18.8 per cent of the total financial cost of occupational diseases. This increase in diseases, together with the lower life expectancy of workers formerly employed in the asbestos industry, recently prompted the French Government to introduce an early retirement plan for employees who worked in factories manufacturing asbestos products.[31]

3.37 The EC point that the situation in France until 1994 was the following: in 1997, the IARC classed all forms of asbestos (including chrysotile) as known carcinogens. It was then that the first specific regulatory provisions were adopted in France in order to limit the risk of exposure to asbestos dust. A series of texts produced by the Ministries with responsibility for health, labour, infrastructure and consumer issues followed, restricting the use of asbestos, either by prohibiting the use of the most harmful forms or by prohibiting its use in certain processes (spraying) or in the manufacture of certain products. In the field of health at work, French legislation has, since 1977, strictly regulated working conditions in the asbestos-processing industry, in particular by setting limit values for exposure. These have been lowered several times to comply with the requirements of Community Directives. In addition to having an asbestos-processing industry producing essentially asbestos-cement, France has used asbestos in numerous sectors including construction (flocking[32] and lagging[33]), the manufacture of everyday consumer goods (floor slabs, brake linings, textiles and boarding) and heavy industry (shipbuilding, metal working). Particular emphasis must be placed on the fact that many asbestos-containing products, especially semi-finished products, were accessible to the general public and sold in large retail outlets (sheets of asbestos-cement and asbestos board, asbestos yarn, heat-resistant gloves, ironing-board covers, etc.).

3.38 The EC explain that, over the years, a series of regulatory measures reduced the applications for which asbestos might be used. Two types of measure were adopted:

(a) Partial bans on processes or products: (i) in 1977, the Ministry of Housing and Planning and the Ministry of Health and Social Security prohibited asbestos flocking in residential premises; (ii) in 1978, the Ministry of Health prohibited in its turn the use of flocking in all buildings; (iii) in 1988, the Ministry of Economic Affairs restricted to a few products (notably asbestos-cement pipes and gaskets) the use of those forms of asbestos considered at the time to be the most harmful, and made labelling compulsory for all products containing other forms of asbestos; (iv) in 1994, the Ministry of Economic Affairs placed a permanent ban on the forms then considered to be the most harmful and prohibited the use of all other forms of asbestos, including chrysotile, in a wide range of products (toys, smoking accessories, paints and varnishes, filters, etc.);

(b) a regulatory framework for authorized activities: (i) in 1977, the Ministry of Labour laid down strict regulations on working conditions in the asbestos-processing industry; (ii) in 1987, the Ministry of Labour lowered the limit values for exposure; (iii) in 1990, the Ministry of Labour prohibited the recruitment of casual workers to carry out the removal of flocked asbestos or demolition work which would expose

[31] Article 41 of the Law on the financing of social security; Decree and Orders of 29 March 1999.

[32] Flocking: application of fibres onto any surface to form a coating with a fibrous, velvety or downy appearance.

[33] Lagging: thermal insulation technique used to avoid heat loss from heating installations, pipes and ventilation shafts.

them to asbestos dust; (iv) in 1992, the Ministry of Labour again lowered the limit values for exposure and issued a reminder that applying asbestos by spraying was totally prohibited. It also laid down rules on procedures for removing flocked asbestos.

3.39 The EC also indicate that 1990-1995 marked the turning point. Following the adoption of the ILO recommendation in 1986 and from the early 1990s, it became apparent that the risks in the servicing and maintenance sector needed to be better assessed. A data bank (EVALUTIL) was set up which made it possible to assess exposure to asbestos among users of asbestos-containing products.[34] This data bank highlighted the extremely high levels of exposure among certain construction workers ("exposure peaks" occurred during operations such as the cutting of flocked cladding containing 5 per cent chrysotile, the cutting of asbestos-lined fireproof doors, etc).

3.40 The EC note that, given the dangers of inhaling fibres from flocked asbestos used in the construction industry between 1950 and 1977, on 13 December 1989, the French Senior Council for Public Health called on local authorities to compile a register of all buildings, especially public buildings, in which flocked asbestos was present. The feasibility of compiling such a register was assessed by a municipal health and safety department in a pilot town between 1991 and 1994. The study came up against major difficulties linked to the fact that some companies no longer existed and in some cases records had not been kept. In the light of these disappointing results, on 15 September 1994, the Senior Council for Public Health expressed the desire to see legislation introduced on the monitoring of flocked asbestos so as to protect exposed populations.[35] The legislation was to be based on an early warning threshold expressed in terms of the erosion of flocked surfaces and corresponding to a level of atmospheric dust in the building concerned of 5 fibres per litre ("f/l") (which corresponds to the average asbestos pollution measured in the outside air) and on a 25 f/l threshold above which work would have to be carried out. In the period prior to the implementation of this legislation, the Ministries of Labour and Health sent two circulars to prefects, dated 15 September 1994 and 31 July 1995 respectively, setting out the thresholds, removal and analysis techniques and the procedures for removing flocked asbestos.

3.41 The EC point out that, at the end of 1994, the Ministry of Social Affairs (Directorate for Industrial Relations and Directorate-General for Health) convened a group of experts, whose discussions brought to light certain scientific data, on the one hand, and certain gaps in the existing legislation on the other. The experts' findings were as follows:[36] (i) an increase in the number of cases of mesothelioma in France and the worrying forecasts in a study conducted by Julian Peto[37] in the United Kingdom. The study predicted a growth in asbestos-related deaths which would total between 2,700 and 3,000 per year in the 2020s; (ii) the serious risk for workers engaged in the servicing or maintenance of asbestos-containing products or equipment. This applies in particular to workers involved in finishing work in the construction industry, such as plumbers or electricians, since their exposure at "peak" moments may be very high; (iii) the emergence of cases of mesothelioma at levels of exposure which were below limit values in force at the time under French legislation. On the other hand, it was felt that there was nevertheless a need to collect together all existing scientific knowledge on asbestos so as to shed light on the effect of low doses and on how harmful chrysotile asbestos actually was. In the light of these findings, French legislation on the

[34] For values measured during the handling of asbestos-cement materials (source EVALUTIL), see Ministry of Labour, Social Dialogue and Participation, Note setting out the main guidelines of the Senior Council for the Prevention of Occupational Hazards, 3 July 1995.

[35] French Senior Council for Public Health, Opinion on premises flocked with asbestos (Division for the assessment of environmental risks to health), session of 15 September 1994.

[36] Ministry of Labour, Employment and Vocational Training, Principal conclusions of the meeting of French asbestos experts on 20 December 1994, dated 7 February 1995.

[37] Peto, J., *et al*., *Continuing Increase in Mesothelioma Mortality in Britain*, Lancet, vol. 345, p.535, 1995, note 31.

protection of workers appeared limited. Firstly, the thresholds seemed to be too high and secondly, the provisions designed for industries and removal work where asbestos was known to be present were scarcely or not at all effective when it came to maintenance workers. This conclusion prompted the authorities to take decisive action to reinforce the existing preventive measures and to obtain more detailed information on the risks linked to asbestos.

3.42 The EC emphasize that, on 3 July 1995, the Senior Council for the Prevention of Occupational Hazards adopted the following guidelines:[38] (i) to improve scientific knowledge of risks (launching of the joint INSERM report); (ii) to enhance protection of workers, especially those engaged in servicing and maintenance work; (iii) to raise awareness among all those exposed to the dangers of asbestos; (iv) to improve compensation for asbestos-related occupational diseases; (v) to begin discussions on whether asbestos should be banned. Contrary to what is asserted in the Canadian submission, the possibility of a ban was not ruled out. In July 1995, therefore, the French Government decided to commission INSERM to carry out a detailed study of asbestos-related diseases, based on all internationally available research. In December 1995 it also adopted a general action plan comprising measures to combat asbestos-related hazards, taking account of problems in the areas of public health, the environment, the protection of workers and compensation for asbestos-related occupational diseases.

3.43 The EC point out that the implementation of the 1995 action plan presented by the Minister for Social Affairs made it possible, without waiting for the findings of the INSERM joint report, to introduce general legislation[39] in order to monitor the situation as regards buildings, limit occupational exposure and improve compensation by reorganizing and reviewing the tables of occupational diseases caused by asbestos. This action plan was intended to meet growing concerns about servicing and maintenance workers in the construction sector, a risk on the subject of which Canada remains silent. The action plan comprised the following measures: (i) owners of buildings were obliged to identify asbestos flocked surfaces and asbestos-containing insulation before 31 December 1999, or before the end of 1996 in the case of priority buildings, i.e. those housing young people or children (Decree No. 96-97 of 7 February 1996); (ii) reduction in the limit values for occupational exposure ("VLEP") to asbestos to the lowest technically possible level (0.1 fibre/cm³); the difference in the limit values for "pure" chrysotile and amphibole forms of asbestos was to be abolished on 1 January 1998, although this would apply only to a very limited number of manufacturing industries (Decree 96-98 of 7 February 1996); (iii) strict regulatory provisions on asbestos removal work; works inspectors were entitled to close asbestos removal sites if they did not consider the protective measures to be adequate (legislative provision); a prohibition was placed on hiring casual workers to carry out work involving contact with asbestos; (iv) the preparation of specific preventive rules for servicing and maintenance work (Decree No. 96-98 of 7 February 1996); (v) the creation of Table 30 bis on the recognition of occupational diseases was created specifically to cover bronchial cancer caused by asbestos; this disease could now be recognized without requiring the presence of medical "markers".[40] The necessity of these measures, taken during the first half of 1996, was confirmed by the INSERM report, which was sent to the Minister for Labour and Social Affairs at the end of June 1996. This report, which shed new light on the subject, prompted the French Government to take additional steps without delay, including banning asbestos with effect from 1 January 1997.

3.44 The EC indicate that, in the summer of 1995, contacts between the Canadian and French administrations took place. France was seeking more effective ways of managing the risk, which it already considered very serious, while Canada proposed setting up an international research centre on

[38] Ministry of Labour, Social Dialogue and Participation, Note setting out the main guidelines of the Senior Council for the Prevention of Occupational Hazards, 3 July 1995.

[39] Compendium of French legislative texts on asbestos, Edition des Journaux Officiels, Ministry of Employment and Solidarity, 1998.

[40] Table of occupational diseases produced by the *Caisse d'assurances maladies des travailleurs salariés* (CNAMTS).

the prevention of respiratory diseases. Several meetings took place with the Canadian party immediately after publication of the INSERM report and prior to the issue of the Decree on a ban; at that time, Canada asked for a derogation. Several meetings took place between the French and Canadian parties following discussions between the relevant Canadian and French ministers and on the instructions of the Prime Minister, who had received a letter from Mr. Chrétien. These meetings took place between July 1996 (announcement of the decision to impose a ban) and December 1996 (the ban entered into effect).

3.45 The EC stress that the scientific discussions took place in an atmosphere of mutual respect. On 8 October 1996, the Quebec experts met the experts from INSERM and then on 9 October 1996 they met the adviser on asbestos to the French Minister for Social Affairs (Mr. Roigt), together with the competent person from the Industrial Relations Directorate. Moreover, on 29 October 1996, France arranged an entire day's technical meeting between the Canadian-Quebec delegation and the French experts. During the day, the questions of the harmfulness of asbestos, the question of substitute fibres, the criteria on which France would allow exceptions to the ban, and the "safe" use of asbestos-cement were discussed. On that occasion, the experts from Canada and Quebec acknowledged the high quality of INSERM's work and showed an interest in discussing a number of scientific points, as is customary among researchers. The EC point out that this oral recognition is in contrast with the criticism of the INSERM report expressed by Canada.[41]

(a) As regards the harmfulness of asbestos, the Quebec delegation reported on the recently published study by Mr. Siemiatycki on women living in close proximity to asbestos mines (the study by Camus *et al*. had not yet been published when the INSERM report was produced). The French experts from INSERM pointed out that they were aware of the study and had examined it in the context of their joint report. In their view, it showed that the risk of bronchial cancer was practically nil at that level of exposure, but that there was a risk of contracting mesothelioma from the asbestos contained in the dust from the chrysolite mines, at levels of exposure accumulated over a lifetime of a few fibres per cm^3 per year. The French experts pointed out that this level was easily reached during the cutting of asbestos-cement and that no country had succeeded in containing this risk.

(b) As regards substitute fibres, the French party felt that further epidemiological data should be obtained, although no victims of the use of substitute products had so far been reported. Decisions were taken "on the basis of the knowledge available". The Canada-Quebec delegation informed the Ministry of Labour and Social Affairs of its desire to be involved in INSERM's work on the fibres used as substitutes for asbestos. Since the purpose of the report was to summarize all international studies on the subject, there was no objection to consulting Quebec scientists as part of the research. At the beginning of 1997, however, when INSERM looked for specialists in the field, its bibliographical search did not identify any Canadian experts (whether English or French speaking) with sufficient publications on the subject. In the end, two experts were proposed by Canada's Health and Safety Research Institute, and both Dr. Gibbs and J. Siematycki attended the hearing organized by INSERM.

(c) As regards exceptions to the ban, the French administration presented the draft decree and explained the circumstances in which an exemption might be granted: there had to be no substitute products performing an equivalent function to asbestos which were less harmful to workers and which offered equivalent technical guarantees of safety for users.

[41] See Section III.B.7 of this report.

(d) Lastly, the issue of the "safe" use of asbestos-cement was discussed. The main argument put forward by Canada and by Quebec in favour of extending the list of exemptions was that asbestos can be used in a "safe" way. The French experts from the INRS (National Safety Research Institute) and the *Caisse Nationale d'Assurance Maladie* (National Sickness Insurance Scheme) presented findings based on measurements which were significantly different from those presented by Canada.

3.46 The EC point out that, for reasons of substance, the request that an exemption be granted for asbestos-cement piping was not admissible. The general ban laid down by the Decree allows for exemptions only when there is no substitute product which can perform an equivalent function and which: (i) presents less of a risk to workers; and (ii) offers all technical guarantees of safety for users. In the case in point, it was very easy to replace asbestos by a less dangerous product. All alternatives to asbestos-cement are less dangerous than chrysotile. In fact, all asbestos-cement can be replaced by products which show no sign of being carcinogenic, whether they are non-fibrous products (ductile iron, plastic) or fibrous products (cellulose, polyvinyl alcohol).

3.47 The EC recall that the ban on asbestos or any material or product containing it has been in force since 1 January 1997. It applies to both industrial and commercial use, i.e. manufacture, processing, possession with a view to selling, offering for sale, import, export or any form of transfer. However, there are a very limited number of strictly monitored exceptions to the general ban. If a temporary and limited exemption is to be granted, there must be no substitute product which could perform an equivalent function and which: (i) on the basis of current scientific knowledge, presents less of a risk to workers; and (ii) provides equivalent guarantees in terms of safety of use (braking performance, for example). Firms which manufacture asbestos-based products or import asbestos must make a declaration to the Ministry justifying the use of asbestos and reporting on the progress made as regards substitution. The administration then registers the declarations which it considers to be in compliance with the legislation. The exceptions are included in a list drawn up by ministerial order.

3.48 The EC indicate that asbestos was used in numerous industrial applications because of its physico-chemical properties: good mechanical resistance (especially to pressure), resistance to high temperatures and to chemical attacks (especially corrosion). Replacing it with a substitute material requires a strict approach applied on the basis of specifications setting out what is required of the substitute product in very specific conditions of use. Once the substitute product has been identified, it must not only be tested, but its reliability over time must also be checked. This can be done by an external body (national or international) on the basis of qualification and approval procedures which, in sectors such as the aeronautical, nuclear or chemical industries, are very long and complex. The sectors most affected by residual use of asbestos are the nuclear, chemical, petrochemical and aeronautical industries.

3.49 The EC emphasize that the Decree provides for an updating procedure designed to eliminate the remaining exceptions as rapidly as possible. The list of categories of exception laid down by ministerial order is therefore reviewed each year by the Senior Council for the Prevention of Occupational Hazards, which shortens the list in the light of technical developments.

(a) The companies registered as a result of the annual declarations made in order to qualify for exemptions from the ban on asbestos are questioned on the progress they have made towards the replacement of asbestos. The findings are compared with the data held by the experts from the INRS[42] and the *Caisse Nationale d'Assurance Maladie.* Experts from co-signatory ministries are consulted (Directorate-General for Competition, Consumer Affairs and Fraud Prevention, Ministries of Industry, Infrastructure, Environment, and Agriculture, and the Directorate-General of

[42] Institut National de Recherche en Sécurité (National Safety Research Institute).

Customs). On this basis, proposals for changes are sent for an opinion to the Senior Council for the Prevention of Occupational Hazards, which comprises employer and employee representatives as well as experts.

(b) For example, the following proposals were made at the end of 1997.

(i) As regards brake linings, substitute products have been developed for heavy industrial installations and equipment, ships and special vehicles including heavy land vehicles and vehicles weighing more than 3.5 tonnes, except for certain military vehicles for which the approval procedures are not yet complete. However, it seems that the brake linings used in aircraft braking systems can be replaced only in certain cases. Where asbestos performs the function of braking agent, tests seem to have been conclusive. However, if asbestos is used as a binder between the brake support and the braking component (generally a fibreglass compound or Teflon), no substitute product has yet been found. Likewise, brake linings for compressors and sliding-vane rotary vacuum pumps have to endure extreme pressures (over 300 bars) and temperatures (over 350°C). The substitute products tested to date have not proved satisfactory; often made of graphite, they are deformed by the combined action of pressure and temperature. Finally, it was proposed that only those exceptions be withdrawn which applied to heavy industrial installations and equipment, ships and floating structures and special non-military land vehicles weighing over 3.5 tonnes.

(ii) As regards gaskets, in sectors such as the aeronautical, nuclear and chemical industries or in specific applications, less progress has been made, given the multiplicity and complexity of technical constraints. Substitute products do not offer sufficient guarantees in terms of their resistance over time to corrosive fluids. Accordingly, it was proposed that the exemption, as set out in the relevant paragraph, be maintained in its entirety.

(c) Monitoring is organized as follows: the list of firms which have made a declaration in accordance with the legislation and the list of their customers are forwarded to the other ministerial departments concerned and to the inspection units so as to facilitate checks by customs authorities, by the Directorate-General for Competition, Consumer Affairs and Fraud Prevention, and by the Labour Inspectorate.

4. Circumstances of exposure to asbestos and asbestos-related pathologies

3.50 **Canada** states that, today, science generally recognizes few or no demonstrable effects of environmental asbestos on health, and concludes that, at worst, the risk is undetectable.[43] Asbestos is used in a vast array of products, because of its very useful and often unique characteristics. During extraction and handling of the mineral, manufacturing and use of its products, as well as their final disposal, however, a certain number of asbestos fibres are released into the environment. Because the hazards resulting from high levels of exposure to asbestos fibres in certain work environments of the past are known, there is concern over the possible effects of any exposure to concentrations of asbestos. Today, chrysotile fibres are bonded to cement or other particulate or encapsulated materials in a plastic, cement, asphalt, or resin matrix. Brittle products and, to a negligible extent, non-brittle products, however, release a certain number of fibres. Canada considers that, in spite of an ever-

[43] Canada notes that, according to the World Health Organization, "risk of mesothelioma and bronchial cancer attributable to asbestos in the general population is undetectably low; the risk of asbestosis is practically nil". (World Health Organization, *Environmental Health Criteria 53: Asbestos and Other Natural Mineral* Fibres, Geneva, p.135).

increasing understanding of the importance and impact of the sources and characteristics of asbestos fibres on human health, much confusion and many misunderstandings exist regarding the various aspects of asbestos production, such as product manufacturing, the types of fibres used, their presence in the environment, and, especially, the health effects of exposure. Canada contends that, as far as the health effects of exposure to asbestos in the workplace are concerned, it is now recognized that in the past several lung diseases were caused by high levels of exposure to asbestos dust inhaled under various working conditions. In the early 1950s, there were many concerns about the link between exposure to asbestos dust in the workplace and certain diseases (asbestosis, lung cancer, and mesothelioma). In spite of the great contrasts between industrial exposure in the past, which obviously had certain effects on health, and exposure in the general environment today, fears of health risks remain excessive; and yet, the risk is undetectable for the public at large.[44] In order to evaluate the health effects of exposure to asbestos, a considerable number of toxicological tests have been performed on animals. Canada asserts that currently most of the results indicate that only fibres of more than 5 micrometers are pathogenic, and that considerable amounts must be inhaled (or implanted in animals) to cause reactions, including cancer. The length of most fibres in the ambient air, however, is less than 5 micrometers.[45]

3.51 According to Canada, it is inevitable that some asbestos fibres are released into the air, water, and soil due to the use of asbestos and asbestos products on a worldwide scale, but concentrations of asbestos in the environment were higher in the past, because of inadequate control measures. In addition to artificial sources, some natural sources (rock alteration) are a significant source of fibres in the ambient air; even water contains natural asbestos fibres. According to the WHO, the total amount of asbestos released by natural sources probably exceeds emissions from industrial sources.[46] A large number of artificial asbestos sources have been studied but, in most cases, there did not seem to be significant fibre emissions. Some of these sources, however, have raised the most fears, for example, brake linings, factory emissions, mines, shipyards, and asbestos in buildings. Although there were some major industrial emissions in the past, a good share of current atmospheric emissions are not respirable, because of the relatively large size of most dust particles and other substances to which the fibres are normally linked. Canada considers that the strong bond between chrysotile and cement in chrysotile-cement products reduces the release of fibres into the air to a minimum.[47] Furthermore, some asbestos products are coated, which makes it very difficult for the fibres to be released. Regarding brake linings, because of the high temperatures caused by friction, up to 99 per cent of the asbestos is physically and chemically transformed into inert and non-hazardous material. Moreover, the fibre remaining after this transformation is less than 5 micrometers in length, and, therefore, has no biological effects.[48] One of the major problems that remain is the elimination of brittle asbestos products that were once used in buildings, especially if they contain amphiboles, as well as the demolition of buildings that may contain significant amounts of these products.

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[44] *Id.*

[45] *Id.*, p.134; Dunnigan, J. and Seymour, N., *L'amiante et la santé: une mise à jour scientifique*, rev. ed., 1991, p. 24.

[46] World Health Organization *Environmental Health Criteria 53: Asbestos and Other Natural Mineral Fibres*, WHO, Geneva, 1986, p. 34.

[47] Commins, B. T., *Estimations of Risk from Environmental Asbestos* in *Non-Occupational Exposure to Mineral Fibres*, IARC Scientific Publication no. 90, Lyon, 1989, pp. 476 and 477.

[48] See, in particular, Commins, B.T., *The Significance of Asbestos and Other Mineral Fibres in Environmental Ambient Air*, Cummins Associates, Berkshire, U.K., 1990, p. 17. See also Commins, B.T., *Estimations of Risk from Environmental Asbestos* in *Non-Occupational Exposure to Mineral Fibres*, IARC Scientific Publication no. 90, Lyon, 1989, pp. 476 and 477. Canada notes that the data obtained in the United Kingdom under situations of very heavy vehicular traffic indicate that the use of asbestos in brake linings does not measurably contribute to atmospheric asbestos concentrations in the urban environment. Even at two heavily-used intersections in the London metropolitan area, concentrations varied from 0.0002 to 0.0004 f/ml (Jaffrey, S., *Environmental Asbestos Fibre Release from Brake and Clutch Linings in Vehicular Traffic* (1990) 34 Ann. Occup. Hyg., Vol.34, p.529.)

3.52 Concerning the concentrations of fibres in the environment, Canada notes that asbestos fibres are present in outdoor as well as indoor air. The average long-term concentration calculated for several years of exposure, taking into account indoor and outdoor air conditions, appears to be between 0.0002 and 0.001 f/ml of more than 5 micrometers, with an average concentration of approximately 0.0005 f/ml of air.[49] Some of this asbestos comes from natural erosion. In urban areas, however, atmospheric asbestos comes mainly from the extensive use of this product. It seems that ambient air concentrations are currently lower than those observed a few years ago. Regarding exposure to asbestos from drinking water, whether or not it is routed through asbestos- cement pipes, drinking water contains 200,000 to 2,000,000 fibres per litre.[50] Canada considers that, in order to evaluate the health effects of asbestos in the environment, it is important to determine the consequences of human exposure, as well as possible inhalation or ingestion of these fibres. There is a lot of confusion regarding the inhalation of all types of particles that penetrate the airways. In Canada's view, it must be recognized that only extremely fine particles can penetrate the deep areas of the lungs. Many inhaled particles are immediately exhaled, because they do not succeed in depositing themselves. Large particles that penetrate through the upper parts of the airways are handled by an extremely effective biological elimination system; the mucociliary mechanism traps the fibres and pushes them out of the airways. Canada considers that the health effects of ingested asbestos are practically nil.[51] The results of animal studies on ingestion by feeding have been absolutely negative, as have the vast majority of human epidemiological studies conducted in areas where asbestos concentrations in water are naturally high due to the presence of asbestos in the rock over which the water flows.[52]

3.53 Canada notes that the WHO clearly reaffirmed, particularly in a 1989 follow-up, that the use of chrysotile-cement pipes is completely safe for transporting drinking water.[53] It is essential to distinguish clearly between the obvious health effects associated with very high exposure to asbestos in the workplace and the absence of demonstrable health effects linked to current environmental asbestos concentrations. Therefore, the WHO considers the risk of mesothelioma and lung cancer attributable to mass exposure to asbestos is so low as to be undetectable.[54] According to Canada, long-term exposure at rates of around 0.0005 fibres of more than 5 micrometers per ml of air corresponds to a possible cancer risk equal, at the most, to the extremely low risks of "rare events," for example, the risk of being killed by lightning or getting cancer from consuming meat grilled over charcoal, or by an increase in the exposure to cosmic rays caused by one transatlantic airline flight each year. Consequently, the risk of cancer due to the exposure to an environmental concentration of 0.0005 f/ml of more than 5 micrometers would be only about one in 100,000 (estimated lifetime risk).

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[49] Spengler, J. *et al.*, *Summary of Symposium on Health Aspects of Exposure to Asbestos in Buildings*, Energy and Environmental Policy Center, Harvard University, 14-16 December, 1988, p. 16; Doll, R., and Peto, J., *Asbestos; Effects on Health of Exposure to Asbestos*, Her Majesty's Stationery Office, U.K., 1985, p. 53.

[50] Dunnigan, J. and Seymour, N., *L'amiante et la santé: une mise à jour scientifique*, rev. ed., 1991, p. 24.

[51] According to Canada, the studies concluded that there is no health risk linked to the ingestion of asbestos. See, in particular, Commins, B. T., *Estimations of Risk from Environmental Asbestos* in *Non-Occupational Exposure to Mineral Fibres*, IARC Scientific Publication no. 90, Lyon, 1989, pp. 476-478.

[52] Dunnigan, J. and Seymour, N., *L'amiante et la santé: une mise à jour scientifique*, rev. ed., 1991, p. 53.

[53] Canada notes that natural concentrations of asbestos fibres are found in spring water, whether or not asbestos-cement pipes are used. The possible contribution to asbestos concentration in water after the use of asbestos-cement pipes was studied in several countries. For example, in the State of Illinois, in the United States, in 15 public water supply networks, some of which were 50 years old, there was no difference in fibre concentrations between samples of drinking water before and after they passed through asbestos-cement pipes. (Hallenbeck, J. *et al.*, *Is Chrysotile Asbestos Released from Asbestos-Cement Pipes into Drinking Water?* (1978) Amer. Water Works Ass., Vol. 70, no. 2, p.97). See also World Health Organization, Letter to T.A. Jafri, *Asbestos in Drinking Water/Amiante dans l'eau de boisson*, Helmer, D.R., WHO, Geneva, 5 April 1989.

[54] World Health Organization, *Environmental Health Criteria for Asbestos and Other Natural Mineral Fibres*, Geneva, 1986, p. 135.

In other words, it is a rate that does not justify any additional measures.[55] According to the French *Académie nationale de médecine*, "this figure, which equals zero based on the degree of biological uncertainty […] indicates that there is no demonstrable risk."[56] These estimated environmental risk values are based on workplace health data and on the use of a linear lung cancer model, as well as on an exponential model for mesothelioma. The estimated values are conservative for various reasons, particularly because of the fact that a large number of previous workplace exposure values underestimated the actual exposure conditions for different types and mixtures of asbestos, and because the model used assumed they would apply even to extremely low exposure values, which means that they do not consider the possibility of a "threshold" effect under which there would be no detectable effect. In reality, Canada concludes that the risk could be even lower because, now, the public is exposed mainly to chrysotile, which is less hazardous than amphiboles.

3.54 Canada points out that environmental risks have to be put into perspective. Generally, it is acknowledged that, of the risks to which our society is exposed, some are less serious than others. Often, however, many people have a poor appreciation of the relative value of these risks, even though they have been published for several years. The following table provides an overview of the risks of exposure to environmental asbestos concentrations in comparison with other risks. It shows that the estimated risk attributed to this exposure is equal to or lower than that of very rare events.

[55] Commins, B.T., *The Significance of Asbestos and Other Mineral Fibres in Environmental Ambient Air*, Cummins Associates, Berkshire, U.K., 1990, p. 62. According to Commins, "[A]ny risk for future exposures to asbestos are of course likely to be lower still because of improving control measures." (p. 64.)

[56] Académie nationale de Médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4, p. 5.

EVALUATION OF LIFETIME RISKS (SELECTED CASES)[57] (according to data mainly from the United States)	
Lifetime risk per 100,000 inhabitants	
Extremely high risk	
Smoking (all causes of mortality)	21,000
Smoking (cancer only)	8,800
Very high risk	
Driving an automobile	1,600
High risk	
Frequent air travel (deaths)	730
Cirrhosis of the liver, moderate alcohol consumption (deaths)	290
Pedestrians hit by automobiles (deaths)	290
Moderate risk	
Low alcohol consumption (one beer per day) (cancer)	150
Death by drowning (all recreational activities)	140
Atmospheric pollution, U.S., benzopyrene (cancer)	110
Natural radiation at sea level (cancer)	110
Cosmic rays, frequent airline travel (cancer)	110
Low risk	
Household accidents (deaths)	88
Secondhand smoke (cancer)	75
Diagnostic X-rays (cancer)	75
(Rate of risk which few people are willing to use their own resources to reduce, Royal Society, London.)	70
Very low risk	
Natural radiation, people living in brick houses (cancer)	35
Smallpox vaccinations, by vaccination (deaths)	22
One transcontinental flight per year (deaths)	22
Saccharine, average consumption in the U.S. (cancer)	15
Consumption of Miami or New Orleans water (cancer)	7
(Rate of risk at which few people feel measures are necessary, in the absence of clear links to consumer products, Royal Society, London.)	7
Extremely low risk ("rare events")	
One transcontinental flight per year, natural radiation (cancer)	4
Lightning (deaths)	3
Hurricane (deaths)	3
Consumption of one charcoal cooked steak per week (cancer)	3
RISK DUE TO ENVIRONMENTAL ASBESTOS CONCENTRATIONS (cancer) (approximately 1 per 100 000 or less[58])	1
("Acceptable" risk, WHO, drinking water (cancer))	1
(Additional restrictive measures are certainly not justified, Royal Society, London, United Kingdom)	0.7

3.55 Canada emphasizes that, because of the extremely low risks linked to the current use of asbestos products, there is no reason to have to reduce the use of chrysotile or tighten restrictive measures if adequate restrictive measures have been taken. Such was the case in France in 1997, according to the French Senate and National Assembly.[59] Despite the importance of applying general restrictive measures, there are currently three specific cases that require particular vigilance: (i) the presence and elimination of old asbestos products in buildings; (ii) the demolition of buildings

[57] Commins, B. T., *Estimations of Risk from Environmental Asbestos* in *Non-Occupational Exposure to Mineral Fibres*, IARC Scientific Publication no. 90, Lyon, 1989, pp. 476-483.

[58] Results of exposure in buildings containing sprayed asbestos over a period of 20 years (See Doll, R., and Peto, J., *Asbestos; Effects on Health of Exposure to Asbestos*, Her Majesty's Stationery Office, U.K., 1985, p. 53.

[59] Le Déaut, J.-Y. and Revol, H., *L'amiante dans l'environnement de l'homme: ses conséquences et son avenir*, Office parlementaire d'évaluation des choix scientifiques et technologiques, National Assembly no. 329/Sénat no. 41, 1997, p. 133.

containing significant amounts of asbestos; and (iii) the elimination of asbestos waste. In addition, particular attention must be paid to the hazards caused by amphiboles. Because of the relatively high risks, compared to those of chrysotile, which are linked to exposure to various types of amphiboles in the workplace, most countries, including Canada and France, have prohibited their use. Special restrictive measures were adopted for extraction and crushing, as these activities can produce large amounts of dust. Appropriate regulation of modern crushing procedures allows asbestos to be exploited with minimal emission of fibres into the environment. For this purpose, for example, effective air purification systems such as electrostatic precipitators, cyclones, or sleeve chambers are used.[60] The uncontrolled use of certain types of asbestos and of certain work processes was responsible in the past for unacceptable emissions. Today, with the help of advanced technologies and the widespread use of wet processing, it is relatively easy to use chrysotile in such a way as to ensure the protection of workers' health while avoiding possible air contamination.[61] Controlled use has been implemented in a number of countries.[62]

3.56 Regarding the limitation of asbestos emissions during construction activities, Canada notes that the use of modern chrysotile products prefabricated in the factory for the construction industry reduces the problems of environmental contamination to a minimum.[63] In these chrysotile-cement construction materials, the asbestos fibres are strongly linked to a matrix. If it should, nonetheless, become necessary to cut them on the construction site, the use of tools that almost entirely eliminate emissions (low-speed saws, with water injection or equipped with suction units), and the wearing of a

[60] Canada indicates that, over the last 15 years, ambient air concentrations of asbestos in the institutions where chrysotile was being extracted in Quebec never exceeded 0.02 f/ml. In 1986, A. Churg (See Churg, A., *Lung Asbestos Content in Long-Term Residents of a Chrysotile Mining Town*, (1986) 134 Amer. Rev. Respirat. Diseases 125) concluded that residents of the mining region of Thetford Mines in Quebec showed no sign of disease due to asbestos and that repeated epidemiological studies did not document any abnormal incidence of respiratory diseases in persons that had never worked in this industry. Canada also draws attention to the work of Dr. Camus *et al* (Camus, M., Siemiatycki, J., Meek, B., *Nonoccupational Exposure to Chrysotile Asbestos and the Risk of Lung Cancer*, (1998) 338, New England Journal of Medicine 1565.) They published a vast study on women in chrysotile mining communities in Quebec, many of whom were exposed to very high levels of fibres between 1920 and 1975. These women were subjected to exposure of 0.0107f/ml, higher than the current exposure limits in France, and literally thousands of times higher than the levels measured in public buildings. Nonetheless, Canada notes that no excess in lung cancer was detected in this population. According to the study's authors, this is particularly important in light of the current French situation. In fact, applying the risk model adopted by France for the exposure studied results in a forecast of approximately 100 lung cancer deaths, while in reality there are none. Likewise, use of the French risk model would have resulted in estimates of approximately 250 and, at any rate, no less than 50 deaths from mesothelioma, whereas the preliminary results of the study in question show only 10 cases, some of which may be associated with exposure to amphiboles. Research continues, particularly with an analysis of the work history of each individual in order to determine the exact link, if any, between these cases of mesothelioma and on-the-job exposure, as well as exposure to amphiboles.

[61] See, in particular, Bragg, G.M., *Basics of Asbestos Dust Control*, Institut de l'amiante, Montreal, 1988.

[62] See paras. 3.120 *et seq* below.

[63] Canada points out that in Germany, for example, a study revealed the low degree of chrysotile fibre emissions in the environment from chrysotile-cement roofing materials, even when these were in a state of advanced corrosion. These chrysotile fibre concentrations, which were measured in urban areas, were well under 0.001 f/ml, i.e. the concentration found acceptable by the German health authorities. (Teichert, U. (1986) 46 Staub Reinhaltung der Luft 432, p. 7 of the English translation.) In Austria, after having compared chrysotile fibre concentrations between areas with and without chrysotile-cement roofing (< 0,0001 f/ml), it was concluded that there was no significant link between the use of chrysotile-cement based materials and the chrysotile fibre concentrations found in the areas concerned. (Felbermeyer, W. S., Ussar, M.B., *Environmental Pollution by Atmospheric Effects on Asbestos Cement Sheets*, Institute for Environmental Protection and Clean Air, Leoben Austria, 1980). Canada notes that, in Australia, the possible contribution of chrysotile-cement roofing materials on school buildings to environmental asbestos concentrations has been analysed. Most of the concentrations were found to be equal to or less than 0.0002 f/ml. (Safety and Welfare of Western Australia, *Asbestos Cement Products*, Report of the Working Party, 1990).

mask by the operator guarantee their safety. It is easy to obtain a copy of the codes of practice that employees must follow when handling modern chrysotile products.[64]

3.57 Canada considers that, in general, the extremely low risks of exposure to asbestos in buildings have been accurately demonstrated.[65] In some cases, however, the materials enclosing the sprayed asbestos in the buildings can deteriorate and pose a certain hazard to their occupants. In France, as in Canada and everywhere else, regulations provide that, beyond a certain concentration of airborne asbestos in buildings, corrective measures such as isolation, encapsulation, or even elimination must be considered. If a large amount of asbestos is present in an old building to be demolished, especially if amphiboles are involved, it may be advisable to eliminate these materials in advance, if possible. The procedures to be followed in these projects are well documented. Canada also considers that the elimination of most modern asbestos products should present only a slight difficulty if a building has to be demolished. It is important to use effective measures for handling, packaging, and transport, as well as for waste disposal. The procedures to be followed for these operations are well documented and often standardized. These measures, which are normally easy to implement, allow asbestos waste in the environment to be kept to a satisfactory minimum.[66] Industrial waste containing asbestos is normally easy to handle and confine, because it is often wet and, therefore, does not produce powder. Furthermore, many industries today recycle their waste because this measure, in addition to being more economical, allows the waste to be disposed of effectively. In most countries, industries must comply with regulations limiting emissions of asbestos into the atmosphere.

3.58 To conclude, Canada contends that, in light of the available data, there is no scientific justification for the prohibition or reduction of the manufacturing or use of modern asbestos products. This conclusion is as valid for developed countries as it is for developing countries. It is enough to continue to take adequate restrictive measures, particularly for mineral extraction and crushing, the manufacturing and use of products, and the elimination of asbestos waste.

3.59 The **European Communities** respond that Canada presents the health effects of asbestos by distinguishing on the one hand the environmental risks and, on the other, certain asbestos-related occupations: mining and crushing, manufacturing of products, building and demolition of buildings, elimination of waste. Canada simply disregards the fact that once asbestos has been used in the construction of a building and until it is demolished, any installation containing asbestos is likely, during its life cycle, to require some form of plumbing, heating or electrical work carried out by professionals or amateurs. Regular servicing and maintenance work carried out by people who are unaware of whether the material on which they are working contains asbestos or not may, if asbestos is present, lead to extremely high peaks of exposure, significantly higher than the exposure limits, and which have been proven to be carcinogenic in a perfectly "detectable" way. According to the EC, the large majority of cancers due to asbestos are the result of such work (servicing and maintenance) on materials containing chrysotile. For many years, scientific bodies and governmental authorities disregarded this type of risk. In the early 1990s, scientists started to note an increase in cases of mesothelioma affecting professionals who had never worked in the asbestos-manufacturing industry. France, following the example of several other countries, became aware of the seriousness of the risk faced by these workers and individuals, exacerbated by the number of asbestos products freely on sale and frequently used. In such situations, controlled use practices, which the EC consider do not in any case eliminate the risk, are inapplicable. Persons liable to be exposed to the risk are unaware that they are working with products containing asbestos. They are therefore unable to protect themselves.

[64] See, in particular, *Code of Practice on Safety in the Use of Asbestos*, International Labour Organization, Geneva, 1984.

[65] Commins, B.T., *The Significance of Asbestos and Other Mineral Fibres in Environmental Ambient Air*, Cummins Associates, Berkshire, U.K., 1990, p. 19.

[66] Institute of Waste Management, *Code of Practice for the Disposal of Asbestos Waste*, Northampton (UK), Institute of Waste Management, 1988.

Even if they did know, controlled use practices imply[67] the use of costly material and equipment and make even the simplest and quickest operations very complicated. Taking these elements into account, France decided, by means of the regulation contested by Canada, to halt the dissemination of such risks by banning all future uses of products containing asbestos.

3.60 The EC point out that Canada asserts that "today science generally recognizes few or no demonstrable effects of environmental asbestos on health". If the idea of ambient air is limited to the usual levels of exposure in towns or buildings that have not deteriorated, the INSERM report reaches the same conclusion unambiguously in several places. But the French regulation is not solely intended to prevent the risk due to ambient exposure, i.e. exposure caused by living in a building containing asbestos. The French regulation calls for caution in this area, but the purpose of the contested ban is to prevent the extension of risks due to exposure, usually only of an occasional nature, for professional activities (servicing and maintenance in buildings/public works, for example) or leisure activities (handymen). The EC state that these risks have been scientifically proven both by metrological data concerning the concentration of asbestos fibres and by international epidemiological data.

3.61 The EC consider that the Canadian assertion that "Today chrysotile fibers are bonded" or "encapsulated" in other materials and therefore do not present any risk is misleading because health problems are not simply due to the presence of chrysotile fibres in materials, but to the fact that very high levels of fibres are released into the atmosphere when working with these materials, for example, when sawing, cutting, etc. This idea is often repeated in Canada's arguments in order to make it appear that asbestos incorporated in various materials, including asbestos-cement, is not dangerous: the purpose of this assertion is to provide misleading reassurance, and it will not be systematically contested. Moreover, it should be noted that the manufacture of asbestos-cement has always required that the asbestos and other materials be bonded. In this connection, it cannot be stated, as Canada does, that there are "modern" manufacturing methods. To the knowledge of the EC, the production methods for asbestos-cement have not evolved to any significant degree for many years. It is also wrong to claim that "The strong bond between chrysotile and cement in chrysotile-cement products reduces the release of fibers into the air to a minimum". This claim is incorrect when the product in chrysotile-cement is the subject of servicing or maintenance which requires drilling or cutting. In such cases, the release of dust into the air is several hundred times higher than the value limit allowed in France, and the United States, or even the limit recommended by the WHO and cited by Canada. The EC note that the risks of "asbestosis" have been known since the beginning of the century and the first regulations adopted to protect the health of workers from the dangers of asbestos were drawn up in England in 1931, as is recalled in the European submission. The risks of asbestos for health have thus been recognized for a very long time.

3.62 The EC point out that Canada cites very low risks for health at very low exposures (0.0005 f/ml). It should be emphasized, however, that: (i) these are the same values as those cited in the INSERM report for such levels of exposure, which Canada appears to disregard; (ii) these values were obtained using the same model as that used by INSERM, whose validity Canada nonetheless denies. If the model can be used by Canada to show that the risks are low at low levels of exposure, why would it not be valid for higher levels of exposure? The EC note that Canada does not provide any justification for this contradiction and adds that this model does not take into account "a threshold below which there is no effect": this ignores the scientific consensus that there is no such threshold. The WHO report of 1988 on the dangers of chrysotile (cited by the EC but never by Canada, which only refers to the 1986 WHO report) recognizes that there is no threshold for chrysotile. The EC note that Canada acknowledges that it has banned the use of amphibole asbestos, like many other countries. Taking into account the equally dangerous threat of lung cancer from both chrysotile asbestos fibres and amphibole asbestos fibres and the theoretical possibility of so-called "safe" use,

[67] Aubier, M., Fournier, M., Pariente, R., *Pneumologie*, Médecine-Sciences, Flammarion, Paris, pp.453 *et seq.*

the Canadian ban on amphiboles alone appears inconsistent, unless it is justified by the fact that Canada does not produce amphibole fibres. It is difficult to understand why it should not be possible to ensure "safe" use of fibres of the amphibole variety when Canada claims that this is possible for fibres of the chrysotile variety: the production methods and the conditions of use are nonetheless strictly identical in both cases.

3.63 According to the EC, Canada's assertion that "It is relatively easy to use chrysotile in such a way as to ensure the protection of workers' health" is a euphemism that hides the real problems faced in practice. On the one hand, such protection can only exist if the worker knows he is handling asbestos products. On the other, following the ISO 7337 standard recommendations means cumbersome and costly individual measures (practically turning oneself into a cosmonaut) without being certain that no fibre can get through the protection. Furthermore, the asbestos-cement market is very diffuse. It is utopian to imagine that all the public concerned could apply the Canadian safe use programme. France recognizes that this is the only way of limiting as far as possible the risks of such operations when the asbestos is already there and it has adopted very strict regulations to this effect. The EC nevertheless contest the fact that Canada seeks to impose the adoption of such measures on very large parts of the economic sectors. In addition to their lack of effectiveness, these measures have a significant impact on the costs of French companies and are unknown to diffuse users of asbestos materials (on building sites, for example): asbestos-cement products were marketed in France as materials that did not present any particular risk, as Canada intimates when it refers to "modern asbestos-cement materials" in which asbestos fibres are "encapsulated"! The EC point out that, as shown by the occupational disease statistics, it is equally impossible to ensure the effective protection of workers in the raw asbestos processing industry, even with sophisticated dust collection and ventilation systems.

3.64 The EC consider that the Canadian claim that "the elimination of most modern asbestos products should present only a slight difficulty if a building has to be demolished" is a euphemism. Asbestos products used in the building industry are fragile and inevitably break or dissolve, releasing fibres into the atmosphere. In addition, the need to remove asbestos before demolition involves huge expenditure because any removal of asbestos requires the observance of draconian technical regulations essential for the protection of the workers. Lastly, the EC reject the Canadian argument that "in light of the available data, there is no scientific justification for the prohibition or reduction of the manufacturing or use of modern asbestos products. Chrysotile asbestos, like other types of asbestos, is dangerous for the health of workers and the population, no safe use allows the risk to be reduced. Scientifically, the French measure on a general ban is justified.

3.65 The EC state that, as the risks from exposure to asbestos were gradually identified and became the subject of preventive rules and regulations, the various types of exposure were listed and were placed in the following three categories: the first category includes occupational exposure of workers, including "primary" users and "secondary" users. "Primary" users are those working in the asbestos industry: mining of asbestos, manufacture of asbestos products (asbestos fibres, asbestos-cement, gaskets, asbestos boards for soundproofing or thermal insulation; since 1965, there has been no asbestos mining in France and less than 1,500 people were working in the asbestos-processing industry at the time the ban came into effect. "Secondary" users are in enterprises which use asbestos products (building industry, metalworking, shipbuilding, etc.); enterprises which, in the course of their work on buildings or plants, encounter materials containing asbestos (servicing and maintenance, electrical work, plumbing, etc.); enterprises engaged in the removal and/or containment of asbestos, particularly flocked asbestos; in France, the use of asbestos products involved several hundred thousand persons at the time of the ban and, at the present time, servicing, maintenance and do-it-yourself using asbestos products affect several million people; removal and containment of asbestos involve several hundred persons. The EC note that the Canadian guide on "controlled" use covers only the mining of asbestos and the processing of raw asbestos into asbestos products, i.e. it applies only to "primary" users. According to the EC, the second category includes para-occupational and domestic exposure, where people come into contact with workers in the first category. Many

members of the general population encounter similar exposure to servicing and maintenance workers when engaged in do-it-yourself activities. Such individuals even undertake the removal of asbestos on their own. They are therefore exposed without being aware of it, for asbestos is often undetectable, as the Canadian submission points out. Environmental exposures are in the third category and three types of source can be distinguished: (i) pollution from a natural source of geological origin; (ii) pollution from a particular "industrial" source; (iii) pollution from asbestos in buildings and various types of equipment. This breakdown reflects that generally found in other industrial countries, except for those countries where asbestos is mined, such as Quebec, where 1,300 persons fall into the category of "primary" users.

3.66 The EC recall that three diseases are caused by asbestos. Firstly, mesothelioma is a pleural cancer for which the only known cause is the inhalation of asbestos.[68] Asbestos in all its forms (amphiboles or chrysotile) is the only known agent which can cause mesothelioma or cancer of the pleura. In this disease, liquid forms between the lung and the thoracic cavity (pleurisy) causing pain and breathlessness. Asbestos of the amphibole type and chrysotile asbestos both cause mesothelioma, although amphiboles would seem to be somewhat more carcinogenic (but only in the case of mesothelioma).[69] This cancer occurs mostly as a result of occasional low-intensity exposure. After a long latency period (lasting for 30 years on average), this cancer enters the terminal phase, which lasts for one year on average. There is as yet no curative treatment with any effect. In 1996 alone, an estimated 750 persons died of mesothelioma in France. Secondly, cancer of the lung may be due to the inhalation of asbestos, but unlike mesothelioma there are other known triggers. The effects of lung cancer are quicker to make themselves felt than those of mesothelioma and both the symptoms and the outcome of the disease are widely known. The first symptoms include blood in the sputum, breathlessness and a general deterioration in the patient's health. Only certain forms of cancer can be treated, depending on their location and histological nature. Both chrysotile asbestos and the amphibole varieties can cause this form of cancer, their carcinogenic impact being comparable.[70] Asbestosis is a form of pulmonary fibrosis (or pneumoconiosis) arising from an accumulation of asbestos fibres, just as silicosis results from the inhalation of silica. The fibrosis takes the form of a scarring process which follows from the inflammatory reactions caused by the presence of asbestos fibres (or silica dust) in the pulmonary alveoli. The fibrous thickening of the thin alveolar wall prevents the circulation of oxygen. Once exposure has ceased, the disease either stabilizes or becomes progressively worse, with respiratory difficulties which may end in the patient's death. No curative treatment is yet available. Asbestosis results from what is considered a high level of occupational exposure. It develops over an average period of seven to eight years. Currently there are some 150 cases of asbestosis per year in France; in the United States there were on average 733 cases per year between 1982 and 1993.[71]

3.67 The EC explain that, in all, asbestos is responsible for some 2,000 deaths per year in France, including 750 deaths from mesothelioma. These figures are based on reliable and verified data. In the INSERM report (pages 172 to 180) a detailed description is given of the data in question, which are drawn from two major French studies and from cancer records. The figures have been fully borne out by the surveys conducted by the *Programme National de Surveillance du Mésothéliome* (PNSM) (National Mesothelioma Surveillance Programme), which was set up under the French Health Monitoring Authority in 1998. In France, asbestos-related occupational diseases account for almost 40 per cent of all social security expenditure in respect of occupational diseases, i.e. over F 1 billion per year.

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[68] Aubier, M., Fournier, M., Pariente, R., *Pneumologie*, Médecine-Sciences, Flammarion, Paris, pp.453 *et seq.*

[69] IPCS, *Environmental Health Criteria (203) on Chrysotile*, World Health Organization 1998, Geneva.

[70] *Id.*

[71] *Atlas of Respiratory Disease Mortality*, United States: 1982-1993, US Department of Health and Human Services, CDC-NIOSH, 1998.

3.68 The EC point out that one important point in this connection is that mesothelioma is regarded as a very reliable indicator of exposure to asbestos. Researchers plot the course of the disease against the use of asbestos since this technique yields important data for assessing the risk involved in various situations where people are exposed to asbestos. Unlike lung cancer, which is the other cancer caused by asbestos, mesothelioma has certain special characteristics: (i) apart from exposure to asbestos, no other causal factor present in the industrialized countries has been established or even seriously suspected. Interpretation of the course of the disease is not therefore impeded by the presence of other factors, such as tobacco in the case of lung cancer; (ii) the spontaneous occurrence of mesothelioma is very rare: where no asbestos is present, the frequency of the disease is estimated at one or two cases per year per million inhabitants,[72] with the same frequency being found in both men and women; whenever levels are found in excess of this frequency, they are regarded as a sure indicator of the presence of asbestos. It is for these reasons that mesothelioma is studied to ascertain the harmful effects of asbestos. But this approach, which is justified for methodological reasons, should not lead one to overlook the fact that most asbestos-related cancer deaths are attributable to lung cancer. According to the EC, it is generally recognized[73] that to obtain the total number of cancer deaths attributable to asbestos, the number of mesothelioma deaths has to be doubled at the very least.

3.69 The EC recall four important dates which mark the progress of international awareness of the health risks. In 1977, the WHO, acting through the IARC, recognized that all varieties of asbestos, including chrysotile, were carcinogenic, causing both lung cancer and mesothelioma, and classified them in group I (known carcinogens). In 1986, the ILO recommended in Convention No. 162 that legislators should make provision for the replacement of asbestos by less harmful materials or technologies, at the earliest opportunity. In 1996, the WHO recommended that asbestos, including chrysotile, should be replaced by harmless substitutes wherever possible. Lastly, in 1998, the WHO again drew attention to the carcinogenic effects of chrysotile, particularly as a cause of mesothelioma; it reiterated its call for the replacement of chrysotile and pointed out that numerous categories of worker were at risk in many areas.

3.70 The EC indicate that the diseases described above and caused by chrysotile asbestos (mesothelioma, lung cancer, asbestosis) are incurable. As it has been recognized for decades that all types of asbestos are life-threatening, measures to protect workers have been taken, and have been in place for a very long time in many countries. Since regulatory measures were first put in place in the United Kingdom in 1931, the ceilings set in many countries for exposure at work have been gradually lowered. The use of certain forms of asbestos has been banned in certain countries and that of any form of asbestos in others. In 1977, following a great many international scientific studies, the WHO listed asbestos in all its forms as a substance known to be carcinogenic to man.[74] Chrysotile asbestos and amphibole asbestos, which cause identical fatal diseases, cannot be treated separately. According to the EC, the diseases identified must be dealt with in a consistent fashion. These two varieties of asbestos cause the same cancers and the exposure conditions are identical. The EC note that, logically, just as it recommends the "safe" use of chrysotile asbestos, Canada could equally well have promoted the "safe" use of amphibole asbestos rather than approving and encouraging its prohibition. It is difficult to understand how Canada can accept the grounds for government measures banning amphibole asbestos while denying their legitimacy in the case of chrysotile.

3.71 The EC point out that asbestos is the cause of an international public health problem which affects both France and Canada. Mortality due to mesothelioma has been increasing in men in

[72] McDonald, J.C., McDonald, A.D., *Epidemiology of Mesothelioma*. In: Liddell, D.K., Miller, K., eds. Mineral Fibers and Health. Boca Raton FL: CRC Press, 1991: 143-164.

[73] Peto, Decarli, La Vecchia *et al*, *The European Mesothelioma Epidemic*, British Journal of Cancer, 1999, 79 (3/4): 666-672.

[74] IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man, *Asbestos*, Vol.14.

industrialized countries by some 5 to 10 per cent per annum since the 1950s.[75] A similar increase has also been seen in France.[76] A recent study coordinated by J. Peto[77] found that in seven European countries nearly 10,000 people had died from mesothelioma during the period 1990-1994. The most recent forecasts on mesothelioma mortality show that over the next few decades there will inevitably be hundreds of thousands of deaths caused by exposure to asbestos dust. Peto's 1999 study, mentioned above, also looks at the evolution of pleural mesothelioma mortality in six Western European countries (Great Britain, France, Germany, Italy, the Netherlands, Switzerland) over the period 1995-2029. This study estimates the total number of deaths due solely to mesothelioma in these six countries at around 200,000. According to the EC, the number of deaths will at least double between the periods 1990-1994 and 2015-2019, when it will reach 6,700 deaths per annum. If these figures are extended to all the countries of Western Europe and deaths from lung cancer are added, by 2029 around 500,000 deaths from cancer will have been caused by exposure to asbestos.

3.72 The EC indicate that, in France, the number of mesothelioma deaths in 1996 is estimated at 750. Contrary to what Canada states,[78] this figure of 750 estimated by INSERM rests on solid data. The data come from two major French studies based on actual cases of mesothelioma since 1979 in the geographical areas covered by the cancer registers in France. The frequency of mesothelioma is steadily increasing: all the French registers listing cases of mesothelioma show that the increase observed is 25 per cent every three years. According to the EC, these data are fully confirmed by the first available data provided by the *Programme National de Surveillance du Mésothéliome* (PNSM), which was set up under the authority of the *Réseau National de Santé Publique* in 1998.[79] A recently published study,[80] similar to that by Peto *et al*., predicts that the annual number of deaths from mesothelioma in France will continue increasing until 2020, in all the hypotheses studied. By that date, there could be 1,040 annual deaths from mesothelioma among men; the total number of deaths from mesothelioma over the whole period 1996-2020 could be 20,000 deaths among men and 2,900 deaths among women. INSERM has estimated that around 1,200 deaths from lung cancer were caused by asbestos in France in 1996.[81]

3.73 The EC note that, in Canada, the promoter of the so-called "safe" use of chrysotile, the health situation is no better than in other countries. It is regrettable that Canada has never provided its own health statistics on certified deaths from mesothelioma, in spite of the repeated requests made during the WTO consultations in Geneva on 8 July 1998. Unlike most other industrial countries, which are

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[75] See for example: McDonald, J.C., McDonald, A.D., *Epidemiology of Mesothelioma*. In: Liddell, D.K., Miller. K., eds. Mineral Fibers and Health. Boca Raton FL: CRC Press, 1991:143-164. See also the INSERM report, Chapter 8 (pp.154-190), which analyses in detail how the frequency of mesotheliomas has evolved internationally. INSERM report, pp.172-180.

[76] INSERM report, pp.172-180.

[77] Peto, Decarli, La Vecchia *et al, The European Mesothelioma Epidemic*, British Journal of Cancer, 1999, 79 (3/4): 666-672.

[78] See paragraph 3.222 below.

[79] Source: Programme National de Surveillance du Mésothéliome, *Rapport d'activité 1998*. Saint-Maurice, Réseau National de Santé Publique, February 1999.

[80] Gilg Soit Ilg, A., Bignon, J., Valleron, A-J., *Estimation of the Past and Future Burden of Mortality from Mesothelioma in France*. Occupational Environmental Medicine, 1998; 55:760-765.

[81] The EC note that Canada seems to believe that this figure is not correct, because it assumes that 5.7 per cent of cases of lung cancer are attributable to asbestos, a figure which comes from a single study carried out in Scotland (and which Canada considers too high, though it does not propose a different value based on the results of scientific studies). This criticism is not justified. The EC point out that, on page 10 of the INSERM report, there is a table summarizing the proportions of lung cancers attributable to asbestos in all the studies which provided an estimate: it shows that in certain studies this fraction is clearly higher than the 5.7 per cent given, and may considerably exceed 10 per cent. In the part of the report which explains the method of calculating the number of cases of lung cancer (page 180), the higher percentage (7 per cent) observed 10 years earlier in Great Britain has not been used since it was believed that this proportion must have declined. According to the EC, it is therefore clear that the INSERM report consistently uses relatively low estimates of the effects of asbestos on cancer mortality in France.

concerned about the deleterious effects of asbestos on the health of their population, Canada has never, as far as the EC are aware, published any data on the incidence of mesothelioma over a long period among its own population, although such data are available. The table below thus had to be reconstituted by French experts from the raw world data published regularly by the IARC.[82]

ANNUAL INCIDENCE OF MESOTHELIOMA IN CANADA AND QUEBEC

NUMBER OF CASES ANNUALLY PER MILLION PEOPLE				
1978-92				
PERIOD	Canada		Quebec	
	M	F	M	F
1978-82	6	2	9	4
1983-87	9	2	11	3
1988-92	11	2	15	3

This table shows that in Canada, each year between 1978 and 1982, six men per million were affected by mesothelioma. Ten years later, more than 11 men per million per year were affected, in other words, the figure doubled in less than 15 years, which is a particularly high rate of growth. According to the EC, the situation in Quebec, the province which produces Canada's asbestos, is even worse: the increase in the number of cases was of the same order, but the rates are consistently higher than in Canada as a whole (about 35 to 50 per cent higher, depending on the period). The fact that the rates for women have remained more or less stable (though markedly higher in Quebec) shows indisputably that the cause of these mesotheliomas is essentially work-related. Furthermore, the fact that the increase in the frequency of mesothelioma-type cancers can be seen throughout Canada, according to the EC, shows that the risk of death from chrysotile is not confined to the asbestos mining industry (which exists only in the province of Quebec), but that it affects all sectors of the economy. The EC also emphasize that Canada, which produces only chrysotile asbestos, has mainly used this type of asbestos.

3.74 The EC note that the number of mesotheliomas, and hence the number of asbestos-related cancers, correlates with the amount of asbestos imported. The more asbestos that is imported into a country, the more deaths there are from cancer caused by asbestos. Analysis of the data for ten Western countries[83] shows a very clear and strong correlation between cases of mesothelioma and consumption of asbestos per inhabitant, measured by the amount of imports. A study was conducted where the rates of cancer in the ten countries were compared with the total amount of asbestos imported per inhabitant (the study analyses the statistical correlation between these two values). This correlation is extremely strong (the very revealing correlation coefficient is 0.70). According to the EC, the number of cases of cancer thus increases proportionally with the increase of imports of asbestos into each country. It is important at this stage to bear in mind that about 95 per cent of all the asbestos used in the world is chrysotile.

3.75 The EC stress that chrysotile is a known carcinogen causing lung cancer and mesothelioma. The fact that chrysotile is carcinogenic has long been internationally recognized. Since 1977, the IARC has classified both chrysotile and amphiboles as carcinogens endangering human health (i.e. category I).[84] The IARC has recognized that chrysotile causes lung cancer and mesothelioma. Very recently - in 1998 - following an assessment conducted under the International Programme on Chemical Safety, the WHO reaffirmed that chrysotile asbestos "has been associated with an increased

[82] Source: *Cancer in Five Continents*, International Agency for Cancer Research, 1987/1992/1997.

[83] Takahashi, K., Huuskonen, M., Tossavainen, M., Higashi, T., Okubo, T., Rantanen, J., *Ecological Relationship between Mesothelioma Incidence/Mortality and Asbestos Consumption in Ten Western Countries and Japan*, Journal of Occupational Health 1999, 41: 8-11.

[84] *IARC Monograph on the Evaluation of Carcinogenic Risk of Chemicals to Man – Asbestos,* 1977, Lyon, Vol.14.

risk of pneumoconiosis, lung cancer and mesothelioma in numerous epidemiological studies of exposed workers"[85]. The WHO thus confirms the conclusions reached by the 1996 INSERM report.[86] Still more recently, INSERM's conclusions were again confirmed by the United Kingdom's Health and Safety Commission (HSC)[87], which considers all forms of asbestos dangerous as they can all cause mesothelioma, lung cancer and asbestosis. The EC note that Canada never cites these WHO and HSC reports, but on the other hand it does cite the recent publication by Camus *et al*[88] on cancer mortality among women living in the vicinity of Quebec's chrysotile asbestos mines. This study does not reveal any risk of lung cancer among these women. Canada fails to mention, however, that other studies, carried out among workers in the Quebec chrysotile mines, had already shown that the dose observed, as compared with the effect noted, was the lowest of all the estimates published in the international scientific literature on the risk of lung cancer. The number of cancers observed among workers in the Quebec asbestos mines is in fact much smaller than that found in all other situations linked to asbestos. This was pointed out in the INSERM report.[89]

3.76 The EC point out that the 1998 WHO report also explicitly noted that: "The exposure-response relationship between chrysotile and lung cancer risks appears to be 10-30 times higher in studies of textile workers than in studies of workers in mining and milling industries." It should be noted that these risks were observed in an American textile factory which had imported chrysotile asbestos from the Quebec mines. According to the EC, there is an international consensus that there is no threshold of harmlessness for chrysotile. It is important to make the distinction between setting exposure ceilings and the existence of a threshold of harmlessness beneath with there would be no health risk. These are two different problems which do not have the same rationale. The exposure ceilings are set by the authorities, taking various factors into account, such as the technical possibility of obtaining sufficiently low levels of exposure in the environment or the technical means of measuring the actual levels in the air for control purposes. The concept of the threshold of harmlessness is a biological and medical one: the aim is to establish whether biological effects are caused by chrysotile below a given level of exposure. There is thus no contradiction between the fact that it is scientifically accepted that there is no biological threshold of harmlessness and the fact that, nonetheless, an exposure limit is set at a certain level that can be achieved and easily measured for control purposes. The 1998 WHO report carried out under the International Programme on Chemical Safety states that, for chrysotile: "No threshold has been identified for carcinogenic risks".[90] This international authority thus confirms the conclusions of the INSERM report on this point.[91]

3.77 The EC point out that most malignant tumours have their origin in the transformation of a single cell, and a very low dose of a carcinogen is quite capable of inducing a transformational mutation in the genetic make-up of a cell. In epidemiology and the biological sciences it is now agreed that the most plausible model for carcinogenicity is one with no threshold value. According to the EC, the results of the most recent studies confirm this fact, while virtually all the references cited by Canada are from the 1980s. Thus, the French study by Iwatsubo *et al*.[92] shows that asbestos has

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[85] *IPCS, Environmental Health Criteria (203) on Chrysotile*, World Health Organization, 1998, Geneva, point 1.6 ("Effects on Humans").

[86] INSERM report, pp.259-266.

[87] Health and Safety Commission, United Kingdom, (1999), *Proposals for Amendments to the Asbestos (Prohibitions) Regulations 1992*.

[88] Camus, M. *et al., Non-Occupational Exposure to Chrysotile Asbestos and the Risk of Lung Cancer*, New England Journal of Medicine, 1998, 338 (22):1566-71.

[89] INSERM report, pp.193-202, particularly Table 2, p.196 and figures 1 and 2, pp.198 and 199.

[90] *IPCS, Environmental Health Criteria (203) on Chrysotile*, World Health Organization, 1998, Geneva, p.144.

[91] See Chapter 9, pp.193-241 of the INSERM report.

[92] Iwatsubo, Y. *et al, Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population – Based Case – Control Study*, American Journal of Epidemiology, 1998, 148: 133-142.

carcinogenic effects at levels well below those specified in earlier publications. Other recent studies analysed in the INSERM report show similar results (see pages 122 and 123 of the report).

3.78 In the EC's view, the model which considers that the risk of cancer is directly proportional to the dose of asbestos inhaled is that which is usually adopted. The model of simple proportionality between the dose of asbestos and the risk of cancer is that which is generally accepted nowadays. In the case of exposure to asbestos, such a model, which sees the risk of cancer as directly proportional to the dose of asbestos inhaled, fits very satisfactorily with direct epidemiological observations of high exposure (above 1 fibre/ml). As applied to low doses, this model is generally considered to be the most scientifically plausible. The EC point out that this model, which is strongly criticized by Canada, is that used by all the official committees of experts to date; it is also used in the HEI (Health Effects Institute) report so comprehensively cited by Canada.[93] It was also used to calculate the lifetime risks presented by Canada to show how insignificant the risks were at very low levels of exposure.[94] The EC stress that the values cited by Canada (0.0002 fibres/ml) in no way correspond to the cases covered by the French Decree challenged by Canada. Such excessively low values are found in the ambient air of towns and buildings: at this infinitesimal level, the risk is clearly undetectable, as the INSERM report states in several places (pages 145 and 146, and 224-230). The ban on asbestos, in France and in other countries, is not intended to eliminate the approximately 0.0002 fibres/ml which exist "naturally" in the air. The ban is intended simply to protect all the workers and users of asbestos who are often exposed to much higher values, which may reach tens of fibres per millilitre (i.e. several thousand times more) in the case of standard procedures for dealing with materials containing asbestos-cement.[95] Chrysotile represents the vast majority of the asbestos used throughout the world. About 95 per cent of all the asbestos used since the end of the Second World War has been of the chrysotile variety and more than 80 per cent of this chrysotile is incorporated into asbestos-cement products. This explains, in particular, the very high incidence of mesothelioma among building workers. It is therefore quite indisputable, in the EC's view, that it is indeed the chrysotile variety of asbestos which causes the vast majority of asbestos-related cancers. This has also been shown in recent publications.[96]

3.79 The EC point out that chrysotile and asbestos-cement pose a threat to an extremely large section of the population. Production workers are not the only section of the population affected. The EC note that, when discussing exposure to asbestos, Canada refers only to workers in the production and processing of asbestos ("primary users"). However, such workers are relatively few in number compared with the huge group of "secondary users". It is because these secondary users are very numerous and run significant risks that there is a very rapid rise worldwide in the mortality rates for cancers caused by asbestos. As the British Health and Safety Commission (HSC) points out, the risks for secondary users of asbestos have, in the past, been underestimated.[97]

3.80 The EC note that the occupations and branches of industry affected have changed and diversified. Several studies show the scale of exposure to asbestos in all countries. They also show the huge variety of occupations and sectors that are affected. In the 1960s, the main occupations affected were those in the insulation industry, in the production and processing of asbestos, in the central heating industry and in the shipyards. In the 1980s and 1990s, in contrast, the highest

[93] See, for example, paragraph 3.124 below.

[94] See, for example, paragraph 3.53 above.

[95] Blotière, C. and Huré, P., *Travaux sur des matériaux contenant de l'amiante – données métrologiques*, Chimie Info No. 60-11/1998.

[96] See for example: Stayner, L.T. *et al., Occupational Exposure to Chrysotile Asbestos and Cancer Risk: A Review of the Amphibole Hypothesis.* American Journal of Public Health. 1996, 86:179-186 and Smith Attand Wright, C.C., *Chrysotile Asbestos, the Main Cause of Pleural Mesothelioma,* American Journal of Industrial Medicine, 1996, 30: 252-266.

[97] *Proposals for Amendments to the Asbestos (Prohibitions) Regulations 1992,* Health and Safety Commission, United Kingdom, (1999).

incidence was found among those whose work involved materials containing asbestos. It was only in the 1990s that studies were published on mortality by type of occupational exposure to asbestos, raising awareness of the large-scale health problem which such exposure posed for many categories of worker. In Great Britain, the study published by Peto *et al*[98] in 1995 dealt with mesothelioma mortality in England and Wales for the years 1979-1980 and 1985-1990. The table below (taken from this study) shows the principal occupations in which deaths from mesothelioma have been observed; the percentages represent the distribution by occupation of all the deaths from mesothelioma that have occurred in England and Wales. It shows the variety and the relative importance of the various occupations exposed to asbestos to a significant degree. The types of work are classified in descending order of frequency of death from mesothelioma. The occupations shown in this table account for some 50 per cent of all the deaths from mesothelioma which occurred during the period studied.

DISTRIBUTION OF DEATHS FROM MESOTHELIOMA BY OCCUPATION[99]

Occupation	**%**
Fitter	6.8
Carpenter	5.7
Plumber	4.5
Construction - non specific	4.2
Machine operator	4.0
Electrician	3.6
Sheet metal worker/boiler-maker	2.5
Engineer - non specific	2.3
Buildings maintenance	2.2
Painter and decorator	2.2
Welder	1.6
Docker	1.5
Metal sprayer	1.1
Boiler operator	0.9
Building foreman	0.9
Electrical engineer	0.9
Industrial coach-builder	0.8
Plasterer	0.6
Industrial designer	0.6
Technician - non specific	0.5
Laboratory technician	0.5
Upholsterer	0.4
Electric power station worker	0.4
Chemical engineer	0.4

3.81 The EC point out that the figures in the table are not estimates but death rates which have actually been recorded. The occupations at high risk of mesothelioma include welders, dockers, laboratory technicians, painters and decorators, plasterers, fitters, upholsterers, power station workers, etc. Thus, the building sector alone accounts for a quarter of all the deaths from mesothelioma which have occurred in England and Wales, a proportion considered by Peto *et al*. probably to be underestimated. When the numbers of deaths from mesothelioma are compared to the number of people who work in each occupation, it can be seen that the jobs which are proportionally most affected are sheet metal workers/boiler-makers (including workers in shipyards) and industrial coach-builders. They are followed by plumbers, carpenters and electricians. In France, a recent study showed that, depending on the generation, between 18 and 25 per cent of French men, i.e. millions of people, have been exposed to asbestos at least once in the course of their working life.[100] Another

[98] Peto, J. *et al., Continuing Increase in Mesothelioma Mortality in Britain*. Lancet 1995; 345:535-539.
[99] *Id.*
[100] Goldberg, M. *et al*., *Past Occupational Exposure to Asbestos among Men in France.* Scandinavian Journal of Work and Environmental Health, 1999 (in press).

French study (currently under way), conducted in six *départements* with a sample of men who had retired between 1994 and 1996, shows the extreme variety of job periods which entailed exposure to asbestos. The EC emphasize that many sectors are exposed to asbestos, and that they are not the traditional industries of asbestos mining and processing. Thus, 45 per cent of building and public works occupations are exposed to asbestos. More than 40 per cent of industrial production jobs involve exposure to asbestos, metallurgy and the machines and tools sector being particularly affected.

3.82 The EC state that the study carried out by Y. Iwatsubo[101] on the French population confirms these data. This is one of the most important worldwide studies analysing the relationship between exposure to asbestos and the risk of mesothelioma; it covers the entire population of the country concerned. Although it had not been published at the time, this study was the subject of an analysis in the INSERM report (see pages 121 and 122). According to the EC, the very large scale of the study showed that there is a clear risk of cancer at levels of exposure that are lower than those previously recognized. This study shows that the vast majority of cases of cancer occur in workers who are "secondary users". Great numbers of people are often employed in the areas in question, which explains the large number of cases of mesothelioma which occur. The study shows, for example, that exposure to asbestos took place in 54 per cent of job periods in the construction sector.

3.83 The EC consider that the principal data which have been presented illustrate the ubiquity of asbestos in the workplace which can, at sufficiently high levels of exposure, lead to numerous cases of fatal disease. As a rule, the very many categories of workers affected handle materials containing asbestos sporadically, particularly asbestos-cement in building and public works occupations. These workers are often unaware of the risk they run. In fact, as Canada rightly and insistently notes, asbestos is undetectable when mixed with other materials, particularly cement. It is therefore not possible for the innumerable workers in all these sectors to be systematically informed of the risks they are taking when working with these materials. It is for this reason, above all, that there are also considerable risks to the general population such as do-it-yourself enthusiasts, who may often use products containing asbestos and may be exposed to significant quantities of asbestos dust when cutting, sanding, sawing and doing repairs of all kinds. It is therefore not entirely true, as Canada maintains, that there is no danger to the public from asbestos. According to the EC, Canada controversially finds that there is little difference between the undetectable risk associated with the levels of exposure in the ambient air - measured by the rate of asbestos fibres within a town or in the vicinity of a building - and the risks associated with the occasional, but sometimes high, levels of exposure which a very large section of a country's population may face.[102] Far from affecting only those working in asbestos production (mining and processing), the danger linked to inhaling asbestos at much higher levels than those cited by Canada is now particularly serious for users of products containing asbestos, whether they use such products in an occupational (textile workers, building workers etc.), para-occupational and/or domestic (do-it-yourself) context. In France, several hundred thousand or even millions of daily users of asbestos are therefore affected; they are never mentioned in Canada's submission.

3.84 **Canada** responds that, even if the EC refuse to recognize this fact, there are significant physical and chemical differences between chrysotile and amphibole asbestos, distinctions which are reflected in the pathogenic potential of the two types of asbestos. These distinctions are crucial in this case since the current problem of asbestos in France is due essentially to past uses and to the use of amphibole fibres. According to Canada, the distinction between chrysotile and amphibole asbestos is

[101] Iwatsubo, Y. *et al, Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos Exposure in a French Population-Based Case-Control Study*. American Journal of Epidemiology, 1998; 148:133-142.

[102] The EC emphasize that the INSERM report, so disparaged by Canada, also stressed the undetectability of the risks associated with very low exposures which are found in the ambient air of towns and buildings (see pp. 145 and 146, and 224-230).

also important by virtue of the fact that the extrapolations performed by INSERM to assess the risks associated with chrysotile asbestos are based on exposure to amphibole fibres, in proportions of up to 100 per cent and in circumstances which have nothing to do with the current uses of chrysotile asbestos.[103] Today, 97 per cent of chrysotile fibres are used in high-density and non-friable materials. Construction materials and pipes based on asbestos-cement account for nearly 90 per cent of the international market. Friction products, for their part, account for approximately 7 per cent of the market, with the remaining 3 per cent consisting of various products such as seals, textiles and membranes. The debate must therefore focus on the current uses of chrysotile, i.e. essentially chrysotile-cement.

3.85 In simple terms, according to Canada, three characteristics of fibrous materials are currently recognized as being significant parameters which determine biological activity: "durability" (or biopersistence), "dimension,"[104] and "dose."[105] In Canada's view, these characteristics are all relevant in the assessment of the health risk, as WHO, INSERM and the EC recognize.[106] It is important to highlight the lower biopersistence and pathogenicity of chrysotile fibres compared to amphibole fibres in order to demonstrate that the current health problems linked to asbestos are largely due to exposure to amphiboles. Canada emphasizes that the ban on current uses of chrysotile is not the solution to the health problems that France is experiencing today. The use of modern research techniques, in particular the mineral analysis of pulmonary tissues, sometimes called lung burden study, has made it possible to identify the "durability" factor as being a key parameter in the study of the pathogenicity of inhaled particles. This characteristic, which varies significantly from one particle to another and is probably linked to the chemical composition and crystalline configuration of the particles, will determine the extent of a basic biological phenomenon: biopersistence, i.e. the period during which the inhaled particles persist in the lungs and exert a harmful effect on the surrounding tissues before being eventually dissolved or eliminated.

3.86 Canada states that the recent studies which use both the fibre mass and the number of fibres as dose units confirm that amphiboles are more pathogenic than chrysotile.[107] The WHO declares that the use of gravimetric data "may be misleading when comparing samples of chrysotile and amphibole asbestos, because the former may contain more than ten times more fibres per unit weight".[108] Thus, the studies demonstrating that there is no distinction between chrysotile and amphiboles on a gravimetric basis mean in fact, according to the WHO, that amphiboles are more than ten times more dangerous than chrysotile, fibre per fibre. This is confirmed by INSERM, which reveals that the risk of mesothelioma is in fact ten times greater for amphiboles than for chrysotile.[109] Several studies

[103] See in particular INSERM report, p. 213.

[104] According to Canada, the pathogenicity of asbestos fibres varies depending on their dimensions. Hazardous fibres are defined as those having a length of more than 5 microns, a diameter of less than 3 microns and a length-diameter ratio of more than 3:1. See in particular *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, 1998, p. 14 . The longest and finest fibres pose the greatest health risk.

[105] According to Canada, the lack of epidemiological data demonstrating the risks associated with low-dose exposures makes it possible to state that the exposure levels associated with the current uses of asbestos do not pose any detectable health risk. See in particular *IPCS Environmental Health Criteria 203 on Chrysotile*, WHO, 1998, p. 144.

[106] *Id.*, p. 51; INSERM report, p. 90 *et seq.* See also para. 3.188 below.

[107] See *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, pp. 69 and 81; INSERM report, Table 2, p. 196; EPA, Integrated Risk Information System, *Asbestos*, Document No. CASRN 1332-21-4 on-line: EPA, <http://www.epa.gov/ngispgm3/iris/subst/0371.htm> (access date: 10 June 1999). Canada points out that, in the large majority of the experimental protocols, the comparisons of the effects were still based on gravimetric data; i.e. the effects were produced by an equivalent mineral mass. In fact, retrospective attempts aimed at converting gravimetric doses into doses of numbers of fibres have indicated that, if based on the number of fibres, pathogenicity studies would show that, fibre for fibre, chrysotile fibres are less pathogenic than the other types of asbestos fibres, indeed even less than certain synthetic fibres.

[108] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 69.

[109] INSERM report, Table 2, p. 196.

published in the early 1980s were conducted on samples of pulmonary tissues from workers whose deaths were thought to be linked to exposure to asbestos, compared to control subjects who had been exposed to various levels of urban pollution. The results showed that the quantities of amphiboles present in the pulmonary tissue of the experimental subjects were one hundred times higher than those found in the control subjects, but that the quantities of chrysotile were similar.[110] Thus, the workers died from exposure to amphiboles, not to chrysotile.

3.87 Canada states that, according to the WHO and studies reviewed by it, the biopersistence of chrysotile is lower than that of amphiboles:

> "The fractional deposition of chrysotile was lower than for amosite and crocidolite [...] The alveolar clearance of chrysotile was faster than that of crocidolite. [...] The retention of chrysotile, as measured a few days after the end of the 6-week exposure period, was only about one third that of amphiboles. [...] This difference in the lung clearance of chrysotile and amphibole fibres has been confirmed by several studies."[111]

3.88 Canada emphasizes that the half-life of amphibole fibres, although difficult to estimate, appears to be in the order of decades, while that of chrysotile fibres may be only a few months.[112] The research of Dr. Bernstein, on the basis of the Interim Protocol for the Inhalation Biopersistence of Mineral Fibres of the EC, confirms, in a 1998 study, the higher biopersistence of amphiboles compared to chrysotile. Chrysotile alone, according to Dr. Bernstein, "would have little if any toxicological effect."[113] Even INSERM recognizes "[Tr.] the difference in carcinogenicity between the two types of fibres for mesothelioma." According to INSERM: "[Tr.] experimental studies have shown that the biopersistence of chrysotile fibres was lower than that of amphiboles."[114] The IARC is of the opinion that the type of fibre must be duly taken into account in assessing the risks of lung cancer.[115] The IARC also recognizes that: "[I]n manufacturing and application industries mesotheliomas have been caused by exposure to crocidolite, and less frequently to amosite and chrysotile."[116] Finally, the IARC adds that when fibres are identified in the lungs, amphibole fibres are predominant.[117]

3.89 Canada also recalls that Drs. Kumar, Cotran and Robbins state, in their authoritative medical textbook on pathology:

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[110] See in particular Wagner, J.C. *et al. Correlation Between Fibre Content of the Lung and Disease in East London Asbestos Factory Workers* (1988) 45 British Journal of Industrial Medicine 305, according to which: "[W]e 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 amphiboles and serpentine asbestos fibre."

[111] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 60, citing Albin *et al., Retention Patterns of Asbestos Fibres in Lung Tissue Among Asbestos Cement Workers* (1994) 51 Journal of Occupational Environmental Medicine 205: "The present data indicate that chrysotile has a relatively rapid turnover in human lungs, whereas amphibole, tremolite and crocidolite, have a slower turnover."

[112] Mossman, B.T. and Churg, A., *Mechanisms in the Pathogenesis of Asbestosis and Silicosis* (1998) 157 American Journal of Respiratory and Critical Care Medicine 1666, p. 1669. The authors also state: "Both animal and human studies show that continuing exposure to amphiboles results in continuously increasing amphibole fiber levels recoverable from the lung, whereas continuing exposure to chrysotile is associated with a negligible increase in chrysotile fiber burden over time." (*Id., p.* 1669).

[113] Bernstein, D., *Summary of the Final Reports on the Chrysotile Biopersistence Study*, Geneva, 1998.

[114] INSERM report, pp. 395-96.

[115] IARC, Vol. 2, p. 17, para. 5.2, available on-line: IARC http://193.51.164.11/htdocs/monographs/Vol02/Asbestos.html> (access date: 10 June 1999).

[116] *Id.*

[117] IARC, Asbestos (Suppl. 7), Part A available on-line: IARC <http://193.51.164.11/htdocs/monographs/Suppl7/Asbestos.html> (access date: June 10, 1999).

> "The basis for the carcinogenicity of asbestos is still a mystery. Clearly, the physical form of the asbestos is critical; very nearly all cases are related to exposure to amphibole asbestos, which has long, straight fibers, and not to serpentine chrysotile."[118]

3.90 For his part, Prof. Sir Richard Doll states that:

> "First, there is the difference between the effects of chrysotile and amphiboles which is so great in relation to mesothelioma that it is possible to argue that chrysotile does not cause mesothelioma at all."[119]

3.91 Canada emphasizes that the French *Académie nationale de médecine* stated, in 1996, that amphibole fibres are "[Tr.] currently considered the most dangerous" and that chrysotile fibres are "[Tr.] considered to pose little danger because of their spontaneous degradation in the human organism. [...] Chrysotile asbestos is a form of asbestos which has not caused mesotheliomas, except in cases of massive and prolonged exposure. This is apparently explained by its solubility in the organism."[120] Canada recalls that, in 1997, the French Ministry of Labour, through the report of the *Groupe scientifique pour la surveillance des atmosphères de travail* (Workplace air quality scientific monitoring group) (G2SAT), cited by the EC, was of the opinion that chrysotile, once in an acidic medium – the lungs for example – ceases to exhibit "virtually any carcinogenic activity":

> "[Tr.] It has been demonstrated that chrysotile is much more easily eliminated from the human lung than the other forms. Moreover, it ceases to exhibit virtually any carcinogenic activity (by intra-cavitary injection) after acid attack, which dissolves most of the magnesium."[121]

3.92 Canada points out that chrysotile fibres are "curly" and downy whereas amphibole fibres are straight and rigid like needles.[122] A 1998 WHO study notes that "[I]nhalation of respirable straight fibres [amphiboles] is reported to be associated with greater penetration to the terminal bronchioles than in the case of 'curly' fibres [chrysotile]."[123] Once they have entered the respiratory tract, chrysotile asbestos fibres, because of their curly shape, are more easily cleared by the mucociliary process than straight and rigid amphibole fibres.[124] Canada observes that, for chrysotile fibres which nonetheless manage to become lodged in the lungs, the macrophages are able to deal more easily with chrysotile fibres than amphibole fibres. In addition, amphibole fibres are much more resistant than chrysotile fibres in an acidic medium such as the lungs; they will therefore remain there longer than chrysotile fibres. According to the WHO, the lower biopersistence of chrysotile compared to amphiboles may be due in part to the fact that chrysotile fibres dissolve in an acidic medium such as the lungs, while amphibole fibres resist dissolution in this medium.[125]

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[118] Kumar, V., Cotran, R. and Robbins, S., *Basic Pathology*, 6th Ed., London, Saunders Co., 1997, p. 435).

[119] Doll, R., *Mineral Fibres in the Non-Occupational Environment: Concluding Remarks*, in Bignon, J., Peto, J. and Saracci R., dir., *Non-Occupational Exposure to Mineral Fibres*, IARC scientific publication No. 90, 1989, pp. 511-518.

[120] See Académie nationale de médecine (Etienne Fournier), *Amiante et protection de la population exposée à l'inhalation d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4, April 1996, p. 2.

[121] See INRS, *Rapport du Groupe scientifique pour la surveillance des atmosphères de travail" (G2SAT)*, 1997.

[122] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 11.

[123] *Id.*.

[124] Kumar, V., Cotran, R. and Robbins, S., *Basic Pathology*, 6th Ed., London, Saunders Co., 1997, p. 228.

[125] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 4. See also Kumar, V., Cotran, R. and Robbins, S., *Basic Pathology*, 6th Ed., London, Saunders Co., 1997, p. 227; INSERM report, p. 396.

3.93 Canada states that it is a basic principle in toxicology that the health risks posed by a toxic agent are directly proportional to the duration of the contacts with the target organs. Thus, since chrysotile is less biopersistent than amphiboles, it logically follows that chrysotile is less pathogenic. In a study by Coffin *et al*. cited by the WHO in 1998:

> "Large differences in the incidence of mesothelioma in intratracheal injection studies were demonstrated [...] crocidolite [was] 30-60 times more tumorigenic than chrysotile on fibre number basis."[126]

3.94 Canada points out that, contrary to what the EC and the United States claim, the United States EPA states that studies demonstrate a difference in carcinogenicity between the types of asbestos fibres.[127] The medical textbooks on pathology also indicate a clear distinction between amphiboles and chrysotile:

> "It is important to make the distinction between various forms of amphiboles and serpentines, because amphiboles, even though less prevalent, are more pathogenic than the serpentine chrysotile, particularly with respect to induction of malignant pleural tumors (mesotheliomas). Indeed, some studies have shown the link is almost invariably to amphibole exposure."[128]

This comes back to one of Canada's main criticisms of the INSERM report, i.e. that the extrapolations performed by INSERM are based on data on exposure to amphiboles or to mixtures of fibres containing amphiboles.[129] The danger of amphiboles cannot and must not be used to justify a ban on chrysotile, in light of the fundamental differences between the two types of fibres.

3.95 Canada asserts that convincing evidence of this distinction between the risk posed by chrysotile and the risk posed by amphiboles is the fact that the asbestos regulations in several industrialized countries make a clear distinction between the two types. Because of the greater risk involved, the regulations impose stricter exposure limits in the case of amphiboles than in the case of chrysotile. The following table indicates, for the sake of example, certain regulatory distinctions.

REGULATORY EXPOSURE LIMITS IN 1998[130]

Country	**Amphiboles**	**Chrysotile**
France (in 1994)	0.3 f/ml	0.6 f/ml
European Communities	0.3 f/ml	0.6 f/ml
Canada	0.2 f/ml (crocidolite) 0.5 f/ml (amosite)	1 f/ml
Spain	0.2 f/ml (amosite)	0.6 f/ml
Japan	0.5 f/ml	1 f/ml
United Kingdom	0.2 f/ml	0.5 f/ml

[126] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 81.

[127] EPA, Integrated Risk Information System, *Asbestos*, Document No. CASRN 1332-21-4, available on-line: EPA, <http://www.epa.gov/ngispgm3/iris/subst/0371.htm> (access date: 10 June 1999).

[128] See Kumar, V., Cotran, R. and Robbins, S., *Basic Pathology*, 6th Ed., London, Saunders Co., 1997, pp. 227 and 228.

[129] See paras. 3.222 and 3.223 below. Canada draws attention to the statement by the WHO in 1998 that the use of this type of data: "contributes less to our understanding of the effects of chrysotile, due to concomitant exposure to amphiboles." *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 107.

[130] Canada notes that, in the case of bans on asbestos, the regulatory limits apply to asbestos already in place.

3.96 Canada notes that amphiboles have been banned in France since 1994, while chrysotile continued to be used there until 1997. Amphiboles have also been banned in the United Kingdom since 1992. Convention 162 and Recommendation 172 of the ILO both call for a ban on crocidolite, which they do not however impose for chrysotile.[131] A WHO Committee which met in Oxford in 1989 also made the same distinction in its recommendations: "For crocidolite and amosite asbestos, on the basis of health, it is recommended that their use be prohibited as soon as possible."[132] In the case of chrysotile, far from suggesting a ban, it suggests an exposure limit of 1 f/ml. The regulatory distinction recognizing the difference in pathogenicity is also found in the disputed Decree, which, for instance, makes an explicit distinction between amphiboles and chrysotile, permitting exceptions only for chrysotile and not for amphiboles. Canada points out that it has demonstrated that the pathogenic potential of amphiboles is much higher than that of chrysotile. Consequently, INSERM is taking the wrong approach by using exposure to amphiboles to determine the risks associated with chrysotile. It is the high pathogenicity of amphiboles – used more extensively in France than the EC would have one believe – which, with the use of friable materials, is the cause of the health problems observed today in the French population. Canada considers that serious questions must be raised as to the reasons which prompt the EC to ignore – indeed even to deny in the way they treat the available scientific data – the existence of all this evidence which establishes, beyond the shadow of a doubt, the significant difference in pathogenicity between chrysotile and amphiboles. Indeed, the latter are the basic cause of the French problem, while the former has no health effects when used in a context of controlled use.

3.97 Canada points out that the EC claim that there is no safe threshold of exposure to asbestos, whether of the amphibole or chrysotile variety.[133] INSERM came to a different conclusion, at least with respect to asbestosis:

> "[Tr.] Most of the epidemiological data gathered in exposed occupational populations suggest that clinically and/or radiologically confirmed asbestosis appears only following sufficiently high exposures […]."[134]

3.98 Canada recalls that the EC have adopted the position that human experience has not demonstrated the existence of a threshold of exposure in the case of lung cancer or mesothelioma below which exposure to asbestos dust poses no health hazard. On the contrary, human experience, via the epidemiological data, supports the idea of a threshold. According to Canada, it is wrong to claim that there is an "[Tr.] international consensus that there is no safety threshold for chrysotile."[135] An EC study cited by WHO suggests the existence of a threshold:

> "It is very likely that there is a practical level of exposure below which it will be impossible to detect any excess mortality or morbidity due to asbestos. [...] Thus, it is possible that there is a level of exposure (perhaps already achieved in the general public) where the risk is negligibly small."[136]

3.99 According to Canada, this appears also to be the position of the EC when they state that their main data "[Tr.] illustrate the ubiquitous nature of asbestos in the workplace which can, at sufficiently high exposure levels, cause numerous cases of fatal diseases."[137] On the contrary, this statement

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[131] International Labour Organization, Geneva, Convention concerning Safety in the Use of Asbestos (Convention 162, adopted on 24 June 1986), Article 11, and Recommendation concerning Safety in the Use of Asbestos (Recommendation 172, adopted on 24 June 1986), Article 18.

[132] WHO, *Occupational Exposure Limit for Asbestos*, Report prepared by a Group of Experts meeting in Oxford, April 1989.

[133] See paras. 3.76 *et seq* above.

[134] INSERM report, p. 327.

[135] See para.3.76 above.

[136] *IPCS Environmental Health Criteria 53 for Asbestos and Other Mineral Fibres*, WHO, Geneva, 1986, p. 143.

[137] See paragraph 3.83 above.

presumes that no disease appears at low exposure levels to asbestos dust in the workplace. The existence of a threshold suggests the possibility of demonstrating that the effect does not manifest itself at or under an identified dose. However, the unequivocal scientific demonstration of a zero effect is impossible, as DG XXIV acknowledges.[138]

3.100 Canada asserts that, when the available epidemiological data are insufficient to make it possible to determine the risks of cancer associated with low exposure to a toxic contaminant, a methodology called "risk analysis" is used. Quantitative risk analyses project the risks observed at high exposure (experimental or occupational studies) to low exposure possibly associated with unobservable low risks. Such projections outside the field of empirical observations must be based on mathematical models. Canada indicates that the linear model is one of the possible risk projection models. This model is simple to calculate mathematically and statistically. It implies, however, that there is no exposure value, no matter how low, which is not associated with a certain level of risk, no matter how low. The uncertain choice of the best model has a major impact on the estimated risk.[139] In the case of asbestos, the linear model is in fact used to extrapolate risks from workers heavily exposed in the past to the exposures 100,000 times lower of the general population and asbestos workers today. In statistics, any extrapolation far from the region of observations (observable values, available studies) is speculative and very risky.

3.101 According to Canada, the EC assert that the linear model is the most plausible by using the following fallacious argument: "[Tr.] This hypothesis of the linearity of the risk based on the level of exposure and the lack of a threshold are part of the currently accepted assumptions concerning carcinogens; for instance, it is included in the ILO encyclopedia. This hypothesis is therefore the most plausible." However, this does not mean that this is the most plausible model, but rather the simplest and most "conservative" model in that it projects higher risks in the region of low doses than the other mathematical models of carcinogenesis. The risk assessment agencies emphasize this distinction and this criterion.[140] The EC confuse the lack of an identified threshold with the lack of a threshold. For instance, the WHO report on chrysotile asbestos notes that: "No threshold has been identified for carcinogenic risks."[141] For Canada, this means simply that a specific threshold cannot be identified, if there is one. At no place in the WHO report or in any other risk assessment is it claimed that there is no threshold. On the contrary, this possibility is mentioned by the Health Effects Institute-Asbestos Review (HEI-AR). According to this group of international experts, which included experts in modelling of cancer risk such as J. Peto, D. G. Hoel and W. Nicholson, the linear dose-response model is not adopted for its validity but rather because it tends to over-estimate the actual risk. This model ignores the natural biological defence mechanisms against toxic invaders of

[138] *Opinion on a Study Commissioned by Directorate General III (Industry) of the European Commission on "Recent Assessments of the Hazards and Risks Posed by Asbestos and Substitute Fibres, and Recent Regulation on Fibres World-Wide"* (Environmental Resources Management, Oxford) (opinion expressed on 9 February 1998).

[139] According to Canada, the linear model predicts risks 100,000 times higher than those predicted by a "log-probit" model at doses 100,000 times lower than those for which risks have been observed. See Brown, C.C., Mantel, N., *Models for Carcinogenic Risk Assessment*, Science 1978; 202:1105.

[140] Environmental Protection Agency, *Guidelines for Carcinogen Risk Assessment*. Fed Reg 1986; 51, CFR 2984 (185/Sept.24):33,992-34,003. Health and Welfare Canada. *Carcinogen Assessment*. Ottawa, Canada: Dept. of Supply and Services Canada, 1991; 96. Health and Welfare Canada. *Carcinogen Assessment*. Ottawa, Canada: Dept. of Supply and Services Canada, 1992. National Research Council. Science and Judgment in Risk Assessment. Student Edition. Washington, D.C.: Taylor and Francis, 1996. National Research Council. Risk Assessment in the Federal Government: Managing the Process. Washington, D.C.: National Academy Press, 1983.

[141] *IPCS Environmental Health Criteria (203) on Chrysotile,* WHO, Geneva, 1998, p. 144, under a).

the body, which, as Canada has previously demonstrated, are very effective in the case of chrysotile.[142] With respect to the validity of the linear model in general, Prof. Doll wrote as follows:

> "We have no real ground for postulating that a linear relationship for lung cancer can be extrapolated back to the levels of dose with which we are concerned in non-occupational settings."[143]

3.102 Canada points out that, similarly, Ames and Gold wrote: "linear extrapolation from the maximum tolerated dose in rodents to low-level exposure in humans has led to grossly exaggerated forecasts in mortality."[144] E. Fournier and M.-L. Efthymiou are even more severe. In their view "linear extrapolation to zero is an unscientific methodology whose social consequences are so immense that it warrants unconditional elimination."[145] Canada indicates that, once a cell has been altered carcinogenically, there are natural defence mechanisms of the organ or of the organism which seek to destroy or eliminate the invaders.[146] The conventional models of carcinogenesis do not take this broader organic context into account. The EC and INSERM appear to confuse dose and exposure in their justification of the linear model. This model is applied to the ambient exposures of workers and of the general population, while it is justified in carcinogenesis on the basis of the effective dose of the target tissues. Not only is it implausible, according to Canada, that the dose-response relationship should be linear at the cellular level (level of mathematical modelling of carcinogenesis), but this is even more implausible at the level of the exposure-effects relationship. In fact, the deposition and clearance of solid particles in the lungs may be non-linear saturable processes,[147] in

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[142] HEI-AR, *Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge (Executive Summary)*, Health Effects Institute – Asbestos Research, Cambridge, 1991, pp. 6-62.

[143] Doll, R., *Mineral Fibres in the Non-Occupational Environment: Concluding Remarks* in Bignon, J., Peto, J. and Saracci R., dir., *Non-Occupational Exposure to Mineral Fibres*, IARC scientific publication No. 90, 1989, pp. 516-17.

[144] Ames, B.N. and Swirsky Gold, L., *Causes and Prevention of Cancer: Gaining Perspectives on the Management of Risk*, in Risks, Costs, and Lives Saved: Getting Better Results From Regulation?, New York, OUP, 1996, p. 6.

[145] Fournier, E. and Efthymiou, M.-L., *Problems with Very Low Dose Risk Evaluation: the Case of Asbestos* in *What Risk?*, p. 49.

[146] According to Canada, simulations with stochastic mathematical models predict that as soon as "defenders" have an effectiveness greater than zero against "invaders", even a linear dose-response relationship at the cellular level will be transformed into an infra-linear relationship at the broader level of the organ or of the organism. See Holland, C.D., Sielken, R.L.J., *Quantitative Cancer Modeling and Risk Assessment*, Englewood Cliffs, New Jersey: Prentice Hall, 1993; Sielken Jr., R.L., Bretzlaff, R.S., Stevenson, D.E., *Incorporating Additional Biological Phenomena into Two-Stage Cancer Models* in Spitzer, H.L., Slaga, T.J., Greenlee, W.F., McClain, M., Eds. *Receptor-Mediated Biological Processes: Implications for Evaluating Carcinogenesis.* New York: Wiley-Liss, 1994; 237-60. Stevenson., D.E., Sielken Jr., R.L., Bretzlaff, R.S., *Challenges to Low-Dose Linearity in Carcinogenesis from Interactions among Mechanistic Components as exemplified by the Concept of "Invaders" and "Defenders"*, BELLE Newsletter 1994; 3(2):1-8. Stevenson, D.E., *Dose-Response Studies of Genotoxic Rodent Carcinogens: Thresholds, Hockey Sticks, Hormesis or Straight Lines? - Comment on the Kitchin and Brown paper*, BELLE Newsletter 1995; 3(3):14-15.

[147] Gart, J.J., Krewski, D., Lee, P.N., Tarone, R.E., Wahrendorf, J. *Statistical Methods in Cancer Research. Vol. III – The Design and Analysis of Long-term Animal Experiments*. IARC Scientific Publications. Vol. 79. Lyon: International Agency for Research on Cancer (WHO), 1986. Vincent, J.H., Donaldson, K., *A Dosimetric Approach for Relating the Biological Response of the Lung to the Accumulation of Inhaled Mineral Dust*, British Journal of Industrial Medicine 1990;47:302-7; Morrow, P.E., Muhle, H., Mermelstein, R., *Chronic Inhalation Study Findings as a Basis for Proposing a New Occupational Dust Exposure Limit*, Journal of the American College of Toxicology 1991;10(2):272-290; David, J.M.G., *The Role of Clearance and Dissolution in Determining the Durability or Biopersistence of Mineral Fibers*, Environmental Health Perspectives 1994;102 (Suppl.5):113-117; Hext, P.M. *Current Perspectives on Particulate Induced Pulmonary Tumours*, Human & Experimental Toxicology 1994;13(10):700-715; David, J.M.G., McDonald, J.C., *Low Level Exposure to Asbestos: Is there a Cancer Risk?* (Editorial). British Journal of Industrial Medicine 1988; 45:505-508; Lippmann, M., *Deposition and Retention of Inhaled Fibres: Effects on Incidence of Lung Cancer and Mesothelioma*. Occupational and Environmental Medicine 1994;51(12):793-798.

which case, even if the relationship between the dose in the tissues and the risk of cancer were linear, the relationship between dose and exposure would be infra-linear, perhaps even with a threshold, and the resulting relationship between exposure and risk would also be infra-linear, or with a threshold. And this would also depend on the type of fibres.[148]

3.103 Finally, Canada emphasizes that the available epidemiological studies which make it possible to study the relationship between lung cancer and exposure to asbestos are statistically compatible with the linear model, but when an *a priori* non-modelized method such as "adjustment by least squares weighted by distance" is applied, the form of the resulting curves is generally infra-linear, except in the case of workers exposed to 100 per cent amosite.[149] Infra-linearity and even a threshold have been noted by various researchers in the case of chrysotile-cement workers,[150] and miners exposed to vermiculite contaminated by tremolite.[151] For the reasons outlined above, in Canada's view, the linear model must be presented as a possible model yielding an upper risk limit, and not as yielding the most accurate or most probable risk estimate. Finally, the possibility of a threshold must be considered plausible and even very probable, even if it is difficult to determine this threshold quantitatively.[152]

3.104 The **European Communities** affirm that the carcinogenic character of asbestos for humans is internationally recognized. Since 1977, the WHO has recognized that all varieties of asbestos, including chrysotile, are carcinogenic, causing cancer of the lung or mesothelioma.[153] In 1986, the ILO advised lawmakers, through Convention No. 162[154], to have asbestos replaced by less harmful materials or technologies as soon as possible. In 1996, the WHO recommended that asbestos, including chrysotile asbestos, be replaced by harmless substitutes, wherever possible. In 1998, WHO reaffirmed the carcinogenic effect of chrysotile asbestos, particularly with respect to mesothelioma, continued to promote substitution and noted that the risk was very widespread among numerous categories of workers.

3.105 According to the EC, asbestos is at the root of a public health problem and chrysotile is the cause of most asbestos-related diseases. In 1998[155], the WHO reaffirmed that chrysotile "has been associated with an increased risk of pneumoconiosis, lung cancer and mesothelioma in numerous epidemiological studies of exposed workers", which confirms the conclusions of the 1996 INSERM report. Since asbestos began to be used for industrial purposes, chrysotile has accounted for about 95 per cent of world asbestos consumption. Between 1945 and 1980, about 97 per cent of the

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[148] Lippmann, M. *Deposition and Retention of Inhaled Fibres: Effects on Incidence of Lung Cancer and Mesothelioma*. Occupational and Environmental Medicine 1994;51(12):793-798.

[149] Camus, M., *Lung Cancer Mortality among Females in Quebec's Chrysotile Asbestos-Mining Areas compared to that predicted by the U.S. E.P.A. Exposure-Effect Model* [doctoral thesis]. McGill University, 1997.

[150] Hughes, J.M., Weill, H. *Asbestosis as a Precursor of Asbestos Related Lung Cancer: Results of a Prospective Mortality Study*. British Journal of Industrial Medicine 1991;48:229-233.

[151] Vacek, P.M., McDonald, J.C. *Risk Assessment using Exposure Intensity: an Application to Vermiculite Mining*. British Journal of Industrial Medicine 1991;48:543-547.

[152] Canada notes that Dr. Gibbs (*A Review of the Report: "Rapport d'expertise collective INSERM*" October 1996, in paragraph 12) cites studies demonstrating the existence of a threshold, notably: Berry, G., *Mortality and Cancer Incidence of Workers Exposed to Chrysotile Asbestos in the Friction-Products Industry* (1994) 38 Ann. Occup. Hyg. 539; Newhouse, M.L. and Sullivan, K.R., *A Mortality Study of Workers Manufacturing Friction Materials:* 1941-1986 (1989) 46 British Journal of Industrial Medicine 1.

[153] According to the EC, it is estimated that asbestos causes twice as many cancers of the lung as cancers of the pleura (mesotheliomas), see Stayner *et al. Exposure to Chrysotile Asbestos and Cancer Risk: a Review of the Amphibole Hypothesis*, American Journal of Occupational Health, 1996, 86:179-186.

[154] International Labour Organization, Geneva, Convention concerning Safety in the Use of Asbestos (Convention 162, adopted on 24 June 1986), International Labour Conference, Geneva. See, in particular, Article 10.

[155] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998.

asbestos consumed in France was chrysotile asbestos. Since 1988, chrysotile has accounted for all the asbestos consumed in France.[156] According to the EC, these figures show that most asbestos-related diseases are caused by chrysotile and not amphiboles, as Canada would have the Panel believe. This is confirmed by recent publications. Thus, according to the study by Stayner *et al*.:

> "Our review of both the toxicologic and epidemiologic literature strongly supports the view that occupational exposure to chrysotile asbestos is associated with an increased risk of both lung cancer and mesothelioma".[157]

3.106 The EC note that the study coordinated by J. Peto[158] and published in 1999 found that in six European countries (France, Germany, Italy, Netherlands, Switzerland, United Kingdom) nearly 10,000 people died of mesothelioma between 1990 and 1994. Moreover, it estimated that during the period 1995-2029 about 200,000 people would die of mesothelioma. If these figures are extrapolated to all the countries of Western Europe and deaths due to lung cancer are included, then the results show that exposure to asbestos could lead to about 500,000 deaths by cancer between now and 2029. In France, the number of deaths due to mesothelioma is increasing steadily. A recently published study[159], similar to that made by Peto *et al*., predicts that the annual number of deaths due to mesothelioma in France will go on increasing up to 2020. It is estimated that in France over the entire period 1996-2020 a total of 20,000 men and 2,900 women will die of mesothelioma.

3.107 The EC state that chrysotile poses a threat to an extremely large section of the population. Several scientific studies show that a huge range of occupations and economic sectors is at risk.[160] For a long time, the asbestos producing and consuming countries considered that the risks of cancer were wholly restricted to "primary users"[161] (asbestos miners and workers in the asbestos-processing industry). In the early 1990s, an international scientific consensus emerged to the effect that the asbestos-related risks for secondary users (users of asbestos-based products, servicing and maintenance workers, "do-it-yourself" enthusiasts, and specialists in asbestos removal and containment) had been historically underestimated.[162] According to the EC, many sectors are exposed to asbestos and they are usually far from fitting the description of the traditional asbestos mining and processing industries.[163] Thus, 4 per cent of construction industry trades and 4 per cent of jobs in the industrial manufacturing sector are exposed to asbestos. As noted by the WHO in its report 203 on the risks of chrysotile asbestos: "Risks are likely to be greater among workers in construction and possibly other user industries".[164] The recent study by Y. Iwatsubo *et al*.[165] shows that the great majority of cancer cases occur among "secondary users". These workers are often unaware of the risk they are running, since when asbestos is mixed with other materials, particularly cement, its presence is not readily discernible.

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[156] See para. 3.22 above.

[157] Stayner, L.T. *et al*., *Occupational Exposure to Chrysotile Asbestos and Cancer Risk: a Review of the Amphibole Hypothesis*, American Journal of Public Health. 1996, 86:179-186. Smith *et al*., *Chrysotile Asbestos, the Main Cause of Pleural Mesothelioma*, American Journal of Industrial Medicine, 1996, 30:252-266.

[158] Peto *et al., The European Mesothelioma Epidemic*, British Journal of Cancer (1999), 79 (3/4), 666-672.

[159] Gilg Soit Ilg, A., Bignon, J., Valleron, A-J., *Estimation of the Past and Future Burden of Mortality from Mesothelioma in France*. Occupational Environmental Medicine, 1998; 55:760-765.

[160] See paras. 3.78 *et seq.* above.

[161] See para. 3.59 above.

[162] Health and Safety Commission, United Kingdom, (1999), *Proposals for Amendments to the Asbestos (Prohibitions) Regulations 1992*. See also para. 3.59 above.

[163] See paras. 3.78 *et seq*. above.

[164] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998.

[165] Iwatsubo, Y. *et al*, *Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population – Based Case – Control Study*, American Journal of Epidemiology, 1998, Vol.148, no. 2.

3.108 The EC stress that the international scientific community does not recognize the existence of a threshold of harmlessness for chrysotile. It is important to note the distinction between the establishment of occupational exposure limits and the existence of a threshold of harmlessness below which there is no risk to health. The occupational exposure limits take into account various criteria, including the technical feasibility of obtaining sufficiently low exposure levels in the workplace and the technological means of measuring actual levels for monitoring purposes. Thus, the occupational exposure limit does not correspond to a threshold of harmlessness which, in the case of asbestos, has never been found. Since as long ago as 1976, the IARC has recognized that "at present it is not possible to assess whether there is a level of exposure in humans [to asbestos] below which an increased risk of cancer would not occur".[166] This position received support from the WHO in its 1998 report[167], which states that "no threshold has been identified for carcinogenic risks", thus confirming the conclusions of the 1996 INSERM report. According to the EC, all the scientific studies show the existence of a linear relation between the dose of asbestos inhaled and the risk of cancer. In 1998, the WHO[168] noted that "there was a clear dose-response relationship (...)". The results of more recent studies[169] confirm the impossibility of identifying a threshold below which asbestos would not present any risk for the populations exposed. As pointed out in the Collegium Ramazzini report, "The strictest occupational exposure limits in the world for chrysotile asbestos (0.1 f/cc) are estimated to be associated with lifetime risks of 5/1,000 for lung cancer and 2/1,000 for asbestosis (Stayner *et al*., 1997)." The EC incorporate here, by reference, the report by the Collegium Ramazzini communicated to the Panel on 7 May 1999.

3.109 The EC state that the number of cases of asbestos-related diseases correlates with the amount of asbestos imported. An analysis of the data for ten Western countries shows a very strong correlation between the incidence of mesothelioma and per capita asbestos consumption measured in terms of imports. In each country, the number of cancer cases increases in proportion to the increase in asbestos imports.[170] Accordingly, in view of the acknowledged carcinogenicity of asbestos, whatever the variety, the number of deaths recorded or predictable over 30 years, the absence of a threshold of harmlessness, the proportion of total asbestos consumption represented by chrysotile and the direct link between the amount of asbestos used and the number of cancer cases, it is essential to stop the risk from spreading by banning all future use of asbestos, whether amphibole or chrysotile.

3.110 The EC state that France has the right to establish its own level of protection against the inhalation of asbestos fibres. The scientific findings available to France when it took its decision to ban asbestos were unambiguous. It has been scientifically established that: (i) chrysotile is a toxic material which has a dramatic effect on health (mesothelioma, cancer of the lung, asbestosis) and is no less toxic than other varieties of asbestos; (ii) there is no threshold of harmlessness as far as the carcinogenicity of chrysotile is concerned and large numbers of people (several millions) are at risk; (iii) controlled use is neither applicable nor effective; (iv) the substitutes for asbestos in asbestos cement (PVA, cellulose) and para-aramids give no cause for concern, asbestos- cement accounting for the vast majority (90 per cent) of the asbestos being used at the time of the ban; (v) there is no evidence of the other substitutes (man-made mineral fibres) being carcinogenic in humans. Among these substitutes, only ceramic fibres, which are very rarely used (to withstand very high temperatures), are carcinogenic in animals and should therefore be employed with due care.

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[166] Landrigan, P.L., *Asbestos – Still a Carcinogen,* 338, New England Journal of Medicine 1619 (May 1998).

[167] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998.

[168] *Id.*.

[169] Iwatsubo, Y. *et al*, *Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population – Based Case – Control Study*, American Journal of Epidemiology, 1998, Vol.148, no. 2.

[170] Takahashi, K. *et al., Ecological Relationship between Mesothelioma Incidences/Mortality and Asbestos Consumption in Ten Western Countries and Japan,* Journal of Occupational Health, 1999, 41:8-11.

3.111 The EC emphasize that the scientific data on which France based its case were of very high quality. The substitute fibres are more than 10 microns in diameter, which makes it physically impossible for them to penetrate into the pulmonary alveoli. With regard to the effects of asbestos on health, France based its case on the joint report of INSERM[171], one of the most important world biological and medical research bodies. INSERM's report consisted of a critical and reasoned review of the world scientific literature by a multidisciplinary team of 11 scientific experts. The method and scope of this work (12 chapters of discussion supported by 1,200 bibliographic references) make it fundamentally different from any monograph or fragmentary study. The quality of the work has been acknowledged by the entire scientific community, including the Canadian experts. The United States, in its third-party submission, fully endorses the conclusions of the INSERM report, including those concerning linear extrapolation to low doses. The EC consider, therefore, that Canada cannot criticize France for basing its case on this report. France has been concerned with the question of substitutes for asbestos ever since it began considering a ban. At the same time as it requested a report on asbestos from INSERM, in the autumn of 1995, France requested an initial report on man-made mineral fibres from the *Groupe de surveillance des atmosphères de travail*[172] (G2SAT) in order to obtain an initial insight into the harmfulness of the most suspect fibres which the proponents of the controlled use of asbestos are always stressing. This group based its conclusions on previous scientific research conducted over a period of many years.[173] The conclusions of G2SAT, submitted to the Government in June 1996, were confirmed by the results of the INSERM report on man-made fibres begun shortly after the submission of the report on asbestos. The fibres used as a substitute for asbestos in asbestos-cement were found to have given no cause for concern. This was confirmed by the report of the CSTEE[174] of DG XXIV of the Commission of the European Communities, and then by the United Kingdom's COC.[175] The scientific data on substitute fibres, on which France based its decision to ban asbestos, are thus broadly supported by other scientific authorities. According to the EC, Canada cannot maintain that France has replaced asbestos with the "unknown" risk of substitutes.

3.112 The EC state that, in the light of this assessment of the risk based on sound and internationally recognized scientific findings, France has adopted a risk management regime. As "safe" use is insufficient to eliminate the risk of an excess of cancers and as France is applying, on the one hand, the principle of replacement by a less dangerous product and, on the other, the principle of reduction of the risk to the lowest level technically feasible, it has decided to impose a ban with exceptions. The EC contend that this is the only solution capable of preventing the spread of the risk associated with materials containing asbestos. The measure is sharply reducing asbestos consumption, which is known to be very closely linked with the incidence of asbestos-related diseases. This solution offers every technical guarantee of safety since provision is made for exceptions when substitution does not ensure equivalent performance. At the same time, France has undertaken to explore the question of substitute products[176] in greater depth. It is also simultaneously strengthening the measures designed to protect workers exposed to "*in situ* asbestos", namely, the hundreds of thousands of maintenance workers, as well as the much smaller numbers engaged in more dangerous work such as asbestos

[171] Peto *et al*, *The European Mesothelioma Epidemic*, British Journal of Cancer, 1999, 79 (3/4): 666-672.

[172] *Fibres minérales artificielles et amiante (Résumé)*, Report of the *Groupe scientifique pour la surveillance des atmosphères de travail (G2SAT)*, INRS – DMT no. 69.

[173] The EC refer in particular to the WHO publication, *Environmental Health Criteria 151, Selected Synthetic Organic Fibres*, WHO, Geneva 1993.

[174] *Avis concernant l'amiante chrysotile et les produits de substitution envisageables*, Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), 15 September 1998.

[175] *Statement for Health and Safety Executive (HSE) on Carcinogenic Risks of Three Chrysotile Substitutes*, Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC), July 1998.

[176] The EC point out that, as soon as the INSERM report on man-made mineral fibres came out, France adopted an action plan aimed at protecting workers exposed to man-made mineral fibres.

removal and containment. France is also reinforcing its building surveillance measures by monitoring false ceilings, as well as flocking and lagging.

3.113 The EC emphasize that the aim of the Decree is consistent with the WHO and ILO recommendations. It is intended to establish an obligation to replace asbestos and products or materials containing asbestos whenever alternative materials or techniques are available, assuming always that they constitute a lower risk. The Decree provides for temporary exceptions to the rule in those very few cases in which there is no lower-risk substitute capable of ensuring equivalent performance. For these residual uses of asbestos, enterprises must request a waiver and undertake to carry out research with a view to abandoning the use of asbestos as quickly as possible. An enterprise which replaces asbestos with another material must rigorously: (i) ensure that, in the light of the knowledge available, the substitute represents a reduced risk to the health of a worker handling the product; and (ii) test the finished product in order to verify that it offers every technical guarantee of safety appropriate to its end use. Some three years after the Decree came into force, the use of asbestos in France is now much reduced and only involves a few precisely targeted and not very widespread industrial applications. The EC estimate that almost 100,000 tonnes of carcinogenic fibres have therefore been eliminated during this period in the form of materials potentially dangerous for the user and have been kept out of French buildings and factories.[177]

3.114 According to the EC, Canada's case is based on incomplete and largely erroneous data. In its arguments, Canada relies heavily on assertions which have no scientific foundation and, more often than not, are based on old or partial reports that are scientifically obsolete or of very debatable value. Canada makes many erroneous statements in support of its case and seeks to obscure well-established facts by creating confusion or omitting important data. The EC contend that many of Canada's assertions are unfounded or erroneous, for example:

(a) The characteristics of chrysotile:

  (i) The failure to make a distinction between the risk of mesothelioma and the risk of cancer of the lung: Canada regularly omits to point out that, whereas the risk of mesothelioma is lower for chrysotile than for amphiboles, this is not true for cancer of the lung;

  (ii) The assertion that the risk due to chrysotile is "undetectable", whereas many scientific studies show that its effects are indisputable.

(b) The French data:

  (i) The assertion that amphibole fibres were "widely used" in France is absolutely wrong;

  (ii) The assertion that France has favoured French products, whereas the EC has emphasized that most of the products used as substitutes for asbestos are imported into France.

(c) "Safe" use:

  (i) The assertion that there is no scientific evidence of risks linked with so-called "modern" use (also called "controlled" or "safe" use) of chrysotile, whereas numerous scientific publications cited by the EC (but not mentioned by Canada) clearly show the opposite to be true;

[177] The EC note that, in 1994, France imported 35,000 tonnes of asbestos and produced 436,000 tonnes of asbestos-cement (Source: Association Française de l'amiante).

(ii) The assertion that "there are effective methods for reducing dust creation" and that the safe use of asbestos is "based on proven scientific knowledge", whereas all the data by the EC show the opposite to be true.

3.115 The EC state that Canada is seriously confusing the issue or making significant omissions.

(a) Confusing the issue:

(i) Confusing the level of chrysotile fibres in the environmental ambient air with that in the workplace by suggesting that the very low levels of fibres encountered in the ambient air of cities and buildings are the only problem potentially linked with asbestos. The level of 0.0005 fibre per ml of air, which Canada always cites to show that the corresponding risk is "undetectable" or zero, is about 100,000 times lower than that created by certain routine operations on asbestos-cement parts;

(ii) Systematic confusion between friable products and amphiboles with non-friable products and chrysotile. In reality, raw asbestos, whether of the amphibole or chrysotile variety, is always spontaneously[178] friable. It is quite wrong to associate amphiboles exclusively with friable products, such as flocking and lagging, and chrysotile exclusively with non-friable products, such as asbestos- cement. Since amphiboles were banned, all asbestos-containing products, whether friable or non-friable, have been based on chrysotile.

(b) Omissions

(i) Systematic omission of the circumstances of occupational exposure most dangerous to health. Thus, in its description of the circumstances of exposure in the construction industry, Canada mentions construction and demolition activities, but simply disregards the fact that once asbestos has been used in the construction of a building, and until the latter is demolished, any installation containing asbestos is likely, during its life cycle, to require some form of plumbing, heating or electrical work carried out by professionals or amateurs.

(ii) Systematic omission of the high occupational levels of exposure associated with everyday uses. Canada cites only a few figures indicating low levels of exposure, omitting to mention the very high figures encountered daily, although they are well-known and have been widely published;

(iii) Systematic omission of the data on the ill-effects on health associated with the use of chrysotile in Canada itself. Thus, Canada seems to be unaware of its own statistics, which reveal a very sharp and rapid increase in cancers caused by chrysotile. Canada must be aware of the publicly-funded scientific research being carried out in Canada by well-known research teams, the results of which are widely published in the scientific press. Canada never refers to this work, which shows that in Canada the risks due to chrysotile are high and at least as great as in the other industrial countries;

(iv) Systematic omission of the most recent scientific research confirming the risks associated with chrysotile, in particular the reports of international

[178] That is, without human intervention, explain the EC.

> organizations to which Canada itself belongs. Thus, Canada cites two World Health Organization reports, one of which dates from 1986 and the other from 1988. It appears that, for Canada, research and the acquisition of new knowledge came to a halt more than ten years ago. Thus, Canada makes no reference to report 203 of the World Health Organization published in 1998 (although it is clearly identified as being an update of the 1988 report), which recognizes the dangers to health posed by chrysotile asbestos and clearly expresses doubts about the possibility of effectively controlling exposure in the building industry.

3.116 The EC state that Canada is using reports whose scientific value is highly debatable or citing reports too selectively. Canada considers that France's ban on all forms of asbestos is not scientifically well-founded. This criticism is mainly based on two reports. These reports are, however, of very debatable scientific value or cited only selectively, with the omission of those elements that conflict with Canada's point of view. According to the EC, the report of the *Académie Nationale de Médecine*, signed by E. Fournier[179], is of debatable value. As pointed out by Prof. Terracini of the University of Turin[180]: "a major limitation of this report is the total lack of bibliographic references. In addition, it is severely unbalanced on several issues". Drawn up by someone who had never previously published anything in the field of asbestos-related risks[181], the report can be no more than the expression of a personal opinion. In this respect, Prof. Terracini's conclusion is unequivocal:

> "This report has been obviously written by persons with no knowledge of the epidemiological methods and of the subtleties of causal inference. It provides no original information and can hardly be of any use in an overall evaluation of the case".

3.117 The EC state that the report of the Royal Society of Canada was prepared in haste at the request of the Canadian Government.[182] It should be noted, first of all, that on its own admission the Royal Society of Canada's Panel of scientific experts had to work too quickly, as it several times acknowledges (see, for example, page 15 of the English text), was not able to reach a consensus among its members (page 15 of the English text) and worked on an incomplete draft of the INSERM report (page 1 of the English text), which obviously explains certain erroneous interpretations resulting from a misunderstanding of the text. The arguments developed in the Royal Society of Canada report have already been the subject of a detailed analysis which showed that the criticisms of the INSERM report were based on an over-hasty reading of an incomplete document and are not well-founded.[183] The EC note, furthermore, that Canada used the Royal Society of Canada report partially and selectively and, in any event, failed truly to reflect the opinion of the group of scientific experts on the main conclusions of the INSERM report. In this connection, the following extracts from the Royal Society of Canada report should be cited:

> "The Panel agreed with INSERM's findings on the following points: all asbestos fibres are carcinogenic, regardless of their mineralogical nature; the risk of lung cancer is higher for longer and finer fibres for low dose and dose-rate exposures, the linear no-threshold model is used by all

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[179] Académie Nationale de Médecine (Etienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie Nationale de Médecine, Vol. 180, no. 4, April 1996.

[180] B. Terracini, *Review of Technical and Scientific Documents Annexed by Canada to its Submission of April 26*, document of 19 May 1999, submitted to the Panel by the EC on 21 May 1999.

[181] The EC note that an extensive search of the international bibliographical databases failed to reveal any scientific publication by the author of this report concerned with the study of asbestos-related risks.

[182] Royal Society of Canada, *A Review of the INSERM Report on the Health Effects of Exposure to Asbestos*, Royal Society of Canada, Ottawa, 1996.

[183] Terracini, B., *Review of Technical and Scientific Documents Annexed by Canada to its Submission of April 26*, document of 19 May 1999, submitted to the Panel by the EC on 21 May 1999.

> regulatory agencies that have performed quantitative risk assessments; research should be done on substitutes for asbestos; the linear no-threshold hypothesis for low exposure levels is not the only possible strategy in risk assessment, but evidence is not available to demonstrate that a different hypothesis is a superior predictor of risks from low exposures." (pages 4-6 of the English text)

3.118 The EC stress that the points on which the Royal Society of Canada says it agrees with the INSERM report are the essential points on which the French decision to ban asbestos is based.

> "Our hope was that we could give consensual answers. We could not always do so. In retrospect, the hope seems to have been foolishly optimistic. Scientists cannot achieve consensus on contentious issues after two weeks of reading and two days of face-to-face discussion." (pages 14 and 15 of the English text)

3.119 In conclusion, the EC emphasize that Canada's assertion that the experts who analysed the INSERM report "sharply criticized" the methods employed and "very severely criticized" its conclusions is, at the very least, tainted with partiality and does not truly reflect the contents of the Royal Society of Canada report. Moreover, it is inconsistent with almost all the scientific data from the relevant international institutions.

5. "Controlled" or "safe" use of chrysotile asbestos

3.120 **Canada** emphasizes that the public's perception of the harmful health effects of using different types of asbestos in various applications has exerted a greater influence on risk management decisions than risk evaluation has. This phenomenon is the result of a conceptual confusion between the terms "hazard" and "risk". Information on "hazards," erroneously presented as information on "risks", has provoked unjustified fears with regard to the undesirable effects of asbestos, such as cancer, in the population. In Regulation No.1488/94 of the European Commission[184], hazard is described as being "the adverse effects which a substance has an inherent capacity to cause". Risk, on the other hand, is defined as "the likelihood that an adverse effect will be caused under the known or the reasonably foreseeable conditions of use". Thus, it is appropriate to distinguish between the "hazards" associated with chrysotile fibres and the "risks" associated with the modern uses of chrysotile fibres. According to Canada, the characterization of the hazardous properties of a substance is not the same as an evaluation of the real risk of all its uses. The evaluation of the associated hazards is an important element but not sufficient in itself to evaluate the risk, which also encompasses evaluating the exact nature of the substance, data on long-term exposure and estimating the probable risk under current conditions of use. Thus, it is essential that the issue of the risks associated with a product be evaluated in the light of its various uses.

3.121 Canada points out that, today, chrysotile represents more than 97 per cent of the asbestos used. Its use is limited to a certain number of high-density applications, above all construction products based on chrysotile-cement, friction materials based on chrysotile and a number of plastic, resin and bitumen materials containing chrysotile, all of which are safe applications. The distinction between these uses and past uses is vitally important when evaluating the real risks posed by chrysotile. In Canada's view, an evaluation of the effects of asbestos in the workplace or in the environment must take into account the latest risk analyses, the current occupational exposure limits and modern applications using chrysotile exclusively in high-density materials. The risk can be managed through numerous forms of government action. In the case at issue, two forms of government action are examined for the purpose of determining the appropriateness of the French measure: controlled use; and the complete ban on asbestos, without distinction among the types of asbestos fibres and their multiple uses.

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[184] Commission Regulation (EC) No.1488 of 28 June 1994 laying down the principles for the assessment of risks to man and the environment of existing substances in accordance with Council Regulation (EEC) No.793/93, O.J., L.161/3.

3.122 According to Canada, the appropriate manner of regulating asbestos must be seen in a broad context. In a world in which global trade is becoming increasingly extensive, it is all the more important to adopt a uniform approach to the formulation of policies and regulations. The most effective and objective way to deal with these matters is to seek an international consensus whenever possible. With regard to asbestos, in Canada's view, the scientific data provide a solid basis for reaching sensible decisions regarding the regulation not only of asbestos, but also of the growing number of potentially hazardous fibres in general, some of which are being used in France as a substitute for asbestos. The lessons to be learned from the uncontrolled use of asbestos point to the importance of establishing appropriate regulations. The most logical and consistent approach to regulation is to reach an international consensus based on the best scientific data. Thus, controlled use means establishing and applying appropriate regulations to ensure the rigorous control of exposure to chrysotile and products containing chrysotile, with the aim of reducing to an undetectable level the risks associated with the extraction, crushing, manufacturing, shipping and handling of this product. Chrysotile is expressly mentioned because the use of amphiboles is banned virtually everywhere at the present time. The principle of controlled use also means that certain uses for which exposure cannot be controlled to an acceptable degree should be banned.

3.123 Canada considers that one of the most in-depth reports on the effects of asbestos and asbestos-containing products is the report published in 1984 by the Royal Commission on Matters of Health and Safety arising from the Use of Asbestos in Ontario. This report, still considered one of the most exhaustive studies of asbestos, recommends that the use of chrysotile be continued under conditions of controlled use.[185] In 1988, under the aegis of the International Programme on Chemical Safety of the World Health Organization (WHO), a working group was convened to evaluate the environmental contamination caused by asbestos. In its recommendations, the working group drew a distinction between the risks posed by brittle, low-density products and the risks posed by high-density products such as chrysotile-cement. The working group recommended that the use of low-density products be discouraged all over the world. It also concluded that the normal use of products containing high-density chrysotile, including chrysotile-cement, does not pose a risk to the general public.[186] In 1989, a group of experts met at Oxford under the aegis of the WHO and formulated recommendations for exposure to asbestos limits in the workplace. In their final report, the participants recommended a maximum exposure of 2 f/ml (weighted average over eight hours), an objective that can be reached everywhere at low cost, and expressed their desire to see efforts made to reduce this rate to 1 f/ml.[187]

3.124 Canada emphasizes that, apart from the regulation of exposure to chrysotile limits in the workplace, the issue of asbestos in buildings, both with regard to occupants and to maintenance and repair crews, has been addressed on several occasions. A study by the HEI published in 1991 concluded that there is not sufficient evidence of health risks to the occupants of buildings where sprayed asbestos is used to justify the removal of intact materials containing asbestos.[188] According to Canada, the conclusions of the HEI are in agreement with those of the experts from around the world who attended a symposium held at Harvard University in 1989 on the health aspects of exposure to asbestos in buildings.[189] The report of this symposium states that the dust diffusion values in buildings where materials containing asbestos have been used are extremely low.[190] The report also

[185] Report of the Royal Commission on Matters of Health and Safety arising from the Use of Asbestos in Ontario, Table of Contents and Overview, Toronto, Queen's Printer, 1984.

[186] International Programme on Chemical Safety, *Report of an IPCS Working Group Meeting on the Reduction of Asbestos in the Environment*, Rome, 12-16 December 1988,WHO, Geneva, 1988, p.19.

[187] WHO, *Exposure to Asbestos Limits in the Workplace*, Report prepared by a WHO committee, Oxford, United Kingdom, 10 and 11 April, 1989, p.12.

[188] *Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge* (Executive Summary), Health Effects Institute – Asbestos Research, Cambridge, 1991, p. 1-12.

[189]Spengler, J. *et al.*, *Summary of Symposium on Health Aspects of Exposure to Asbestos in Buildings*, Energy and Environmental Policy Center, Harvard University, 14-16 December 1988, pp. 26 and 27.

[190]*Id.*, p.27.

states that the risk posed by installed asbestos is very low, both in absolute and relative terms, and that this risk is much less acute than most other environmental hazards, including cigarette smoke and radon, for instance.[191] Nonetheless, the report continues, increased protection should be afforded to public works and maintenance crews exposed to brittle asbestos that can be disturbed.[192]

3.125 Canada points out that all international standards on asbestos establish parameters for its controlled use. Chief among these is Convention 162 concerning Safety in the Use of Asbestos and the accompanying Recommendation 172.[193] These standards were adopted in 1986 by representatives of governments, industry and labour unions meeting under the aegis of the International Labour Organization (ILO). Convention 162 recommends strict regulation of chrysotile, but does not recommend a total ban, except for crocidolite and sprayed asbestos. Recommendation 172 sets forth the minimum labour standards to be observed in order to prevent and control the risks associated with occupational exposure to chrysotile. Countries which ratify Convention 162 concerning Safety in the Use of Asbestos make a commitment to implement laws and regulations prescribing the measures to be taken to prevent and control the health risks associated with occupational exposure to asbestos and to protect workers against these risks. In addition, there exists a general reference code, the collection of the International Labour Office entitled *Code of Practice on Safety in the Use of Asbestos*.[194] The guidelines contained in this Code are aimed at preventing, eliminating or reducing as much as possible the exposure to asbestos dust and safeguarding the health of workers engaged in operations that could give rise to such exposure. The first part of the Code deals with workplace regulations, methods of prevention, packaging, shipping and intermediate storage of asbestos, the elimination of debris and the protection of workers' health. The second part deals with prevention in certain activities: mining extraction, the manufacturing and utilization of asbestos products (asbestos-cement, friction products, etc.), insulation work, construction work and demolition work. Finally, the ISO[195] has issued a number of standards applicable, *inter alia*, to the diverse applications making use of asbestos. These standards cover the use of a broad range of modern products containing chrysotile-cement, including tubes, corrugated, ribbed and smooth panels, shingles and pipes. In particular, they contain guidelines for construction sites where asbestos-cement products are in use.

3.126 Canada notes that, in the United States, the attempt by the EPA to ban asbestos failed. In 1989, the EPA adopted a regulation that provided for the prohibition and progressive elimination of 94 per cent of all commercial uses of asbestos over a period of seven years. In so doing, the EPA had wholly disregarded all the evidence submitted to it indicating that the past, outdated uses of asbestos did not provide any justification for a complete ban and that chrysotile asbestos can be used in a safe manner. The EPA did not consider either the uncertainty surrounding the health risks of using substitute products or the additional costs of using such substitute products. The EPA regulation banning asbestos was appealed in court. The Court of Appeals concluded that the risks presented by the EPA were not supported by the scientific facts.[196] The Court ruled that the EPA would have to prove that the products covered by the ban posed an unacceptable risk. Thus, the ban was annulled

[191] *Id*., p.26.

[192] *Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge* (Executive Summary), Health Effects Institute – Asbestos Research, Cambridge, 1991, pp.1-12.

[193] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Conference, Geneva; Recommendation concerning Safety in the Use of Asbestos (Recommendation 172), adopted on 24 June1986, International Labour Conference, Geneva.

[194] Code of Practice on Safety in the Use of Asbestos, International Labour Organization, Geneva, 1984.

[195] International Organization for Standardization, Standard ISO-7337, 1984.

[196] Ruling of the 5th Circuit Court of the United States dismissing the EPA regulation, handed down on 18 October 1991.

and the EPA was ordered to consider all the evidence that it had initially disregarded. In 1997, practically all the uses that had originally been banned were re-admitted by the EPA.[197]

3.127 Canada points out that, prior to adoption of the Decree, France maintained a policy of controlled use. Indeed, it appears that the legislative provisions on asbestos provided adequate protection to workers and consumers. A review of French legislation shows that the hazardous uses of asbestos were already banned before the Decree. Sprayed asbestos was banned for all buildings in 1978.[198] Amphiboles were banned in 1994, including marketing, use and importation of these products.[199] The levels of exposure to asbestos dust were strictly regulated. Successive reductions in the exposure limits to airborne dust in workplaces had been adopted. The regulation currently in effect in France prescribes a workplace exposure limit of 0.1 f/ml.[200] A large number of products that had traditionally contained asbestos had already been banned by successive Decrees.[201] Finally, measures had been taken to protect the population against passive exposure to asbestos in buildings. A Decree imposes the obligation on all building owners, with the exception of owners of single-family dwellings, to search for the presence of sprayed asbestos or heat insulation containing asbestos and brittle materials likely spontaneously to release asbestos fibres into the air and to verify the good condition of these materials by means of an evaluation grid or dust measurements, so as to determine whether work would be necessary.[202] In light of all these actions, it may be concluded that the French Government had already regulated the risks associated with the use of asbestos, including those deriving from the use of chrysotile fibre, prior to the adoption of the ban. According to Canada, there have been no new scientific findings that would justify the change in the asbestos regulations adopted by France.

3.128 The **European Communities** indicate that Canada implies that chrysotile previously accounted for a smaller proportion of the asbestos consumed. This statement is wrong, as can be seen in the figures for global consumption of chrysotile and amphibole asbestos. In France, for example, since 1945, around 97 per cent of the asbestos used has been chrysotile-cement. Furthermore, the EC highlight below the inadequacies of safe use for protecting the health of workers and the population. The EC welcome Canada's recognition that "The principle of controlled use also means that certain uses for which exposure cannot be controlled to an acceptable degree should be banned" (Canada does not, however, define what these uses are nor their frequency). Like the WHO, the EC consider

[197] See the list of permitted uses in the United States: EPA, Regulation of 5 November 1993, Vol. 58, no. 213. pp. 58964-58968, 40 CFR, Section 765.

[198] Decree No.78-394 of 20 March 1978.

[199] Decree No.94-645 of 26 July 1994.

[200] Decree No.96-98 of 7 February 1996 concerning the protection of workers against the risks associated with asbestos dust inhalation. Canada notes that this Decree establishes the principles of prevention in the three work situations in which a worker is exposed to asbestos by virtue of his activity: manufacturing activities, for which the prohibition is not an exceptional and temporary measure; asbestos removal or containment operations; contact with asbestos during maintenance work. The report of the *Office parlementaire d'évaluation des choix scientifiques et technologiques* emphasizes that, according to the dose-response ratios established by INSERM and in view of the current worker exposure standards (i.e., 0.1 f/ml), "it can therefore be asserted that the measures provided for workers […] appear to be quite appropriate and sufficient". (WTO translation)

[201] Toys, materials or preparations for spraying, finished products in powder form meant for retail sale to the public, merchandise for smokers, catalytic screens and insulation materials in heating equipment using liquefied gas, paints, varnishes, road coating products if the fibre content is greater than 2 per cent, mortar, protective finishes, fillers, sealing products, joining pastes, mastics, glues, decorative powders and wall faces, low-density insulation or soundproofing materials, air filters and filters for the transport, distribution and use of natural gas or city gas, backings for plastic-coated wall and floor liners, finished textiles, bituminized felts for roofing, toasters, heat distribution devices, ironing boards, ironing board covers, iron holders, mobile heaters, insulation panels for the do-it-yourself market, boxed insulation panels for the professional market and materials destined for heat insulation in heating equipment, pipes and cable jackets.

[202] Decree No.96-97 of 7 February 1996 concerning the protection of the population against the health risks associated with exposure to asbestos in buildings.

that all servicing and maintenance operations cannot be controlled because of their frequency and their ubiquity. Moreover, according to the EC, international scientific data show that controlled use does not suffice to prevent the risk of cancer in asbestos-processing industries (manufacture of asbestos-containing products) nor in removal activities. Under such circumstances, the EC consider that it is justified to ban all uses of asbestos.

3.129 The EC point out that Canada cites the reports of the Ontario Commission and the WHO: one of which dates from 1984 and the other from 1988. It appears that, for Canada, research and the acquisition of new knowledge came to a halt more than ten years ago. Thus, Canada makes no reference to report 203 of the World Health Organization published in 1998 (although it is clearly identified as being an update of the 1988 report), which recognizes the dangers to health posed by chrysotile asbestos and clearly expresses doubts about the possibility of effectively controlling exposure in the building industry. The EC stress that this document confirms the conclusions of the INSERM report. The EC note that, according to Canada, "a group of experts met … under the aegis of the WHO … [and] … recommended a maximum exposure of 2 f/ml … [and] … expressed their wish that efforts be made to reduce this rate to 1 f/ml". Here again, the document cited by Canada dates from 1989. The EC note that, since then, many findings have highlighted the risks at much lower levels: some of these findings were analysed in the INSERM report.

3.130 The EC point out that the INSERM experts were aware of the HEI report, cited by Canada, and analysed it in detail in 1996 – observing that:

- It only deals with risks associated with the presence of persons inside buildings containing asbestos, excluding other exposures, occupational exposure in particular; INSERM's mandate related to all exposures; concerning exposure in buildings, INSERM's findings are the same as those of the HEI, but INSERM focused above all on what is considered by all experts to be the major risk of asbestos, namely, occupational exposure.

- The model used by the HEI to establish the very low risks linked to very low levels of exposure usually to be found in well-maintained buildings is exactly the same as that used by INSERM (linear model without a threshold) and so disparaged by Canada. The information concerning this model can be supplemented by citing the report of the Royal Society of Canada, to which Canada often refers: "but the Panel agrees [with INSERM] that regulatory agencies use the model in this form". Lastly, the EC consider that it is tendentious to state, as Canada does, that in France "the hazardous uses of asbestos were already banned before the Decree". This statement takes it as a fact that uses such as work on asbestos-containing materials, which were certainly not banned in France, are not hazardous. The EC reject this statement.

3.131 The EC point out that the available scientific data show that a high mortality rate persists despite the so-called "safe" use of chrysotile asbestos. Surveys carried out more than thirty years after the introduction of a "controlled use" policy in the United Kingdom indicate a significant excess of deaths from lung cancer and mesothelioma, not just among workers in plants where "safe" use was enforced, but above all in the population working outside such plants. According to the manual of the Canadian Asbestos Institute, the "safe" use policy is based on an "at-source" control system which consists of an "agreement" among producers, chrysotile exporters and manufacturers of asbestos-containing products[203], whereby the latter undertake to comply with rules designed to protect their employees and, in particular, to ban the on-site cutting of asbestos-cement. This is possible because Canadian production methods enable "made-to-measure" units to be manufactured at the plant, thus obviating the need for on-site cutting. However, as the manual admits, voluntary

[203] *Safe Use of Chrysotile Asbestos: a Manual on Preventive and Control Measures* (available on the Internet).

participation by manufacturers remains the cornerstone of this policy. The manual also provides for the supply of the products concerned to be stopped, after consultation with the national authorities, in the event of any failure to comply with this "agreement". According to the EC, this procedure is limited in a number of ways: (i) it covers manufacturing companies only; and (ii) it does not protect the huge numbers of occupational users engaged in various activities because manufacturers have no power of supervision over these individuals. The question also arises as to how this "agreement" is implemented when chrysotile is exported. Rigorous implementation should have led to a halt in Canadian exports of chrysotile asbestos to France because the French manufacturers had not introduced "made-to-measure" production. In practice, there is clearly no way of ensuring that the Canadian method is actually applied in the importing countries. The EC state that the available scientific data show that despite the "safe" use of chrysotile asbestos, exposure entails fatal disease in a large number of cases. The data from the United Kingdom indicate a significant excess of deaths from lung cancer and mesothelioma, not just among persons employed outside the plants, but also among persons who started their working lives in plants operating a "safe" use policy after that policy was introduced in the United Kingdom in 1969.

3.132 The EC indicate that there are risks associated with "safe" use during the manufacture of asbestos-based products. Natural asbestos fibre, which is a highly resistant material and has exceptional insulation capacities, was used in France for a wide variety of industrial purposes from 1945 onwards. The Canadian concept of the "modern use of asbestos-cement" does not reflect historical reality. For the past 40 years, the production of asbestos-cement has consisted of "encapsulating" asbestos in cement, but in the EC's view this process does not guarantee the safety of the product. When asbestos-cement is used for occupational, para-occupational or domestic purposes, it is usually sanded, crushed or sawn, thus releasing its carcinogenic fibres into the environment in the form of dust. In addition to its use in the asbestos-processing industry (mainly to produce asbestos-cement), asbestos has been used in a wide range of areas, such as construction (flocking and thermal insulation of piping), production of a wide range of consumer goods (floor tiles, brake linings, textiles and boards) and heavy industry (shipbuilding, metallurgy). The EC contend that the available scientific studies demonstrate the limits of "safe" use. The 1996 HSE[204] study carried out in the United Kingdom on the cancer risks incurred by asbestos workers after 1969, when the "safe" use of asbestos was adopted in that country, should be examined in detail. The EC note that a detailed analysis of the study is in fact attached to the 1996 report by the Panel of the Royal Society of Canada, which has been quoted extensively by Canada without acknowledging its source. However, the study indicates that, in spite of strictly "controlled" use – because it focuses solely on workers in the processing industry - there is a significant net excess of mesothelioma in workers who operated solely under conditions of "controlled use", i.e. after 1969 (when the rules entered into force in the United Kingdom). It follows that "controlled" use does not enable deaths from mesothelioma to be avoided, even in specific manufacturing branches with a limited workforce, which in principle are easy to demarcate and control.

3.133 According to the EC, "safe" use is not applicable to servicing and maintenance activities, but mesothelioma fatalities occur mainly among "secondary users" of asbestos. The aforementioned 1995 study by J. Peto[205] shows that 95 per cent of mesothelioma cases in England and Wales occurred in occupations not covered by "controlled use" policies. Also of relevance is the study by M. Siemiatycki,[206] which is never referred to by Canada, even though it was carried out by one of that country's leading research teams (the one which published the study on women living near asbestos mines). Siemiatycki's study in Montreal concentrates essentially on workers exposed when dealing with asbestos-containing materials. The study points to a net excess of lung cancer cases and a high

[204] Hutchings, S., Jones, J., Hodgson, J., *Asbestos – Related Disease*, Occupational Health Decennial Supplement, London, Health and Safety Service, 1996, pp. 127-152.

[205] Peto, J. *et al.*, *Continuing Increase in Mesothelioma Mortality in Britain*, Lancet, vol.345, p.535 (1995).

[206] Siemiatycki, J., *Risk Factors for Cancer in the Workplace*, Boca Raton, Florida, CRC press, 1991.

risk of mesothelioma associated with chrysotile exposure (risk multiplied by a factor of between 4.4 to 14.6). The worst affected occupations are in the building servicing and maintenance sectors: plumbers, gas fitters, carpenters and electricians are some of the workers most exposed to asbestos. These workers are subjected to exposure peaks that are sometimes very substantially above the current limit values for dust. For example, a roofing worker using a grinder outside to repair corrugated roof sheeting made of asbestos-cement is subjected to a maximum exposure level of 41 f/ml[207], 410 times in excess of the limit.

3.134 The EC contend that, in a legal framework which provides for a total ban on asbestos, the ISO limit continues to be a useful instrument for protecting the health of workers coming into contact with asbestos-containing materials. Such contact is unavoidable, given that millions of tonnes of asbestos were used in France and are still present in many structures. However, merely applying the ISO limit does not contain the risk, and hence "safe" use is not sufficient. The ISO 7337 standard referred to by Canada recommends working methods and tools for cutting asbestos-cement products on-site in such a way as to keep dust emission levels as low as possible. The EC note that, when ISO 7337 was published in 1984, it represented a major step forward in relation to the rules applied prior to that date but it does not guarantee a sufficient level of protection in terms of the health and safety target (maximum limit of 0.1 fibre/ml) adopted by the vast majority of countries. For instance, in the case of a worker using a tool such as a handsaw, application of the ISO standard shows that he is exposed to a level 30 times in excess of the maximum limit of 0.1 f/ml authorized in France and the United States. Cutting an asbestos-cement pipe with a jig saw fitted with a dust collection system (as referred to in this standard) entails exposure of between 7 and 12 times in excess of the maximum limit, whereas manual tools (hammer, chisel) without dust collection entail exposure 20 times in excess of that limit. Although the equipment and rules set out in the ISO standard - which is currently being revised - form the basis of prevention for specialists coming into contact with asbestos-cement materials on-site, they are inappropriate for do-it-yourself enthusiasts or non-specialists (para-occupational or domestic use). The EC state that there is a high level of mesothelioma among servicing and maintenance workers. The aforementioned study by Y. Iwatsubo[208], which was conducted in France on individual cases in the general population (and which covered 405 mesothelioma patients and 389 persons not suffering from the illness between 1987 and 1993) showed a clear increase in the mesothelioma risk among servicing and maintenance workers. Even in Canada, the study[209] carried out by the Quebec Health and Safety Commission (CSST) showed that the risk of mesothelioma has increased steadily in Canada since 1967, essentially among servicing and maintenance workers. The study points to a particularly rapid growth in the incidence of this illness in the maintenance sector. In cases where exposure had been short-term, servicing and maintenance workers were more numerous than any other category. The study also shows that the occurrence of mesothelioma is caused by chrysotile.

3.135 The EC emphasize that "safe" use in the general population at risk is impossible. Apart from hundreds of thousands of construction and servicing and maintenance workers, other persons run the risk of inhaling asbestos dust. Do-it-yourself enthusiasts are a prime example of a section of the general population at risk. Exposure is "unwitting" in so far as many of the individuals concerned are unaware that their activities may expose them to a risk of breathing in asbestos fibres with fatal consequences. As Canada points out, materials containing asbestos-cement have the same innocuous appearance as most of the materials that building workers and do-it-yourself enthusiasts are used to handling. The EC point out that Canada describes para-occupational and domestic exposure situations in the following terms "Thus, in the eyes of the consumer chrysotile-cement products and fibro-cement products are like products in all aspects, unless a data sheet is available showing which

[207] Blotière, C., and Huré, P., *Travaux sur des matériaux contenant de l'amiante – données métrologiques*, Chimie Info. No.60-11/1998 (source EVALUTIL).

[208] Iwatsubo, Y. *et al*., *Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population-Based Case Control Study*, American Journal of Epidemiology, 1998.

[209] Bégin, R., *et al*., *Work-Related Mesothelioma in Quebec, 1967-1990*, American Journal of Industrial Medicine 22 :531-542 (1992).

fibres makes up their composition".[210] Even when they are aware of the risks associated with asbestos, there is no simple test enabling para-occupational and domestic users to check whether materials not described as dangerous do in fact contain asbestos fibre. Under the current rules, manufacturers are merely required to mark or label the outer packaging of the materials sold.

3.136 The EC conclude that all these data show that it is extremely difficult to pinpoint the risks associated with breathing in asbestos and the use of asbestos products cannot be efficiently controlled. As the HSC notes in its proposed amendments to the rules introduced in the United Kingdom in 1992, efficient control of the use of chrysotile asbestos cannot be guaranteed, even at the stage which in principle is easiest to control, namely production. "Absolute control of the manufacture, and particularly the use of chrysotile asbestos products can never be guaranteed – some people may continue to be exposed, unknowingly, to relatively high levels of fibres during the installation, maintenance or removal/disposal of products containing chrysotile asbestos."[211] Controlled use procedures cannot be effectively applied to safeguard the hundreds of thousands of persons who are exposed on a daily basis in industries where health and safety arrangements are minimal, such as the building industry, which accounts for at least 25 per cent of mesotheliomas. The 1998 WHO Environmental Health Criteria 203[212] state that "it is proven that the risk is probably higher among workers in the building industry and perhaps in other industries where asbestos is used". Given the extremely large numbers of persons concerned, the difficulty of assessing the risk, the complexity of individual and collective protection systems and their negative effect on dexterity, the need to use special equipment and the overall cost engendered by the requisite arrangements mean that asbestos-containing materials cannot viably be used in a manner that will protect workers' health effectively. The EC accordingly consider that the principle of "controlled use" cannot be applied to the indeterminate risks incurred over the very wide spectrum of occupations where workers come into contact with asbestos in many ways, in particular in the servicing and maintenance operations for which "safe" use is not a practicable option. Without actually specifying them, Canada acknowledges that "certain uses for which exposure cannot be controlled to an acceptable degree should be banned".[213] The EC regret that Canada does not specify these uses nor indicate how frequently they occur. In addition, given the population groups exposed unwittingly, it is unacceptable that materials involving such a high risk should continue to be used in France. The various international organizations dealing with the protection of workers against asbestos are well aware of these facts.

3.137 **Canada** notes that the EC classify exposures to asbestos into three broad categories, namely: (i) occupational exposures of workers; (ii) para-occupational and household exposures; and (iii) environmental exposures. They group occupational exposures of workers into two sub-categories, namely "primary" users (e.g. extraction, manufacturing) and "secondary" users (e.g. construction and maintenance). According to the EC, para-occupational and household exposures mainly involve do-it-yourself enthusiasts. Finally, passive or environmental exposures result from asbestos dust emitted by a natural source of geologic origin, an industrial point source or by asbestos in place in buildings and various facilities.[214]

3.138 Canada contends that current uses of chrysotile asbestos do not endanger human health because they are now strictly controlled. These uses include the range of non-friable products where the chrysotile variety alone is used, to the exclusion of the amphibole varieties (crocidolite and amosite), and in which the fibres are firmly bound physically and chemically to the matrix (cement, bitumen, resins, plastics, etc.) of the composite (chrysotile-cement, friction materials, etc.). The

[210] See paragraph 3.423 below.

[211] *Proposals for Amendments to the Asbestos (Prohibitions) Regulations 1992*, Health and Safety Commission (1999), p.4.

[212] *IPCS Environmental Health Criteria (203) on Chrysotile*, World Health Organization, Geneva, 1998.

[213] See para. 3.122 above.

[214] See paras. 3.59 *et seq* above.

French Decree is therefore not necessary to protect health. According to Canada, the EC do not judge the concept of controlled use as proposed by Canada. They judge only one aspect of controlled use, namely responsible use.[215] The EC confuse "controlled use" and "responsible use". The responsible use of chrysotile, to which they refer, is a voluntary self-regulation initiative of Canadian producers and exporters of chrysotile. Its objective is to sell chrysotile only to businesses which abide by the national regulations required to meet the international standards governing the use of chrysotile.[216] Responsible use is only one component among others of controlled use. Canada emphasizes that, contrary to what the EC endeavours to demonstrate, ironically but quite unconvincingly, controlled use does not require that millions of persons exposed occasionally and unknowingly to emissions of asbestos dust be equipped with elaborate "space suits." Controlled use is a regulatory approach based on international standards which relies on scientific data applicable to a wide range of hazardous materials. According to the principles on which this approach is based, only products and materials that can be controlled in such a way that the health risks are eliminated throughout their life cycle are permitted. In the case of chrysotile asbestos, controlled use means the application of appropriate regulations aimed at limiting exposures to asbestos by banning certain types of asbestos and certain uses, and prescribing maximum exposure levels as well as work practices and standards.

3.139 Canada points out that the controlled use approach is not a Canadian invention. It is based on the principles of controlled use outlined in ILO Convention 162.[217] This provides for protective and preventive measures against health risks due to occupational exposure to asbestos. These measures include: (i) making work in which exposure to asbestos may occur subject to regulations prescribing adequate engineering controls and work practices, including workplace hygiene; (ii) prescribing special rules and procedures, including the authorization of a competent authority in the field, for the use of asbestos or of certain types of asbestos or products containing asbestos or for certain work processes; (iii) where necessary to protect the health of workers and technically practicable, replacement of asbestos by other materials or products evaluated as harmless or less harmful; and (iv) total or partial prohibition of the use of asbestos or of certain types of asbestos or products containing asbestos in certain work processes.

3.140 According to Canada, Convention 162 clearly lays emphasis on controlled use and not on banning products. Indeed, the Convention only provides for two specific prohibitions, namely the use of crocidolite and products containing it and the spraying of all forms of asbestos.[218] The general responsibilities of governments, employers' and workers' organizations concerned, as well as a national regulatory framework governing safety in the use of asbestos, are also set out in Convention 162. National regulations should: (i) establish procedures for the notification by the employer of certain types of work involving exposure to asbestos; prescribe adequate engineering controls and work practices to prevent or control exposure to asbestos; (ii) enforce laws and regulations through an adequate and appropriate system of inspection, including appropriate penalties; (iii) prescribe limits for the exposure of workers to asbestos and make employers reduce exposure to as low a level as is reasonably practicable; (iv) measure the concentrations of airborne asbestos dust in workplaces and monitor the exposure of workers to asbestos at intervals; take appropriate measures to prevent pollution of the environment; (v) ensure that employers have established polices and procedures on measures for the education and periodic training of workers on asbestos hazards and methods of prevention and control; (vi) establish standards for respiratory protective equipment and special

[215] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Organization, Geneva.

[216] Canada points out that, moreover, the manual to which the EC refer deals not only with responsible use but describes controlled use in detail. This manual is intended for producers only and does not mention work methods at construction sites or for building sub-trades.

[217] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Organization, Geneva.

[218] *Id.*, Article 11; Recommendation concerning Safety in the Use of Asbestos (Recommendation 172, adopted on 24 June 1986, Geneva) Article 18.

protective clothing for workers; (vii) recognize contractors qualified to carry out the demolition of plants or structures containing friable asbestos insulation materials, and removal of asbestos from buildings or structures; (viii) ensure that workers who are or have been exposed to asbestos are provided with free medical examinations to supervise their health in relation to the occupational hazard; and (ix) prescribe adequate labelling of containers, including material safety data sheets indicating the asbestos content, the health risks and the appropriate protection measures concerning the materials or the product. Convention 162 is supplemented by the Recommendation concerning Safety in the Use of Asbestos (Recommendation 172), which, in substance, repeats the content of Convention 162 and outlines a set of minimum work standards.[219]

3.141 Canada notes that the ILO's Code of Practice on Safety in the Use of Asbestos is intended for all those who are responsible, in the public or private sector, for ensuring the safety of workers when asbestos is used. It is not intended to replace national legislative or regulatory provisions nor applicable standards, but to serve as a guide for the formulation of similar provisions, in particular for authorities and government agencies, specialized agencies as well as businesses and health and safety committees. This Code of Practice aims to: (i) prevent the risk of exposure to asbestos dust at work; (ii) prevent the harmful effects of exposure to asbestos dust on the health of workers; and (iii) indicate reasonable and practically feasible methods and techniques to reduce occupational exposure to asbestos dust to a minimum.[220]

3.142 Canada indicates that Standard ISO-7337 expressly discourages the use of certain high-speed cutting tools that are not vacuum-equipped and produce excessive quantities of suspended fine dust that can also contain respirable asbestos fibres. France's member committee approved this Standard.[221]

3.143 Canada points out that the use of pre-machined parts and fittings, despite the EC's opinion, is not a far-fetched or utopian solution. According to OSHA: "pre-cut, pre-tapped pipe has received tremendous marketplace acceptance and represents a large majority of sales. [...] This is significant because the use of pre-cut, pre-tapped pipe may reduce or eliminate some types of field fabrication activities."[222] As a result of pre-fabrication, pre-machining, the use of fittings and compliance with work standards, the amount of handling and working of asbestos-cement products is very limited. The ISO has also formulated Standard ISO-14001 - Environmental Management Systems – Specifications and Guidelines for Use.[223] The ISO accreditation of a business confirms that it complies with national environmental standards. For instance, if the environmental standards specify a maximum rate of emission of fibres in the air, Standard ISO 14001 is a guarantee of compliance with these standards by the accredited business. In Canada's view, this is a concrete way of guaranteeing that national standards are observed.

3.144 Canada emphasizes that the practice of controlled use to regulate asbestos, including chrysotile asbestos, is therefore based on well-established international principles. First of all, the permitted uses are based on the varieties of fibre. A clear distinction is made between chrysotile and amphiboles, with certain amphiboles being banned. Secondly, the permitted uses are based on the fixation of the fibres in a binder in such a way that chrysotile asbestos dust cannot be released as a result of normal wear on the product. Almost everywhere, controlled use includes measures such as a

[219] Recommendation concerning Safety in the Use of Asbestos (Recommendation 172, adopted on 24 June 1986, Geneva).

[220] *Code of Practice on Safety in the Use of Asbestos*, International Labour Organization, Geneva, 1984.

[221] International Organization for Standardization, Standard ISO-7337.

[222] See OSHA, on-line: OSHA:< http://www.osha-slc.gov/Preamble/AmendAsb_data/ASBESTOS_AB4.html> (access date: 20 June 1999).

[223] ISO, Environmental Management Systems – Specifications and Guidelines for its use – Standard ISO-14001, 1995.

ban on processes or products that release or are likely to release dust, for example friable low-density insulation products. Thirdly, the permitted uses are based on control of the average concentrations of asbestos fibres in the workplace. An acceptable limit of 1.0 f/ml or less was recommended by a group of experts that met in 1989 under the auspices of the WHO. The use of dust control equipment combined with the adoption of specific work methods can easily make it possible to meet this limit in mines, processing plants, as well as at the stage of installation of the product, its repair or removal and disposal of the waste.

3.145 Furthermore, Canada states that controlled use involves the implementation of certain practices and methods of working with materials containing asbestos. To be complete, any regulations based on the principles of controlled use must include appropriate measures and guidelines for the marking and labelling, transport, monitoring of the air, medical monitoring, monitoring of construction activities and waste disposal. The WHO recognizes that controlled use is effective. In its 1998 study entitled *Chrysotile Asbestos*, with respect to the controlled use of chrysotile, the WHO concludes, in the following terms:

> "Control measures, including engineering controls and work practices, should be used in circumstances where occupational exposure to chrysotile can occur. Data from countries where control technologies have been applied have demonstrated the feasibility of controlling exposure to levels generally below 0.5 fibres/ml. Personal protection equipment can further reduce individual exposure where engineering controls and work practices prove insufficient."[224]

3.146 Canada considers that the exclusive use of chrysotile asbestos and the adoption of effective methods to reduce dust are the best guarantees of protection of the health of workers. Canada advocates the controlled use of chrysotile asbestos, relying on scientific research conducted by recognized experts and international organizations, including the WHO. In Canada, the hazardous product regulations apply throughout the life cycle of products. More specifically, all activities involving asbestos – extraction, transport, processing, installation and repair, removal and waste disposal – are closely scrutinized in order to protect not only the health of the public and of workers, but also the environment. In Canada, controlled use has resulted in a ban on friable products containing any type of asbestos in order to protect the public, and in the adoption of measures to ensure the health and safety of workers exposed to asbestos. The latter measures generally fall under provincial jurisdiction and, in Quebec, have been instituted mainly through the Regulations on the quality of the work environment and the Safety Code for the Construction Industry, which are administered by the *Commission de la Santé et de la Sécurité au Travail* (CSST) (Occupational Safety and Health Board). These two regulatory texts govern working conditions in chrysotile mines, asbestos product manufacturing plants and businesses specializing in the maintenance and removal of sprayed asbestos.

3.147 Canada indicates that, in the early 1990s, Quebec lowered the permitted exposure limit for chrysotile asbestos to 1.0 f/ml, while this limit was set at 0.2 f/ml for crocidolite and amosite. The province has also banned the use of friable insulating materials, as well as crocidolite and amosite.[225] At the same time, Quebec amended its Safety Code for the Construction Industry in order to ensure that workers who have to handle asbestos intermittently on construction sites are adequately protected. Subsection 3.23 applies to all construction sites where work that is likely to release asbestos dust is carried out. The Code establishes a three-tier classification of work: (i) type I jobs or low-risk activities, i.e. all work with non-friable or high-density products, where the use of hand tools or vacuum-equipped power tools can reduce exposures to well below the exposure limit. Measures must be taken to minimize exposures, prevent the spread of dust and dispose of asbestos waste; (ii) type II jobs - or medium-risk activities - involve minor disturbances or removal of small amounts of friable materials containing asbestos. For example, when removing pipe insulation,

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[224] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.145.

[225] Quebec Province – *Regulation on the quality of the work environment*, L.Q., 1979.

workers must wear gloves and special protective clothing, as well as a half-face filter respirator; (iii) type III jobs - or high-risk activities - include large-scale removal of friable asbestos-containing materials, spray application of sealants to asbestos-containing materials, etc., and require very stringent workplace practices. For inside jobs, the ventilation system must be turned off, the work area totally enclosed and maintained under negative pressure, a decontamination centre constructed, and appropriate personal protective equipment issued to workers.

3.148 Canada explains that, before commencing work likely to release asbestos dust, the employer must determine the types of asbestos present in the materials and must also train and inform workers about the risks, prevention methods and safe work methods. Regulations have also been introduced in Canada to address the disposal of asbestos waste. Provision is made for safe transportation (covered vehicles, sealed packaging, labelling) and disposal of the waste at approved sites. For instance, solid waste containing asbestos is shipped to solid waste disposal or storage sites. In the case of a sanitary landfill site, the solid waste is compacted in uniform layers and covered over. These regulations apply to friable asbestos waste and not to high-density products.[226] At the federal level, again, the Hazardous Products Act prohibits the use of asbestos in the following products or applications: untreated low-quality textile products which can release fibres under normal use; various consumer products, such as toys, modelling compounds and low-density jointing compounds; the sale of loose or raw asbestos to consumers; all asbestos products destined for application by spraying; and finally, the use of crocidolite or crocidolite-containing products.[227] Regarding labelling, the Workplace Hazardous Materials Information System (WHMIS) was introduced under the Federal Hazardous Products Act. It requires suppliers of all hazardous materials to provide labels with specific pictograms and warning phrases, along with Material Safety Data Sheets, as a condition of sale and importation. WHMIS also requires that workers receive appropriate information and training if called upon to work with or handle such products.[228] It is crucial to measure the emissions of fibres in the air in workplaces, to assess the effectiveness of the control methods and to show that the business complies with the regulations. The measurement of airborne fibres in the workplace is carried out regularly.

3.149 Canada states that, under the Canadian Environmental Protection Act, regulations have been established governing stack emissions from asbestos mines and mills. An emission limit of 2.0 f/ml has been established, in addition to appropriate monitoring methods and administrative controls.[229] Quebec legislative and regulatory provisions prescribe standards for atmospheric emissions of asbestos fibres at all stages of mining operations, including crushing, drying, drilling, storage and processing, as well as conveyors and transfer points, the loading and unloading of asbestos concentrates, not to mention the processing and handling of asbestos waste. In Canada, emphasis is on compliance with requirements. Inspection programmes are in place and strict compliance is monitored so that any necessary legal proceedings can be brought and the maximum penalties imposed.

3.150 According to Canada, the EC rely heavily on a study by the Health and Safety Executive (HSE) entitled "Asbestos-related diseases" to which they refer to show that controlled use is not effective in preventing mesotheliomas and lung cancer among chrysotile-processing workers. This study reveals that workers exposed after 1969 have been affected by exposure to asbestos. In 1969, the standard in England was 2 f/ml, but with an upper exposure limit of 12 f/ml at any time. These levels are much higher than today, in particular the absolute upper limit of 12 f/ml. Secondly, the time required to modernize the obsolete equipment of the period would have to be taken into account. It was only in 1983 that the standard in England was lowered to 1 f/ml in all circumstances. In

[226] Canadian solid waste regulations.
[227] *Hazardous Products Act*, Statutes of Canada, http://canada.justice.gc.ca.
[228] *Id.*
[229] *Canadian Environmental Protection Act and Asbestos Mines and Mills Release Regulations*, Statutes of Canada, http://canada.justice.gc.ca.

Canada's view, the EC wrongly stress the risks of asbestos-related diseases after 10 years of latency in the group, whose exposure to asbestos would have begun after 1969. In fact, in this group, an excess risk of lung cancer, mesothelioma and asbestosis was statistically significant even before the latency period of 10 years. This means that the cohort supposedly exposed to asbestos beginning in 1970 was in fact composed of workers exposed to asbestos prior to 1970 (the explanation advanced by the authors themselves, p.144). Therefore, this is not a genuine cohort of workers exposed for the first time from 1970 onwards. Furthermore, other risk factors (e.g.: smoking rate of 54 per cent in this group versus 42 per cent in the reference population) and other factors not comparable between the cohort and the reference population were already having an impact before the beginning of the exposures to asbestos reported from 1970 onwards. Furthermore, notwithstanding the anomalies and bias cited above, the study cannot constitute a credible test of the Canadian practice of controlled use. In 1969, the new standards constituted only one step toward controlled use; these insufficient improvements were far from equivalent to controlled use as proposed 10 years later. In addition, although England reportedly decided in 1969 to stop importing crocidolite, it did not decrease its imports of amphiboles until 1975 and these imports did not cease until around 1979. Despite all this, there was nonetheless a statistically significant decrease in the risk of mesothelioma and of other asbestos-related diseases because of a decrease in exposures and perhaps the cessation (barring exceptions) of crocidolite imports.

3.151 Finally, Canada wonders why the EC do not cite the INSERM data and analyses to illustrate the trends in France:

> "[Tr.] As a result of the reduction in exposure levels to asbestos in recent decades, practically no further deaths from asbestosis are observed (in the mortality statistics of INSERM in 1990) (INSERM, 1993); 26 deaths from this cause were recorded in France: 24 men and 2 women."[230]

If these are the results of the reductions in exposure brought about by only a partial application of the controlled use advocated by Canada, a control similar to that practised in Canada would undoubtedly yield even more positive results in terms of reduction of disease. The EC rely on the study by Siemiatycki to argue that there is a very strong association between mesothelioma and work in the construction sector.[231] According to Canada, the EC misinterpret the results of this study. The cancers studied occurred in the early 1980s; they were therefore induced 20-30 years earlier, i.e. in the 1950s. There is absolutely no logical link between these mesotheliomas reported between 1979 and 1985 and the safe use of chrysotile introduced at the beginning of this short period of observation.

3.152 Canada points out that the EC can in no way infer from these results that controlled use does not work. Canada notes that the EC start from the assumption that construction work is by nature uncontrollable. When a study shows an association between mesothelioma and construction or building sub-trades work, they conclude that this represents an association with an uncontrollable exposure. The EC cite a study by Y. Iwatsubo.[232] According to Canada, this study does not support a relationship between chrysotile asbestos alone and health effects such as a clear increase in cases of mesothelioma. This study merely reveals what can happen in the absence of a policy of controlled use, two of the main components of which are a ban on amphiboles and control of the average concentrations of chrysotile fibres in the workplace. This study merely reveals the health effects arising from an exposure to mixtures of asbestos fibres that is undefined in terms of concentration and duration.

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[230] INSERM report, p.179.

[231] See para.3.133 above.

[232] Iwatsubo, Y. *et al., Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population-Based Case Control Study*, American Journal of Epidemiology, 1998, vol.148, no.2. See also para. 3.82 above.Peto, J., *Continuing Increase in Mesothelioma Mortality in Britain* (1995) 345 Lancet 535.

3.153 Canada considers that the same comments apply to the study by J. Peto on which the EC rely to claim that the bulk of mesotheliomas occur in occupations which fall outside the policies of controlled use.[233] Canada cannot agree with the fallacious claim underlying the EC's argument that controlled use is not feasible with respect to servicing and maintenance workers. A letter from researchers in the Netherlands criticizing the article by J. Peto points out that the higher incidence of mesothelioma in their country has nonetheless stopped rising, even though the controls did not come into effect until 1977 in the Netherlands, i.e. eight years later than in the United Kingdom. These authors propose a hypothesis consistent with Canada's position:

> "[…] the exposure of crocidolite asbestos in construction work may have been more extensive in the UK than the Netherlands. In our country, mesothelioma incidence is clustered in areas with shipbuilding and other heavy industry, where crocidolite was used for insulation […] Although we question the projections of Peto and co-workers, we support their statement that too many people are still being exposed to (crocidolite) asbestos without knowing of it, especially those employed in maintenance and demolition.[234]

3.154 Canada notes that the cohort studied by Bégin *et al*.[235], on which the EC base their claim that the risk of mesothelioma has been increasing regularly, extends from 1967 to 1990, and the authors indicate 26 years as the average duration of exposure. Therefore, the cases reported began their exposure between 1941 and 1964. This was obviously not a time when controlled use (low exposure to chrysotile alone) was in effect. According to Canada, the EC's inference that exposures to chrysotile are responsible for the mesotheliomas reported is unjustified and false. In the database of the study by Bégin *et al*., exposures are usually recorded approximately by categories of use; care must therefore be taken not to make a too specific and consequently abusive interpretation of these data. On the contrary, this study suggests that mesothelioma strikes workers in the secondary and tertiary industrial sectors more than workers in the chrysotile mines and mills. However, several processing businesses in the Montreal area have used amphiboles and particularly crocidolite in the past and construction, sub-trades and insulation workers have been exposed to friable products which very frequently contained amphibole asbestos. Furthermore, the data for Quebec are only reliable since 1984; before this date, the incidence of mesothelioma was considerably under-estimated, resulting in an upward bias in the incidence of mesothelioma during the 1970s and 1980s. Canada considers that the EC's interpretation of the Bégin study is incorrect. The data from this study corroborate the existence of a risk of mesothelioma in occupations in the secondary and tertiary sectors more exposed to amphiboles, but they cannot in any way specifically "incriminate" chrysotile and its current uses.[236]

3.155 Canada contends that controlled use in the extraction and processing industries is feasible. The EC have admitted that the control of dust emissions in extraction and processing plants, as well as in plants producing chrysotile-based materials, is effective in controlling the risk of contracting a disease attributable to exposure to asbestos.[237] Canada points out that the EC have backed away from their position in this dispute, but this position is quite simply unfounded. In most countries, the processing of chrysotile fibre takes place in highly automated plants, in which very strict control and health measures are applied. These measures include proper work and maintenance methods, appropriate ventilation and dust control systems, as well as information and training for workers. According to the WHO, there is no risk in the extraction and processing industry: "The overall relative risks for lung cancer are generally not elevated in the studies of workers in asbestos-cement

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[233] Peto, J., *Continuing Increase in Mesothelioma Mortality in Britain* (1995) 345 Lancet 535.

[234] Weill, H. and Hughes, J., *Letter to the Editor: Mesothelioma*.

[235] Bégin, R., *et al*., *Work-Related Mesothelioma in Quebec, 1967-1990*, American Journal of Industrial Medicine, 1992, 22 :531-542 (1992).

[236] McDonald, J.C., McDonald, A., *Work-Related Mesothelioma in Quebec, 1967-1990*, American Journal of Industrial Medicine, 1993, 24:245.

[237] European Commission (G. Lohan, DG III), European justification for Decree No.96-1133 to the Canadian authorities (15 April 1997 following the French notification G/TBT/Notif.97.55).

production and in some cohorts of asbestos-cement production workers."[238] With respect to emissions from crushing in mills, it adds: "In well-controlled mills, this is largely confined in the mill building, and presents low emissions because the mill air is collected and ducted through control devices."[239]

3.156 Canada notes that statistics exist indicating that controlled use is effective. The data collected and compiled by the Asbestos International Association in 1995 cover 28 countries where approximately 25,000 workers are employed. In these countries, 87 to 99 per cent of the workers are exposed to levels of less than 1.0 f/ml.[240] In Quebec, the exposure values at raw material extraction sites and in plants which separate chrysotile asbestos fibres from the raw material have declined by an average of 16 f/ml to less than 1 f/ml following the application of control measures, such as technical processes, since 1973.[241] Canada contends that controlled use is also effective in the processing industry. Technical processes can be adopted in chrysotile-cement plants. These processes involve, *inter alia*, dust emission control and confinement. In chrysotile-cement plants, several operations, such as the internal machining of fittings for example, can be performed in such negative pressure enclosures.

3.157 According to Canada, it is essential to stress the latency period in order to assess the effects attributed to exposure to asbestos. The effects reported today reflect the circumstances of uncontrolled exposure which prevailed more than 20 or 30 years ago, and absolutely cannot be used as evidence that effective control (low exposure) of current uses of chrysotile asbestos (excluding amphiboles) is impracticable and solves nothing. G. Berry and M.L. Newhouse conducted a mortality study (1942-1980) in a plant producing friction materials where chrysotile asbestos was used almost exclusively. Compared to national mortality rates, the authors did not observe any excess mortality due to lung cancer, cancer of the digestive tract or any other cancer. The exposure rates were low, and only 5 per cent of the workers had accumulated 100 fibres-years/ml. The authors stated that the experience accumulated at this plant over a 40-year period showed that chrysotile was not associated with any apparent excess mortality.[242] The extension of the study over a period of seven years enabled the authors to confirm that there was no excess mortality due to lung cancer or other tumours associated with asbestos or to chronic pulmonary diseases. After 1950, air quality control measures were gradually improved in this plant, and since 1970, the concentrations of asbestos have not exceeded 1.0 f/ml. The authors conclude as follows: with proper control measures of the ambient air, it is possible to use chrysotile in the manufacturing industry without causing excess mortality.[243]

3.158 Canada also refers to a study by J. Peto: "Only a few (5 per cent) of British mesothelioma deaths were among workers in regulated occupations".[244] When the latency period is considered, these deaths are due to the regulations in the 1960s. The authors of another study followed 1,970 workers at an asbestos-cement plant where chrysotile was used exclusively and examined their mortality data. They did not note any significant elevation of the standardized mortality ratio for the causes of death examined, i.e. all causes, all cancers, lung cancer and pleural cancer and cancers of the digestive tract. The authors conclude that the general findings of this mortality study suggest that the workers at the chrysotile asbestos-cement plant studied did not face an increased risk with respect to total mortality, mortality due to all forms of cancer, lung cancer and bronchial cancer or to cancers

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[238] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p. 8.

[239] *Id.*, p.24.

[240] Pelnar, V., *Further Evidence of Nonasbestos-Related Mesothelioma: a Review of the Literature*, 14 Scandinavian Journal of Work, Environment and Health, 1998, p.141.

[241] *L'évolution des taux d'empoussièrement dans les mines du Quèbec*, in *L'amiante chrysotile*, un aperçu, Institut de l'amiante, Montreal.

[242] Berry, G. and Newhouse, M.L., *Mortality of Workers manufacturing Friction Materials Using Asbestos*, 40 British Journal of Industrial Medicine, 1983, p.1.

[243] Newhouse, M.L. and Sullivan, K.R., *A Mortality Study of Workers manufacturing Friction Materials: 1941-86*, 46 British Journal of Industrial Medicine, 1989, p.176.

[244] Peto, J. *et al.*, *Continuing Increase in Mesothelioma in Britain*, 345 Lancet, 1995, p.535, cited in *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.123.

of the digestive tract.245 In another study of 5,645 workers at an asbestos-cement plant, in which the authors did not find any increase in mortality resulting from exposure to chrysotile asbestos over a 20-year period at exposure levels equal to or less than 100 mppcf x years (which corresponds to approximately 15 f/ml x years). The authors state that the demonstration that cumulative low and short-duration exposures did not result in a detectable excessive risk of respiratory cancer could serve as a basis for the development of regulations, because these data make it possible to state that there are low degrees of exposure which are not associated with a demonstrable increase in risk.[246]

3.159 Canada mentions a cohort study of 1,176 workers at a Swedish plant producing asbestos-cement containing chrysotile, which did not show any excess mortality associated with exposures of approximately 10 to 20 fibres/ml x years.[247] In another cohort study, this time of a group of 2,167 workers between 1941 and 1983, the authors did not observe any excess incidence of lung cancer or any other excess mortality associated with asbestos at average fibre concentrations of less than 1 f/ml, although the concentrations were probably higher in certain areas of the asbestos-cement plant.[248] Finally, the McDonald study examined what is undoubtedly the largest cohort of asbestos workers ever studied and followed over the longest period, namely the cohort of miners and plant workers at chrysotile mines in Quebec. This study was initiated in 1966 and includes 11,000 workers born between 1891 and 1920 who have been followed since its inception. The researchers made optimal use of all the available measurements of dust concentrations to assess the exposure of each member of the cohort in terms of duration, intensity and period during which this exposure occurred. The mortality data have been published on five occasions, and there is a recent report updating the results of the mortality analysis for the period 1976-1988 period inclusive. One of the main findings of this update is that for several narrow exposure categories of up to 300 mppcf x years, the standardized mortality ratio for lung cancer was around one, with no perceptible trend, and increased significantly above this level of exposure.[249] More recently, the same authors again updated their results, this time on a group of 9,780 men followed until 1992. The results for exposures of less than 300 mppcf x years, which is equivalent to about 900 f/ml x years – or 45 f/ml for 20 years – prompt the authors to conclude that, from the standpoint of mortality, exposure in this industry to less than 300 mppcf x years has been essentially harmless.[250] With respect to the current exposure levels to chrysotile permitted or recommended and the hesitations one might have to convert mppcf to f/ml, even by applying a prudent conversion factor of 1 mppcf = 3 f/ml, the studies cited previously, including the recent updates, constitute a strong argument in favour of the recommendation by the WHO group of experts of an exposure limit value of 1 f/ml for chrysotile asbestos.

3.160 Canada claims that controlled use is effective on construction sites. However, this in no way alters the fact that there are large quantities of amphiboles and friable materials on construction sites. Certain precautions must be taken during the installation of slabs on construction sites and the burying of chrysotile-cement pipes. When, despite pre-machining and the use of fittings, it is necessary to handle and work with asbestos-cement materials, precautions must be taken. On the other hand, studies have shown that exposure levels can be maintained well below 1 f/ml if proper work methods

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[245] Thomas, H.F. *et al.*, *Further Follow-Up Study of Workers from an Asbestos-cement Factory,* 39 British Journal of Industrial Medicine, 1982, p.273.

[246] Weill, H., Hughes, J. and Waggenspack, C., *Influence of Dose and Fibre Type on Respiratory Malignancy Risk in Asbestos-cement Manufacturing,* 120 American Review of Respiratory Disease, 1979, p.345.

[247] Ohlson, C.-G. and Hogstedt, C., *Lung Cancer among Asbestos-cement Workers. A Swedish Cohort Study and a Review,* 42 British Journal of Industrial Medicine, 1985, p.397.

[248] Gardner, M.J. *et al.*, *Follow up Study of Workers manufacturing Chrysotile Asbestos-cement Products* (1986) 43 British Journal of Industrial Medicine 726.

[249] McDonald, J.C. *et al.*, *The 1891-1920 Birth Cohort of Quebec Chrysotile Miners and Millers: Mortality 1976-88,* 50 British Journal of Industrial Medicine, 1993, p.1073.

[250] The results were published in Liddell, F.D.K., McDonald, A.D., McDonald, J.C., *The 1891-1920 Birth Cohort of Quebec Chrysotile Miners and Millers: Developments from 1904 and Mortality to 1992,* 41 Annals of Occupational Hygiene, 1997, p.13.

are followed. Similarly, according to Canada, the application of simple work methods that do not generate dust will protect employees during the removal of chrysotile-cement. According to the WHO, it is friable materials that pose a problem: "Some asbestos-containing products pose particular concerns and chrysotile use in these circumstances is not recommended. These uses include friable products with high exposure potential". However, Canada notes, the controlled use which the EC claim is too difficult is associated with the use of friable materials, not with the current uses of chrysotile.

3.161 Canada states that the typical exposure levels for various operations performed with low-speed hand tools during the installation of chrysotile-cement products are essentially below 0.1 f/ml and differ significantly from those the EC mention with respect to the application of Standard ISO-337, which they severely criticize. They consider this standard inadequate to guarantee a sufficient level of protection in light of the health objective (limit of 0.1 f/ml) adopted by France. Firstly, based on the rates of dust emission mentioned above, the exposures in many operations remain below the limit of 0.1 f/ml. Secondly, the limit adopted by some countries is lower than that proposed by the WHO. While it is the prerogative of each country to adopt the values it chooses, it does not follow that the higher rates of asbestos dust produced by using certain tools create circumstances of exposure in which workers do not benefit from adequate protection. Also, in cases where exposure rates are higher than the limit of 0.1 f/ml, these rates nonetheless remain well below the value of 1 f/ml suggested by the WHO to guarantee a sufficient level of health protection of workers. In conclusion, Canada points out that, after a presentation of the exposure data concerning the application of Standard ISO-7337, which gives rise to some confusion, the EC recognize that the equipment and the rules outlined in Standard ISO-7337 "form the basis of prevention for specialist workers coming into contact with asbestos-cement materials on-site […]".

3.162 Canada does not agree with the EC's claim that France cannot protect servicing and maintenance workers from exposure to asbestos. This category includes building carpenters, plumbers and electricians. This claim ignores the fact that it is past uses, particularly sprayed-on applications of asbestos (notably amphiboles), that are the cause of the health problems attributable to asbestos in France. That is the conclusion of several epidemiologists, including Dr. Camus, in whose view:

> "In the industrialized countries, friable asbestos products inherited from the past represent by far the greatest potential for exposure and risk today and in the decades to come. In comparison, the potential for exposure to new chrysotile products composed of rigid matrices (mainly cement) seems to be very low and much easier to control. Prevention efforts must therefore focus on the actual risk of asbestos products in place."[251] (WTO translation)

3.163 According to the WHO in 1998:

> "Data from industries where control technologies have been applied demonstrated the feasibility of controlling exposure levels generally below 0.5 f/ml. Personal protective equipment can further reduce individual exposure where engineering controls and work practices prove insufficient."[252]

3.164 Canada shares the view that construction workers who work with the parts of buildings containing sprayed-on asbestos are likely to be exposed to asbestos. However, the ban on chrysotile asbestos and the Decree do not alter this situation in any way. The exposure of these workers to asbestos is the consequence of past products and uses, which are prohibited today. The circumstances of workers who work with the parts of buildings containing sprayed-on asbestos cannot be compared in any way with the conditions of servicing and maintenance workers who handle asbestos-cement

[251] Camus, M., *L'amiante et les risques pour la santé,* April 1999, pp.9 and 10.
[252] *IPCS Environmental Health Criteria (203) on Chrysotile,* WHO, Geneva, 1998, p.144.

products. Canada considers that the EC and France cannot use studies or findings concerning the former to justify measures intended to protect the latter.

3.165 With regard to controlled use and do-it-yourself enthusiasts, Canada considers France's concerns to be unfounded for four reasons. First of all, Canada wishes to point out that the EC have not established that intermittent exposures to chrysotile fibres, even at high concentrations, would create a detectable health risk. Secondly, this concern is based on a false perception, that the cutting of high-density non-friable materials containing chrysotile releases large quantities of chrysotile fibres. In fact, even using tools that are not recommended by the guides on safety in the use of asbestos, such as high-speed power tools, the dust emitted contains only a tiny quantity of respirable chrysotile fibres. Thirdly, most of the chrysotile fibres that are released following the use of high-speed saws have been chemically altered.[253] They have a different form in terms of structure and chemical composition. For this reason, they are less hazardous. The same is true of the dust released following the abrasion of chrysotile-based resin or plastic products: this dust contains tiny quantities of chrysotile fibres. Fourthly, cutting any cement material using inappropriate tools such as a high-speed saw releases silica and quartz. Silica is a group 1 type carcinogen according to the IARC classification. The risk incurred by a person who cuts a cement pipe depends on the tool used (high-speed power tool for example) and not on the presence of chrysotile fibres in the cement. Whether or not chrysotile is present, the person should wear an appropriate mask or use the appropriate tools such as hand tools or low-speed power tools producing coarse dust or chips.

3.166 Canada considers that the codes of practice intended for all those who are responsible for ensuring the safety of workers when chrysotile asbestos is used and recommended by the ILO or the ISO also support the position that the handling of products in which chrysotile fibres are solidly set in a binder does not expose workers or do-it-yourself enthusiasts to asbestos dust which presents a detectable risk to their health. Unlike professionals, private individuals are likely to work with chrysotile-cement products only very sporadically. According to Canada, the exposures received by these weekend do-it-yourself enthusiasts will only be a fraction of those received by professionals. Consequently, if professionals who work with chrysotile-cement products on a daily basis are not subject to any detectable risk, then logically the risk for private individuals will be even less. Private individuals will generally not carry out heavy operations such as sawing, sanding or demolition of materials. Do-it-yourself enthusiasts will rather perform light work occasionally, for example, drilling a hole to run a cable. Finally, if he works with cement products, whether containing chrysotile or not, a do-it-yourself enthusiast will have to follow simple protection methods, if only because of the presence of other carcinogenic materials such as crystalline silica.

3.167 Canada disagrees with the EC's assertion that the overall costs of the measures necessary to ensure effective control of the uses of asbestos are such that the use of asbestos-based materials in conditions that would effectively protect the health of workers is not viable. Most of the measures necessary to implement effective control of applications of asbestos do not entail exorbitant costs. Even if the measures required to control the applications of asbestos should in practice prove too costly, Canada maintains that the economic agents should then be allowed to make the decision to choose the controlled use of chrysotile or the use of substitute fibres or products.

3.168 In conclusion, Canada states that effective protection measures for extraction and processing workers have existed since the 1970s. The methods used for this purpose involve relatively simple technologies, such as increased ventilation of work areas, more effective filtration of air containing dust, grinding and processing operations under negative pressure to prevent dust from escaping, exhaust hoods in the workstations directly exposed to fibres, wet-process manufacturing techniques and the mechanization of processes. Workers in the construction, servicing and maintenance sectors are occasionally exposed to friable asbestos products (of all varieties) in the course of their occupational activities. It should be recalled, however, that friable products are not the subject of the

[253] See para.3.51 above.

present debate. Workers exposed to peaks have a lifetime risk of approximately 20 to 300 per million, which is an "undetectable" risk, i.e. a risk which cannot be demonstrated or measured empirically.[254] Canada maintains that the controlled use of chrysotile asbestos and of current products is possible for all occupations, even those where workers may occasionally be exposed. It is a matter of enforcing an appropriate framework of use, in the same way as for numerous other hazardous substances used in the workplace.

3.169 The **European Communities** assert that the so-called "safe" use is ineffective and inapplicable. Attempts to make "safe" use of asbestos concern only a small number of jobs. Canada's attempt to establish a "safe use" policy is based on "at-source" controls consisting, in particular, of an agreement between the producer-exporters of chrysotile asbestos and the manufacturers of products or materials containing chrysotile. This agreement provides for the transmission of information on the risk and the means of protection to be used by producer-exporters of raw asbestos. It also provides for an undertaking on the part of the manufacturers to inform their employees of the risks associated with inhaling asbestos and to provide the indispensable collective and individual protection equipment. This "understanding" covers only the relatively small asbestos manufacturing sector and presupposes the voluntary participation of the industry. Subsequently, the asbestos-containing products and materials are widely distributed among a very extensive range of users for installation in buildings, industrial plants and vehicles. The installers are professionals assumed to be aware of the risks or occasional professional or non-professional users who may be totally unaware of the risks. Any warnings about the presence of asbestos and the risks associated with using the product (labelling, notices, etc.) have disappeared by this stage, in which the products and materials have already been unpacked and installed (for example, a painted sheet of asbestos-cement in a building or a gasket in an engine).

3.170 According to the EC, "safe use" cannot be applied in the servicing and maintenance sectors. During the entire life cycle of an asbestos-containing product or material in a building, factory or vehicle, servicing and maintenance will be required and the workers are liable to be seriously exposed, throughout their working life, to risks of which they are unaware. Building and industrial maintenance workers constitute a group with high exposure to the risk of mesothelioma and lung cancer. In France, there are several hundred thousand of these workers spread over a wide variety of sectors (metallurgy, construction, vehicle repair, etc.), whereas before asbestos was banned the workers employed by enterprises engaged in the primary processing of raw asbestos into materials - those supposed to be sufficiently well informed to be able to control the risk - numbered less than 1,500. Servicing and maintenance workers may be frequently and unwittingly exposed to peaks of exposure several hundred times higher than the exposure limit established in France, as in many other countries: dry-cutting asbestos-cement generates 41 fibres/ml, or 410 times the limit value.

3.171 The EC point out that, as Canada indicates, the ISO 7337 standard proposes preventive measures (moistening of the material or dust extraction) and recommends the use of hand tools or low-speed tools with a view to limiting fibre emission. These practices are also recommended by the public health authorities in many other countries to limit the exposure of those required to work on-site with materials known to contain asbestos. The large volume of metrological data recorded at work stations at which such equipment is used, including on asbestos-cement, shows that the recommendations of ISO 7337 are inadequate and that the exposure threshold, which itself does not provide absolute protection, is almost always exceeded, the levels being 30 times the limit value for a

[254] CONSAD Research Corporation, Economic Analysis of the Proposed Revisions to the OSHA Asbestos Standards for Construction and General Industry, Washington, D.C.: OSHA, United States Department of Labor, 1990; Health Effects Institute-Asbestos Research, *Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge, Final Report*, Cambridge, MA., Health Effects Institute-Asbestos Research 1991, pp.4-74.

handsaw and five to 12 times the limit value for a jig saw with dust extraction.[255] Numerous data documenting this finding can be found in the international scientific literature.[256] In most servicing and maintenance situations, because of time and ergonomic constraints, the specialized tools recommended by ISO 7337, which are often heavy and take a long time to set up, are not used (for example, when a hole is to be cut in an asbestos-cement roof, the tool might have to be connected to a cumbersome dust extraction system or a remote water supply network). Thus, the rules of "safe use" cannot be effectively applied on the scale of the hundreds of thousands of people daily exposed to asbestos in sectors as difficult to regulate from the standpoint of occupational health as the construction sector, which generates at least 25 per cent of the cases of mesothelioma.

3.172 The EC point out that all the scientific data available show that the "safe" use of asbestos cannot prevent large numbers of deaths from mesothelioma or lung cancer, neither in the confined sector of asbestos-containing material production nor in the highly dispersed sectors of construction, servicing and maintenance, and demolition. In particular, the Health and Safety Executive (HSE) study, carried out in the United Kingdom on a population of asbestos-processing workers rigorously subjected to the rules of "safe use" since 1969, shows that the application of these rules cannot prevent a significant excess of mesotheliomas, even in a sector seemingly easy to manage and supervise (involving fixed work stations in a factory environment).[257] The studies already mentioned by J. Peto[258], Y. Iwatsubo[259] and the CSST[260] (*Commission de la Sécurité et de la Santé au Travail*) in Quebec stress the seriousness of the risk for servicing and maintenance workers and indicate an abnormally high level of mesotheliomas in these occupations. The Canadian study shows that in Canada the risk of mesothelioma has been increasing steadily since 1967 and that the increase in the incidence of this always fatal disease has been particularly rapid in the servicing and maintenance sector. Thus, the limitations of all the various attempts to make "safe" use of asbestos have now been revealed and the serious public health failures to which they have led can only be checked by completely halting the spread of the risk.

6. Substitute fibres for chrysotile

3.173 **Canada** points out that, due to the versatility of chrysotile, there exist more than 150 substitute fibres. These substitutes reproduce, for certain specific uses, the thermal resistance, reinforcement capability, chemical resistance and even the acoustical and thermal insulating properties of chrysotile. The most common substitute fibres are aramid fibres, polyvinyl alcohol (PVA) fibres, cellulose fibres, glass fibres, ceramic fibres, rock wool and wollastonite.[261] The

[255] Blotière, C., Huré, P., *Travaux sur des matériaux contenant de l'amiante – données métrologiques*, Chimie Info no. 60-11/1998.

[256] Tossavainen, A., *Some Comments on the First Written Submission by Canada, dated 26 April 1999, in the Case "Communautés européennes – Mesures concernant l'amiante et les produits en contenant"*, 22 June 1999.

[257] Hutchings, S., *Asbestos-Related Disease*, Occupational Health Supplement, London, Health and Safety Executive, 1996, pp.127-152

[258] Peto, J. *et al., Continuing Increase in Mesothelioma in Britain*, vol.345, Lancet, 1995, p.535.

[259] Iwatsubo, Y. *et al., Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos; Exposure in a French Population-Based Case Control Study*, American Journal of Epidemiology, 1998, vol.148, no.2.

[260] Bégin, R., *et al., Work-Related Mesothelioma in Quebec, 1967-1990*, American Journal of Industrial Medicine, 1992, 22 :531-542 (1992).

[261] See Cossette, M., *Substitutes for Asbestos*, (December 1998) on the technical properties of the main fibres used to replace chrysotile. The paper also deals with substitute products for products based on chrysotile fibre and notes certain undesirable environmental consequences related to the manufacture of the substitute products. Finally, the paper delves into the economic, energy policy and safety considerations related to the use of substitute fibres and products. See also Anderson, A., *Fibers in Friction Materials*, (December 1998). A. Anderson is the chairman of the sub-committee on health and the environment (Brake Committee) of the Society of Automotive Engineers and was formerly responsible for friction materials at the scientific laboratories of the Ford Motor Company.

prohibition of chrysotile and the conversion to substitute fibres and fibro-cements have caused an increase in the use of substitute fibres. The conversion took place, however, without sufficient risk analysis. The still undetectable risk associated with modern uses of chrysotile has been replaced by the unknown risks associated with the use of substitute products . Moreover, the use of substitute fibres contributes to an increase in risks associated with products containing substitute fibres that are of lower quality in terms of their physical, chemical and mechanical resistance.[262] The decision to ban chrysotile was announced the day after the publication of the summary of the INSERM report. In this report, however, the authors admitted that they did not investigate the risks posed by substitute fibres and concluded:

> "Although, because of the time limit given to it, the group did not wish to take up the question of substitute fibres, the lack of epidemiological data concerning their harmlessness in the long term cannot hide the findings reached in experimental systems, which show the capacity to cause pathological modifications. Appropriate research should be carried out and developed as a matter of urgency before use of substitute fibres becomes general."[263] (WTO translation)

3.174 Canada claims that there has been a total conversion to substitute fibres, despite INSERM's formal warning. It was not until June 1998, one and a half years after the adoption of the Decree, that the Executive Summary – and not the full report – of another INSERM study, on substitute fibres, was published. In the Executive Summary, it is acknowledged that:

> "Fibres on which very few toxicological data exist are today being used … on a large scale as a replacement for asbestos; the novelty of their use for such applications is accompanied by a lack of data on their potential effects on human health."[264] (WTO translation)

3.175 From the beginning, the Executive Summary admits that great vigilance is in order with respect to the possible effects of using substitute fibres:

> "Any new fibre proposed as a substitute for asbestos or for any other use should *a priori* be suspected of being pathogenic because of its structure, although this does not prevent an analysis of the possible effects of its physico-chemical characteristics."[265] (WTO translation)

3.176 INSERM also stresses that its study is limited to the risks of substitute fibres in the respiratory system, even though the health risks on the whole cannot be confined to respiratory ailments:

> "This approach is restrictive in the sense that it focuses in the first place on respiratory diseases. It can be seen that dermatosis caused by fibres affects a large number of workers in contact with such materials … It might be suggested that it would be preferable not to confine studies to the respiratory system, particularly because of the development of vitrous fibres that are soluble in a biological environment. Solubilized products may, sometimes, reach other organs." [266] (WTO translation)

3.177 Canada points out that the Executive Summary also highlights the differences in the experimental exposure levels used to evaluate the risks of substitute fibres compared to those for

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[262] Cossette, M., *Substitutes for Asbestos*, (December 1998) and Anderson, A., *Fibers in Friction Materials*, December 1998.

[263] INSERM report, p.434.

[264] INSERM, *Synthèse – Effets sur la santé de substitution à l'amiante*, INSERM joint report, Paris, 1999, p.1 (hereinafter "*Substitutes – Executive Summary").*

[265] *Id.*, p.2.

[266] *Id.*

chrysotile fibres, even though the modern uses of substitute fibres are similar to those of chrysotile fibres.[267]

> "It has been noted that, in general, the animals have been exposed to a number of substitute fibres that is much lower than the level used during experimental exposures to asbestos. It is likely that similar concentrations of asbestos fibre would have yielded results that were of little or no significance in studies of carcinogenicity."[268] (WTO translation)

3.178 Canada indicates that Directorate General XXIV (consumer protection policies) of the Commission of the EC stated that "for substitute materials (for chrysotile), there is no significant epidemiology base to judge the human health risks (...) hence the conclusion that specific substitute materials pose a substantially lower risk to human health, particularly public health, than the current use of chrysotile, is not well founded."[269] Dr. J. M. G. Davis' paper[270], *The Biological Effects of Fibres Proposed as Substitutes for Chrysotile Asbestos: Current State of Knowledge in 1998*, conducts a review of the scientific literature on substitute fibres for asbestos and concludes that:

> "Replacement is premature in the present state of our knowledge."[271] […] The need for full toxicological testing of new fibre products is recommended before these products are marketed. [...] It is of much concern to find that of the three fibre types suggested as chrysotile substitutes, polyvinyl alcohol, para-aramid and cellulose, only one type of aramid (Kevlar) has been tested in a way at all close to what is required."[272]

3.179 Canada considers that France has replaced the undetectable risk associated with modern uses of chrysotile with the unknown, and perhaps greater, risk associated with the use of substitute fibres for asbestos.[273]

3.180 The **European Communities** note that the majority of substitute products for asbestos, particularly chrysotile asbestos, are non-fibrous products, for example, PVC. Canada never refers to these products, which competed with asbestos-cement long before the ban. In France, for example, the decision to stop production of asbestos-cement pipes was taken by industrialists before the announcement of the ban because the competition from PVC and ductile iron made this sector non-viable from the economic perspective. The main purpose of the policy adopted in France in 1996 is to replace materials containing asbestos by other harmless materials, particularly non-fibrous materials,

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[267] The full INSERM report entitled *Effets sur la santé de substitution à l'amiante* was published in November 1999, i.e. after the parties had presented their written rebuttals to the Panel. Canada referred to this report at the second substantive meeting with the parties. See paras. 3.325-3.327.

[268] *Substitutes – Executive Summary*, p.33.

[269] Opinion on a study commissioned by Directorate General III (Industry) of the European Commission on *Recent Assessments of the Hazards and Risks Posed by Asbestos and Substitute Fibres, and Recent Regulation of Fibres World-Wide* (Environmental Resources Management, Oxford). Opinion expressed on 9 February 1998, European Commission, DG XXIV, 1998, p. 1.

[270] M.A., Sc.D., FRC. Path. (Fellow of the Royal College of Pathology). Davis, J.M.G., *The Biological Effects of Fibres Proposed as Substitutes for Chrysotile Asbestos: Current State of Knowledge in 1998*, 1998 [hereinafter Davis].

[271] See Davis, p. 1.

[272] *Id.*, p. 6. Canada notes that the report of the Ontario Royal Commission also cautions against the conversion to substitute fibres: "We conclude that the health hazards caused by exposure to asbestos fibres depend very much upon the dimensions of the fibres, and that long, thin, respirable fibres are of primary concern. This leads us to be extremely cautious about concluding from the evidence (on) substitute fibres (that they) will not present health hazards in the future. […] [W]e believe it would be risky to allow the exposure of workers to respirable fibres longer than 5 microns, with small diameters, *of any material,* if those fibres are likely to be very durable in the lungs" (p.359).

[273] Canada notes that the United States Court of Appeal in the matter of the EPA, (see para.3.126 above) rightly emphasized that "Eager to douse the dangers of asbestos, the agency [EPA] inadvertently actually may increase the risk of injury", *Corrosion Proof Fittings v. Environmental Protection Agency*, (5th Circuit 1991), p.35.

for example, by replacing asbestos-cement roofing by galvanized steel or aluminium sheets of an equivalent size or larger, replacing asbestos-cement pipes by ductile iron or PVC (plastic) pipes. According to the EC, fibres to replace asbestos can only be used in certain materials if their harmlessness or their lower level of risk in comparison with asbestos has been irrefutably proved by the international scientific community. The risk assessments proposed by INSERM conclude that, for the various fibres analysed, the risk of cancer is sometimes "plausible" and sometimes "cannot be excluded", sometimes "there is no convincing element indicating an excess risk" (WTO translation)[274]; this is far from the certainties concerning chrysotile, a proven carcinogen according to all the international authorities. It can also be emphasized that none of the substitute products for asbestos is classed in group 1 of the IARC (proven carcinogen for humans).

3.181 The EC indicate that aramid fibres, polyvinyl alcohol (PVA) fibres, cellulose fibres, glass fibres, ceramic fibres, rock wool and wollastonite are only used as an asbestos substitute in very limited cases where it is not possible to find a non-fibrous substitute. For asbestos-cement materials, which accounted for more than 90 per cent of asbestos use in France, industrialists now use cellulose fibres (the same as those always used in the paper industry), polyvinyl alcohol and aramid fibres, for which the available toxicological data are quite reassuring. According to the EC, it is wrong to state that "The conversion [from asbestos to substitute fibres] took place without sufficient risk analysis". None of the substitute products for chrysotile has been classified as carcinogenic for humans at the international level. Moreover, the replacement of asbestos by less harmful substitute fibres has been done in stages and exercising the utmost caution concerning their harmfulness. The French text provides for the possibility of requesting waivers from the ban on asbestos whenever there is no technically comparable substitute that is less dangerous than asbestos.

3.182 The EC point out that the task entrusted to INSERM by the French Government in 1995 was first to assess the state of scientific knowledge on the risks and dangers of asbestos. Canada indicates that only the Executive Summary of the INSERM report on substitute fibres for asbestos was published in June 1998. This statement is wrong. The full text, in the form of a provisional working document, was published at the same time as the Executive Summary, as was done for the report on asbestos in July 1996. In order to provide transparency and ensure that the findings - which are necessarily succinct in a summary document - are based on detailed scientific arguments, it is INSERM's policy to provide access to the full text in provisional form (because printing a report in accordance with the requirements of scientific publications necessarily takes a very long time).

3.183 The EC point out that replacement is a necessity acknowledged internationally. In 1986, ILO Convention 162 on asbestos recommended that national legislators should make provision, whenever possible, for the "replacement of asbestos or of certain types of asbestos or products containing asbestos by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful …" (Article 10(a)).[275] The WHO press release of 26 July 1996[276] also states that it is necessary to effect such replacement, including chrysotile. The WHO states that "consideration should be given to replacing chrysotile by harmless substitute materials whenever it is possible to do so". In 1998, the WHO report drawn up as part of the International Programme on Chemical Safety[277] recommended the use of substitute materials where they are available. Since 1990, in its framework Directive on the health and safety of workers, the European Community has advocated the principle that a dangerous agent or procedure should be replaced by a harmless or less harmful agent or procedure in so far as one exists. In the case of cancer risks, the principle is set out in the Directive on carcinogenic agents, which specifically states that a

[274] *Substitutes – Executive Summary*, pp.15-17.
[275] Convention concerning Safety in the Use of Asbestos (Convention 162), ILO.
[276] WHO press release of 26 July 1996.
[277] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998.

carcinogen should be replaced by a less dangerous agent in so far as this is technically possible.[278] The EC note that the French Decree contested by Canada in the present case complies with the recommendations of the ILO and the WHO. Substitute products can only be used to replace asbestos if they entail a lower risk for workers according to current scientific knowledge. In view of the proven carcinogenicity of chrysotile and the impossibility of controlling the risk, the French Government opted to prevent any proliferation of the risk by applying the principle recommended by the WHO and the ILO and endorsed by the European Union for carcinogenic risks: replacement by a less dangerous product in so far as this is technically possible.

3.184 The EC point out that the wide variety of substitute products reflects the diverse possible uses of asbestos. There is no natural or synthetic product with the same set of properties as asbestos. Accordingly, there is no one substitute for asbestos, but various substitutes which are sometimes combined with each other for certain applications. When referring to "substitute products", Canada appears to be referring solely to mineral fibres, whereas in fact a very wide range of products and materials is used to replace asbestos. It goes without saying that the materials obtained after asbestos is replaced have different physical and mechanical properties from the asbestos-containing material. As a result, each substitution operation entails careful checks by manufacturers on the properties of the new material and, sometimes, a complete redefinition of the product's field of application (watertight gaskets and braiding, for example).

3.185 The EC explain that these substitute products can be of three types. Firstly, products which do not use fibres: (i) replacement of asbestos-cement pipes by ductile iron or PVC (plastic) pipes, which were on the market long before France banned asbestos; and (ii) replacement of asbestos-cement roofing by galvanized steel or aluminium sheets of an equivalent size or larger. Secondly, products using fibres shown to be harmless or less harmful: (i) replacement of asbestos in cement-fibre materials by cellulose, PVA or aramid fibres (asbestos-cement accounted for more than 90 per cent of asbestos use in France); and (ii) replacement of asbestos in friction surfaces (brakes, clutches) by metal (copper), aramid fibres or granular materials. Thirdly, products containing less harmful man-made mineral fibres: (i) replacement of asbestos in watertight braiding (textile-asbestos) by glass fibres or rock fibres in most cases, or by ceramic fibres, which are essentially used as a substitute for amphibole asbestos and for very rare uses (above 1,200°C). The cost of using these fibres is considerably higher than that of using asbestos (50 per cent more).

3.186 The EC point out that none of the substitute products for chrysotile is classified as carcinogenic for humans. The lower carcinogenicity of the fibres regarded as most dangerous was already known in France when the decision was taken to ban asbestos. In the course of discussions on the eventuality of a ban, the Ministry of Labour asked the *Groupe sur la surveillance des atmosphères de travail (G2SAT)*, which meets under the aegis of the French Senior Council for the Prevention of Occupational Risks, to draw up a report using existing international data on the comparative carcinogenicity of asbestos and man-made mineral fibres. The report[279], which was presented in June 1996, indicates a clear hierarchy in the relative toxicity of substitute fibres. The results were confirmed by a 1997 survey on synthetic mineral fibres carried out by INSERM. None of the man-made mineral fibres investigated showed proven carcinogenicity for humans. According to this report, glass wool and slag wool do not cause fibrosis or cancers in animals; rock wool only causes fibrosis in animals and then only at very high levels of exposure. These fibres are used only for

[278] Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC), OJ L 196, 26.7.1990, p.1. Council Directive 97/42/EC of 27 June 1997 amending for the first time Directive 90/394/EEC on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC), OJ L 179, 8.7.1997, p.4.

[279] *Fibres minérales artificielles et amiante* (summary); INRS, Documents pour le médecin du travail n°69.

certain rare applications (watertight braiding as a substitute for textile asbestos); ceramic fibres cause cancers and fibroses in animals and have been diagnosed as the cause of pleural plaques in humans. These fibres are used mainly as a substitute for amphibole asbestos in very restricted and highly specific cases (temperatures in excess of 1,200 degrees). The European Community Directive[280] relating to the classification of man-made mineral fibres placed mineral wool in category III (unproven suspicion of carcinogenicity in animals) and ceramic fibres in category II (proven risk for animals). The EC point out that ceramic fibres essentially provide a substitute for amphibole asbestos and their use is strictly regulated (Labour Code, Articles R-231-55 *et seq*.). None of the substitute products for chrysotile is classified as carcinogenic for humans (group 1). Since it is known that chrysotile asbestos is classified as a "proven carcinogen for humans" (group 1), according to the EC, there is therefore a clear hierarchy of risk.

3.187 The EC emphasize that there are no data giving rise to concern as to the carcinogenicity of fibres used as a substitute for asbestos in cement fibres. The findings of the Scientific Committee on Toxicity, Ecotoxicity and the Environment are unambiguous in this connection. The SCTEE was set up by Commission Decision 97/579/EC of 23 July 1997 setting up scientific committees in the field of consumer health and food safety (Official Journal L 237 of 28 August 1997, p.18). The SCTEE's brief is to provide the Commission with high-quality scientific opinions in all cases in which it has to be consulted. It may also be consulted on other issues of special relevance to consumer health and food safety. Its composition and work are based on the principles of excellence, independence and transparency. The SCTEE has examined the comparative carcinogenicity of chrysotile and the main fibres used as a substitute for asbestos in cement fibres (which accounted for more than 90 per cent of the asbestos used when the ban came into force in France). The investigation focused on cellulose fibres, para-aramid fibres and PVA.

3.188 The EC indicate that the SCTEE's[281] findings are unambiguous as to the hierarchy of risks. Its conclusions are as follows: (i) the SCTEE notes that the three fibres investigated have been used for many years[282] and yet no worrying data have emerged over this long period as to their carcinogenicity; (ii) there is no doubt whatsoever that chrysotile is carcinogenic; (iii) chrysotile also causes asbestosis and chronic illnesses, which is not the case for the fibres investigated; (iv) chrysotile has carcinogenic effects on the lung and causes mesothelioma, whereas there is no evidence to suggest that para-aramids do so (no long-term research is available for the other two fibres, but it should be recalled that they have been in use for many years); (v) predictive studies - i.e. experimental studies on animals - show that chrysotile has far more substantial and lasting inflammatory and proliferative reactions; and (vi) the substitute fibres are considerably larger (in diameter) and have much less fragmentation capacity than chrysotile, which has very high "fibrillation" (separation of fibres lengthways into even finer fibres). The result is that the substitute fibres are far less respirable. Three interdependent parameters were used to assess the risk associated with substitute products as compared with chrysotile asbestos: (i) the dose of fibres in the air: the fibre's diameter determines how long it remains suspended in the air; accordingly, the smaller the diameter, the higher the carcinogenic risk; (ii) the physical characteristics of fibres, in particular their dimension (diameter and length) and their fragmentation capacity ("fibrillation"); the greater the degree of fibrillation, the higher the risk of the fibres being inhaled, and thus the higher the risk of cancer; and (iii) the biopersistence (or "durability") of the fibre in the lung tissue and inside the macrophages, given that long fibres are eliminated slowly. It is accepted that a ratio of length to diameter of more than 3:1 entails a higher risk of cancer. The SCTEE's study thus concludes that chrysotile asbestos is present in high concentrations in the air because of its small diameter and is very easy to inhale because of its high degree of fibrillation. The substitute fibres for asbestos-cement are

[280] Directive 97/69/EEC, of 5 December 1997.

[281] *Avis concernant l'amiante chrysotile et les produits de substitution envisageables*, Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), 15 September 1998.

[282] The EC point out that polyvinyl alcohol fibres (PVA) have been used since 1936; para-aramid fibres have been on the market for about thirty years.

PVA and cellulose fibres. Para-aramids are used for other applications (brakes, friction). These three types of substitute fibre are the most frequently used.

COMPARATIVE TABLE OF THE CHARACTERISTICS OF FIBRES EXAMINED BY THE SCTEE

	Length (microns)	**Diameter (microns)**	**Fibrillation**
Chrysotile	> 5	< 1	+++
PVA	> 5	10 – 16	+/-
Para-aramids	> 5	10 – 12	(requires considerable abrasion to produce a large number of fibrils)
Cellulose	> 5	12 – 40	Exposure data suggest that fibril production is very limited

3.189 The EC note that, from these observations, the SCTEE unanimously concluded that: (i) there is sufficient evidence to show that all forms of asbestos, including chrysotile, are carcinogenic; (ii) on the other hand, there is no evidence of cancer being caused in humans by fibres of any of the three substitute products examined; and (iii) consequently the dangers of chrysotile are probably greater (in the scientific sense) than those associated with the substitute fibres examined. The SCTEE adds that, in its opinion, no study which might have led it to a different conclusion was omitted from the examination.

3.190 The EC also note that the findings of the Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC)[283] transmitted to the Health and Safety Executive (HSE) in July 1998 confirm the results of the SCTEE study. This Committee also examined cellulose fibres, para-aramid fibres and PVA fibres. In particular, the COC's work focused on comparisons between the results of carcinogenicity studies and studies on the physical properties of fibres (dimensions, fibrillation). Its conclusions were identical to those of the European Committee. In addition, the COC noted that the levels of exposure to those fibres were considerably lower than those associated with the use of chrysotile. The COC concluded its study as follows:

> "The evidence presented to the Committee on fibre dimensions, studies in animals including that of biopersistence in the lung, indicate that the carcinogenic risk posed by PVA fibres, p-aramid fibres or cellulose fibres is likely to be less than posed by chrysotile … Additional reassurance can be gleaned by noting that these materials are unlikely to form significant amounts of respirable fibres under normal working conditions and that occupational exposures to these materials will be below the control limit for chrysotile."[284]

3.191 The EC emphasize that, in France, as in many other countries, manufacturers had for more than ten years been seeking asbestos-free substitutes which would meet their technical requirements and would be compatible with their health and safety obligations. In the vast majority of situations, zero-risk substitution is possible: either (i) by using non-fibrous products which are not carcinogenic (such as plaster for fire protection instead of limpet spraying); or (ii) by using fibres on which no worrying data have emerged after decades of use (cellulose or PVA in cement fibres). Moreover, replacement by man-made mineral fibres is strictly regulated: (i) mineral wool (glass or rock fibres), which have not been proven dangerous even to animals in high doses and which are used for a limited number of applications (watertight braiding); these fibres are subject to occupational exposure limits and to the rules designed to protect workers against chemical risks; and (ii) ceramic fibres, for which manufacturers are currently seeking replacements; these fibres are subject to rules which are even

[283] *Statement for Health and Safety Executive (HSE) on Carcinogenic Risks of Three Chrysotile-Substitutes*, Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC), July 1998.

[284] *Id.*, p.5.

stricter than those concerning chemical risks. Under these rules, ceramic fibres must be replaced by a less dangerous agent wherever technically possible, and their sale to the general public is prohibited.

3.192 The EC point out that exceptions to the asbestos ban are possible where using asbestos is a safer option. Manufacturers may qualify for exemption from the asbestos ban where no asbestos-free substitute performing an equivalent function is available which, on the one hand, represents less of a danger to workers and, on the other, offers users all the technical safety guarantees. When replacing asbestos by a substitute material, it is necessary to follow a carefully defined procedure laid down in the specifications which set out the performance requirements that the manufacturer's substitute material must satisfy under very precise conditions of use. Once selected, the substitute product must not just be tested but must also undergo feasibility studies over a period of time. This may take the form of qualification or approval procedures carried out by domestic or international third parties; these procedures are lengthy and complex in sectors such as the aerospace, nuclear or chemical industries. The EC also note that the Decree contested by Canada does not make the use of substitute products mandatory, be they fibrous or non-fibrous.

3.193 In the EC's view, in many instances it is not necessary to use fibrous substitute products. Asbestos-cement can be fully replaced by products with no indication of carcinogenicity; these may be either non-fibrous products (ductile iron, plastic) or fibrous products (cellulose, PVA). In the case of fire protection products, for instance, there is no need to use substitute fibres. In France, traditional plaster-based products or hydraulic binders loaded with mineral aggregates such as perlite or vermiculite have been used to protect concrete or steel structures against fire since 1978 when flocking was banned. In practice, manufacturers decide to use fibrous substitute products only if these are the sole products offering the requisite technical performances (previously obtained using chrysotile). Residual use of asbestos is made on an occasional, highly specialized basis. It is most common in the nuclear, chemical, petrochemical and aerospace industries.

3.194 The EC contend that Canada cannot claim that Decree No.96-1133 is designed to "promote" domestic substitute products because France records a substantial trade deficit for PVA and para-aramid fibres. It should also be noted that PVA fibres are produced in only two plants worldwide, one in Japan and one in China. As regards cellulose fibres, the fraction used to produce fibro-cement is extremely small. The bulk of the cellulose raw material (94.5 per cent) is used by the paper industry and the remainder (5.5 per cent) goes mainly to the textile and construction industries. France imports about 40 per cent of the cellulose it uses, mainly from Canada and the United States. In 1998, France imported 380,000 tonnes from Canada, against 371,000 tonnes in 1997 and 366,000 tonnes in 1996.[285]

3.195 **Canada** asserts that the undetectable risk associated with current uses of chrysotile has, as a result of the Decree, been improperly replaced by the unknown risk of substitute fibres. At the most, science indicates that, although certain substitutes can be considered "less harmful" than chrysotile, their harmlessness has not been proved. Furthermore, the ban on chrysotile promotes a false sense of security among the population, which is likely to reduce the vigilance of workers, do-it-yourself enthusiasts and the population in general when chrysotile substitutes are used. According to Canada, this is the key issue, i.e. whether the ban on asbestos effectively protects the French population while restricting international trade as little as possible. The most common chrysotile substitute fibres include aramid fibres, polyvinyl alcohol (PVA) fibres, cellulose fibres, glass fibres, ceramic fibres, rock wool, slag wool, glass wool and wollastonite.

3.196 In Canada's view, nothing is less certain than the "proven" character of the safety or low toxicity of substitute fibres, as the EC assert. First of all, the EC stress that substitute fibres "have been in use for many years". Although little accustomed to criticizing others for a lack of historical perspective, Canada considers that use of approximately 20 years does not constitute "use for many

[285] Source: COPACEL and the French customs.

years" of substitute fibres. It is sufficient here to refer to the CSTEE (DG XXIV) document, which speaks more appropriately of a "relatively short"[286] period of use extending over "approximately 20 years."[287] Similarly, a working group which reported on substitute fibres to the British Health and Safety Executive (HSE) noted:

> "Carcinogenic risks posed by chrysotile-substitutes and chrysotile cannot be based predominantly on an epidemiological assessment since substitute fibres have only been used for periods of up to approximately 20 years." [288]

3.197 Canada notes that INSERM itself warns against the fact that "[Tr.] very few toxicological data exist"[289] on asbestos substitute fibres. Canada also draws attention to the conclusions of the CSTEE (DG XXIV), to which the EC refer extensively, with respect to the safety of substitute fibres:

> "For substitute materials [to chrysotile], with the exception of vitreous fibres, there is no significant epidemiology base to judge the human health risks [...] hence the conclusion that the use of specific substitute materials poses a substantially lower risk to human health, particularly public health, than the current use of chrysotile, is not well founded."[290]

3.198 Canada points out that the CSTEE (DG XXIV) also states that: "no epidemiological studies or observations in humans of the long-term effects of p-aramid or PVA have been reported in the scientific literature".[291] It goes on to add: "overall, acute and subacute toxicity data on the three substitute fibres are very meagre and do not allow for a proper comparison with chrysotile".[292] The WHO, in a study on substitutes published in 1993, which is similar in scope to the 1998 report on chrysotile, states in conclusion that:

> "All fibres that are respirable and biopersistent must undergo testing for toxicity and carcinogenicity. Exposures to these fibres should be controlled to the same degree as that for asbestos."[293]

3.199 Canada notes that the Occupational Safety & Health Administration of the United States Department of Labor underlines the risk of using substitute fibres and products:

> "Although the introduction of asbestos substitutes and alternatives enables manufacturers to avoid contact with asbestos, many of these surrogates pose occupational health hazards of varying degrees."[294]

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[286] *Avis concernant l'amiante chrysotile et les produits de substitution envisageables*, Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), 15 September 1998.

[287] *Statement for the Health and Safety Executive (HSE) on Carcinogenic Risks of Three Chrysotile Substitutes*, Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC), July 1998. Canada points out that the EC use expressions such as "for a very long time", "long period" and "use for many years", but these do not appear in the CSTEE text.

[288] *Id*.

[289] *Substitutes – Executive Summary*, p.1.

[290] Opinion on a study commissioned by the Directorate General III (Industry) of the European Commission on *Recent Assessments of the Hazards and Risks Posed by Asbestos and Substitute Fibres, and Recent Regulation of Fibres World-Wide* (Environmental Resources Management, Oxford). Opinion expressed on 9 February 1998.

[291] *Avis concernant l'amiante chrysotile et les produits de substitution envisageables*, Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), 15 September 1998.

[292] *Id.*

[293] *IPCS Environmental Health Criteria (151): Selected Synthetic Organic Fibres*, WHO, Geneva, 1993, p.76.

[294] See United States Department of Labor (OSHA), *Asbestos - Final Regulatory Impact and Regulatory Flexibility Analysis*, on-line:
OSHA <http://www.osha-slc.gov/Preamble/AmendAsb_data/ASBESTOS_AB4.html> (access date: 22 June 1999).

3.200 Canada asserts that, not only is the safety or low toxicity of substitute fibres not "proven", what is more, the EC and the United States misrepresent the situation of substitute fibres in an effort to compensate for the irrationality of the total ban on asbestos and the blind use of substitute fibres. For example, the United States claims that "none of these [replacement] fibers have been found to cause either malignant or non-malignant respiratory diseases similar to those associated with asbestos exposure in humans".[295] Canada considers that this is not true, as can be seen from the IARC data and its classification of carcinogenic substances. The IARC classifies substances according to the following four categories:[296]

(a) group 1: the agent (mixture) is carcinogenic to humans. The exposure circumstance entails exposures that are carcinogenic to humans;

(b) group 2 (two classifications):

(i) group 2A: the agent (mixture) is probably carcinogenic to humans. The exposure circumstance entails exposures that are probably carcinogenic to humans;

(ii) group 2B: the agent (mixture) is possibly carcinogenic to humans. The exposure circumstance entails exposures that are possibly carcinogenic;

(c) group 3: the agent (mixture, or exposure circumstance) is unclassifiable as to carcinogenicity in humans;

(d) group 4: the agent (mixture, or exposure circumstance) is probably not carcinogenic to humans.

3.201 Canada explains that these groups are not based on the toxicity of the substances, but rather on the available information. To the EC, which state that chrysotile is a carcinogenic agent in group 1, Canada responds that this category, which covers three and a half pages in the IARC document, includes many products such as silica, tobacco smoke and wood dust; it also includes alcoholic beverages, salted fish and oral contraceptives. The IARC warns against the reasoning of saying that a substance in group 1 is more hazardous than a substance in group 2.

> "These categories refer only to the strength of the evidence that an exposure is carcinogenic and not to the extent of its carcinogenic activity (potency) nor to the mechanisms involved. A classification may change as new information becomes available."[297]

For example, a substance may be classified in group 2B if there is sufficient data from animal experiments confirming its carcinogenicity, but the data for humans are still "inadequate". Rock, glass and slag wools and refractory ceramic fibres are classified in group 2B, i.e. possible carcinogens. Polyvinyl alcohol, aramid and glass fibres are classified in IARC group 3, which is characterized by "inadequate" evidence of carcinogenicity in humans and "inadequate" or "limited" evidence from animal experiments. For Canada, it is not surprising that knowledge is still insufficient with respect to substitute fibres that have been used industrially for only about 20 years. According to the French *Institut national de recherche et de sécurité* (INRS) (National Research and Safety Institute), "[Tr.] some authors are of the opinion that glass fibres should be considered

[295] See Section IV below.

[296] See IARC, Evaluation Method, on-line: IARC < http://193.51.164.11/monoeval/Eval.html> (access date: 16 June 1999).

[297] *Id.*

carcinogenic."[298] The IARC, for its part, reveals that glass fibre can cause mesotheliomas, at least in animals.[299]

3.202 Canada also indicates that the United States claims that none of the chrysotile substitute fibres have been associated with respiratory diseases similar to those associated with asbestos. However, the United States Occupational Safety and Health Administration (OSHA) points out the hazards of synthetic mineral fibres:

> "Several epidemiologic studies have demonstrated statistically significant elevations in the risk of lung cancer and other respiratory system cancers among workers employed in fibrous glass and mineral wool manufacturing facilities. [...] The most recent follow-up of fibrous glass exposed workers in the U.S. study still demonstrate a significant excess of lung cancer. [...] Numerous studies have demonstrated that fiber glass and mineral wools produce lung cancer, mesotheliomas, and sarcomas in experimental animals."[300]

The accumulation of evidence has prompted the United States to classify glass fibre, glass wool and ceramic fibres as "reasonably anticipated to be a carcinogen".[301]

3.203 Canada notes that the French INRS states that refractory ceramic fibres "[Tr.] cause mesotheliomas with an experimental incidence comparable to and indeed greater than (at high doses) asbestos (chrysotile)".[302] Again according to the INRS: "[Tr.] In light of the results of animal experiments, RCFs [refractory ceramic fibres] are carcinogenic and fibrogenic when inhaled".[303] According to the United States EPA, these fibres are probable carcinogens.[304] The EC cite the larger diameter of three of the substitute fibres, namely PVA, para-aramid and cellulose fibres, to argue that they pose a lower health risk. However, this is a "nominal diameter" which does not prevent a significant proportion of fibres from having a diameter which falls well within the range of respirable diameters.[305]

3.204 According to the WHO in a 1993 study on substitute fibres:

> "All fibres that are respirable and biopersistent must undergo testing for toxicity and carcinogenicity. [...] The data available suggests para-aramid fibres fall within this category. Furthermore, other respirable organic fibres should be considered to fall within this category."[306]

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[298] *Fibres minérales artificielles et amiante (Résumé)*, Report of the *Groupe scientifique pour la surveillance des atmosphères de travail* (G2SAT), INRS – DMT No.69.

[299] See IARC, Vol. 2, para. 5.1, available on-line: IARC <http://193.51.164.11/htdocs/monographs/Vol02/Asbestos.html> (acces date: 10 June 1999); IARC Vol. 14, para. 5.1 available on-line: IARC < http://193.51.164.11/htdocs/monographs/Vol14/Asbestos.html> (access date: 10 June 1999).

[300] See United States Department of Labor (OSHA), *Synthetic Mineral Fibers: Hazard Description*, on-line: OSHA <http://www.osha.gov/oshinfo/priorities/synthetic.html> (access date: 22 June 1999).

[301] *Id.*, OSHA refers to the National Toxicology Program, Seventh Annual Report on Carcinogens, United States Department of Health and Human Services, Public Health Service, 1994.

[302] *Fibres minérales artificielles et amiante (Résumé)*, Report of the *Groupe scientifique pour la surveillance des atmosphères de travail* (G2SAT), INRS – DMT No.69.

[303] *Id.*

[304] Canada See notes that the United States EPA classifies refractory ceramic fibres as probable carcinogens. See the EPA site on refractory ceramic fibres, available on-line: EPA <http://www.epa.gov/iris/subst/0647.htm>.

[305] Dunnigan, J., Nadeau, D. and Paradis, D., *Cytotoxic Effects of Aramid Fibres on Rat Pulmonary Macrophages: Comparison with Chrysotile Asbestos*, (1984) 20 Toxicology Letters 277.

[306] *IPCS Environmental Health Criteria (151): Selected Synthetic Organic Fibres*, WHO, Geneva, 1993, p.76.

In light of the IARC classification, the WHO, EPA and INRS data, and the two INSERM reports, Canada considers that one cannot therefore objectively speak, as the EC do, of the "proven" safety or lower toxicity of substitute fibres. In Canada's view there is "no clear hierarchy in the relative toxicity" of chrysotile fibres and substitute fibres, as the EC claim and would like to believe.

3.205 Canada considers that the use of chrysotile substitute fibres has an impact not only in terms of creating a risk for the French population because of the toxicity of substitute fibres and the false sense of security that the Decree promotes. The use of substitute fibres also has a direct impact on the question of controlled use, one of the key issues in this dispute. Canada notes that, in order to counter Canada's argument that there is a means less restrictive for international trade than a total ban, the EC cite "the impossibility" of the controlled use of chrysotile. Yet, in the same breath, they minimize the risks of substitute fibres by stating that the strict regulations which govern them eliminate any hazard. For Canada, these strict regulations constitute nothing less than a controlled use of substitutes.

3.206 Canada notes that the EC claim, for example, that refractory ceramic fibres, despite their known toxicity, do not pose a risk to the French population since they are strictly regulated, citing in support of their argument the relevant articles of the Labour Code. They continue to praise controlled use, boasting that "replacement by man-made mineral fibres is strictly regulated". Concerning glass and rock wools, the EC claim that "These fibres are subject to occupational exposure limits and to the rules designed to protect workers against chemical risks." As for refractory ceramic fibres, the French population is apparently protected since "These fibres are subject to rules which are even stricter than those concerning chemical risks." Canada is quite intrigued by this about-face as to the merits of controlled use and wonders why the EC cite the feasibility of controlled use for substitute fibres and summarily reject the feasibility of controlled use in the case of chrysotile fibres?

3.207 According to Canada, the EC are endeavouring to make the replacement of chrysotile by fibres "shown to be harmless or less harmful" a "necessity acknowledged internationally". There are two major flaws in this reasoning. The first flaw is that replacement must be done only when necessary. The ILO, through Convention 162[307] and Recommendation 172,[308] therefore provides for replacement "where necessary". As Canada has already pointed out, high-density non-friable chrysotile materials account for 97.5 per cent of the current uses of chrysotile. These are no longer the friable products that the WHO, like Canada, considers problematic. In Canada's opinion, it is these friable products whose replacement must be contemplated and that have already been largely replaced (97.5 per cent).

3.208 Canada notes that, as the EC emphasize, the WHO is of the opinion that replacement must be done whenever it is possible to replace chrysotile asbestos with "safe substitute materials". As Canada has stressed, the chrysotile substitute products used in France are not, as the WHO prescribes, "safe". Chrysotile asbestos is not replaced by products "shown to be harmless or less harmful". Nor is it replaced by products which, according to the ILO, should be "harmless or less harmful".[309] The replacement of chrysotile asbestos by substitute fibres in fibro-cement and friction products is not a "necessity acknowledged internationally". At best, the Decree on a ban, which imposes replacement,

[307] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Organization, Geneva, Article 10. Recommendation concerning Safety in the Use of Asbestos (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva, Article 12.

[308] Recommendation concerning Safety in the Use of Asbestos (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva, Article 12.

[309] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Organization, Geneva, Article 10; Recommendation concerning Safety in the Use of Asbestos (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva, Article 12.

is an unjustified restriction on international trade in violation of the WTO Agreements.[310] At worst, it is a measure which endangers the French population by replacing an undetectable risk by an unknown risk and by fostering a false sense of security.

3.209 The **European Communities** assert that the principle of replacing one substance by another that is less dangerous or harmful or by a new technique is a general rule of primary prevention applicable to human and environmental protection. It is based on abolishing the risk at the source by totally abandoning the use of the substance shown to be harmful in order to eliminate its effects. Where the use of asbestos fibres is concerned, this basic rule is applied by all the international bodies that draft recommendations designed to protect human health. According to the EC, positions on this rule have been taken repeatedly: (i) by the ILO[311], since 1986; (ii) by the WHO[312], in particular in its press release dated 26 July 1996 concerning the chrysotile variety of asbestos, according to which "when available, substitute materials evaluated as safer than chrysotile should be considered"; and (iii) by the European Community in its 1990 framework Directive on the health and safety of workers and later in the Directive on carcinogens.

3.210 The EC point out that, when banned in France, asbestos fibre was not being used as such but mainly as a component in the following products or materials: (i) asbestos-cement materials (pipes, ducts, roof tiles, roof and wall cladding, planting tubs, etc.), which accounted for more than 90 per cent of the chrysotile used in France; (ii) friction materials (clutch and brake linings); (iii) insulation (board, felt); (iv) textile products (sealing braid, tape, blankets); (v) seals and gaskets; and (vi) miscellaneous products (mouldings, plastics, glues, coatings, mortars, etc.). Since asbestos has so many uses, there is no single natural or synthetic product which, alone, could serve as a universal replacement for asbestos in all the products and materials that contain it. According to the EC, there is thus no single substitute for asbestos, only replacement solutions which rely on different substitutes depending on the application, sometimes used in combination to provide a material or product with equivalent performance. Thus, the ban on asbestos is being applied by steering the market for asbestos-containing products and materials towards: (i) existing alternative technologies which do not rely on a substitute for asbestos (ductile iron or plastic pipes, aluminium roof and wall cladding, etc.); and (ii) products and materials containing one or more substitutes, some of which are fibrous but less dangerous.

3.211 The EC state that, depending on the application, asbestos has been replaced by: (i) cellulose, polyvinyl alcohol and polypropylene fibres in asbestos-cement materials; (ii) para-aramid fibres and glass fibres (combined with other non-fibrous materials) in brakes and other friction products; (iii) man-made mineral fibres (glass, rock) and often non-fibrous materials (perlite, vermiculite, silicates, etc.) for insulating panels, blocks and coatings; (iv) para-aramid and man-made mineral fibres combined, depending on the technical requirements, with metal thread (steel) or carbon or polytetrafluoroethylene (PTFE) fibres in asbestos-containing textile products, seals and various moulded products; or (v) special glass fibres (calcium and magnesium silicates) or refractory ceramic fibres in products designed to withstand very high temperatures. The price of asbestos fibres varies from F 5 to 9 per kilo depending on the origin and the physical characteristics of the fibres. The various substitute products, whether or not fibrous, are generally more expensive than asbestos (with the exception of some which cost more or less the same). The finished products containing asbestos substitutes are all more expensive than the asbestos-containing products serving the same purpose. In general, the price ranges of the main substitutes are as follows: (i) less than or about F 12/kg: cellulose, man-made mineral fibres (glass, rock), perlite, vermiculite; (ii) from F 12 to 60/kg: glass filaments, steel thread, polypropylene and polyvinyl alcohol fibres; (iii) from F 60 to 120/kg: special

[310] Canada notes that the Decree "in no way makes it mandatory to use substitute products", but it does make it unavoidable, as the EC note.

[311] Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1986, International Labour Organization, Geneva, Article 10.

[312] *Chrysotile Asbestos evaluated by Health Experts*, Press Release 51, WHO, 26 July 1996.

glass fibres (high-temperature), polytetrafluoroethylene (PTFE) fibres; and (iv) from F 120 to 200/kg: para-aramid and refractory ceramic fibres.

3.212 The EC indicate that these various substitutes are used as replacements for asbestos only on a very small-scale as compared with their widespread use in other industries: (i) between 10 and 20,000 tonnes of cellulose for fibro-cement, as compared with about 5 million tonnes consumed in France in the paper and textile industries; (ii) only a few thousand tonnes of polypropylene or polyvinyl alcohol fibres, which are mostly used in the textile and packaging industries; and (iii) less than 1 per cent of man-made mineral fibres, mainly used for insulating buildings. In general, France imports about 40 per cent of the cellulose it uses, in particular from Canada[313] and the United States. Thus, in 1998, France imported 380,000 tonnes from Canada as compared with 371,000 tonnes in 1997 and 366,000 tonnes in 1996. The EC also note that there are only two factories in the world that produce polyvinyl alcohol fibres, one in Japan and the other in China. Finally, overall, France's trade balance for these two products is regularly in deficit.

3.213 The EC assert that none of the substitutes for chrysotile is classified as carcinogenic for humans. The main substitutes are cellulose and polyvinyl alcohol fibres used to replace chrysotile in materials and products formerly made of asbestos-cement, together with the para-aramid fibres used in jointing, textiles and friction products. According to the EC, these are substances which give no cause for concern after decades of massive use throughout the world for other purposes. Thus: (i) cellulose fibres have also been used for several centuries for making paper pulp (several million tonnes are consumed in France every year); (ii) polyvinyl alcohol has been widely used since 1936 for making film for wrapping food and in the textile industry; and (iii) since the 1960s, para-aramid fibres have been extensively used for making clothing and twine. Only fibres less than 3 microns in diameter can penetrate deep into the lungs. The fibres which must be taken into account in making a metrological assessment of a working environment have been defined by the WHO[314] in accordance with the following dimensional parameters: (i) length greater than 5 microns; (ii) diameter less than 3 microns; (iii) ratio of length to diameter greater than 3 microns [3:1]. The polyvinyl alcohol and para-aramid fibres used to replace asbestos are 2 to 8 mm (i.e. 2,000 to 8,000 microns) long and 10 to 16 microns in diameter. Cellulose fibres, which are 12 to 40 microns in diameter, can give rise to finer particles (fluff), which are said to irritate the respiratory pathways. These fibres are more than 10 microns in diameter, which means that it is physically impossible for them to penetrate into the pulmonary alveoli.

3.214 The EC consider that the results of the CSTEE[315] and COC[316] studies are unambiguous as regards the carcinogenicity of chrysotile and the fact that the three fibres mentioned above have given no cause for concern over their long period of use. Man-made mineral fibres such as glass or rock fibres are used for gaskets, friction materials and sealing braid required to withstand temperatures up to 1,200ºC. These substances have been the subject of studies analysed in two reports[317] which have concluded that they are less harmful for humans than chrysotile asbestos. The EC emphasize that, unlike chrysotile fibres, which have a diameter of from 0.1 to 1 micron and which separate lengthways into even finer crystalline fibrils (0.020 micron), all the synthetic fibres used in France to replace chrysotile, whether of organic (polyvinyl alcohol, para-aramid) or mineral (glass, rock) origin,

[313] The EC note that, in 1984 and 1985, Canada produced 20 million tonnes of cellulose (source: *Alternatives to Asbestos, the Pros and Cons*, Society of Chemical Industry, United Kingdom, 1989).

[314] Determination of airborne fibre number concentrations, WHO, Geneva 1998.

[315] *Avis concernant l'amiante chrysotile et les produits de substitution envisageables*, Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE), 15 September 1998.

[316] *Statement for the Health and Safety Executive (HSE) on Carcinogenic Risks of Three Chrysotile Substitutes*, Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (COC), July 1998.

[317] *Fibres minérales artificielles et amiante (Résumé), Report of the Groupe scientifique pour la surveillance des atmosphères de travail* (G2SAT), INRS – DMT No.69. INSERM, *Substitutes – Executive Summary.*

retain the diameter determined by the manufacturing process throughout the life cycle of the fibre, even when emitted by a material in the process of being machined. Refractory ceramic fibres, classed as group 2 carcinogens (i.e. carcinogenic in animals but not in man), are only used in industry for a few applications where very high temperatures must be withstood. In accordance with the substitution principle, they are progressively being replaced by other, less harmful substances as technology evolves.

7. The INSERM report

3.215 **Canada** states that, at the request of the *Direction des Relations du Travail* (Ministry of Labour) and the *Direction Générale de la Santé* (Ministry of Social Affairs), INSERM mandated a "joint commission of experts" to study the health effects of the main types of exposure to asbestos. This group of 11 researchers was set up in the summer of 1995 and met some ten times between August 1995 and March 1996. It submitted its Executive Summary to the French Government on 21 June 1996. This Executive Summary was made public in July 1996 and the final report in November 1997.[318] The final report has two sections: an analysis section and an Executive Summary. The analysis section contains a review of the scientific literature and summarizes the state of knowledge, allowing for a better understanding of the health risks of various circumstances of exposure to asbestos. In particular, this section covers measurement methods, the physico-chemical properties of asbestos, the main circumstances of exposure and the epidemiology of diseases linked to asbestos. The Executive Summary contains a recapitulation and presents the findings and recommendations on future studies and research to be carried out.

3.216 Canada notes that the main findings in the Executive Summary are as follows: concerning the evaluation of the risks, INSERM estimated the number of deaths in France in 1996 attributable to passive exposure to asbestos at 1,950. Concerning risk management, the group of experts pointed to certain facts: (i) asbestos is carcinogenic and should be replaced with substitute fibres, as soon as technically possible, in accordance with European law; however, the researchers do not have sufficient information on the risks of substitute fibres; (ii) chrysotile entails a level of risk comparable to or lower than the other types of asbestos, depending on the diseases considered; (iii) there is not enough data on the number of persons exposed to asbestos to assess the risks under varying situations of exposure; (iv) the risk assessment was effected on the basis of the regulation legal exposure limits; (v) the quantification of the risks is different from an evaluation of the risks, which would involve ethical, social, economic and political considerations; (vi) the researchers express grave reservations about the systematic removal of sprayed asbestos from buildings; (vii) extreme caution is called for with regard to the control of the conditions of occupational exposure to asbestos; and (viii) the researchers question the low level of compensation afforded to persons suffering from diseases caused by occupational exposure to asbestos.

3.217 Canada notes that the group also issued recommendations on future studies and research to be carried out in the following areas for which the data are still insufficient: (i) knowledge of site contamination; (ii) knowledge of exposure of people; and (iii) monitoring the trend in health risks associated with exposure to asbestos in order to assess the risk of low-level exposure. Finally, the research group makes the following recommendations: (i) further epidemiological research should be conducted into the risks associated with exposure to asbestos, as the researchers had not been able to gain an in-depth understanding of the topic; (ii) given the lack of data on the safety of substitute fibres, research should be conducted into this area without delay; (iii) more extensive research into the control of environmental health risks should be conducted; and (iv) a policy of coordinated studies and research into the environmental health risks should be elaborated. According to Canada, the INSERM report does not offer any new scientific findings. However, it proposes a model for assessing the risks of contracting lung cancer and mesothelioma from low-level exposure, which is

[318] INSERM, *Rapport sur les effets sur la santé des principaux types d'exposition à l'amiante*, INSERM joint report, Paris, INSERM publications, 1997, p.239.

based on a simple extrapolation of the risks observed from higher levels of exposure, without distinction between amphiboles and chrysotile. The report indicates, however, that: "[Tr.] This extrapolation does not produce certain scientific knowledge, but only an aid to understanding the implications for risk management."[319]

3.218 Canada submits to the Panel four studies that are critical of the INSERM report. The studies are by the Royal Society of Canada[320], Dr. Graham W. Gibbs[321], Dr. Jacques Dunnigan[322] and the epidemiologist Michel Camus.[323] Furthermore, certain key conclusions of the INSERM report obviously contradict a study by the French *Académie nationale de médecine*.[324] The critical studies reveal that INSERM studied the health effects of asbestos on the basis of hypothetical exposure situations that bear no relationship whatsoever to actual exposure. INSERM did not have at its disposal any data whatsoever on the number of persons exposed to asbestos in France. It did not sufficiently emphasize the fundamental pathogenic distinction between amphibole fibres and chrysotile fibres. The conclusions of the INSERM report are based on the risks associated with exposure sustained in the context of outdated asbestos applications, i.e., the use of amphiboles or fibre mixtures in brittle materials such as spraying asbestos and heat insulation. Moreover, the methodology of the INSERM report utilizes a linear risk model that assigns, by pure extrapolation, theoretical risks to low-level exposure, even though no epidemiological study to date has detected a higher health risk resulting from low-level exposure. Finally, the INSERM report does not investigate substitute fibres, a problem that the researchers themselves considered to be "inseparable"[325] from the question of whether to ban chrysotile. Canada also notes that the INSERM report was qualified by Claude Allègre, France's Minister for Education, as "mediocre". Mr. Allègre also said that "[Tr.] There is nothing exceptional about the report in terms of scientific rigour, courage or scientific initiative […] The report contains no clear findings and can be used to support any and all arguments."[326]

3.219 According to Canada, the INSERM report is based on hypothetical data[327] and does not study the exposure actually sustained by the French population. Instead, it proceeds to make "the most plausible, though uncertain estimates".[328] The INSERM researchers themselves concluded that "[Tr.] there is currently a great deal of uncertainty about occupational or passive exposure that has existed or

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[319] INSERM report, p. 239.

[320] Royal Society of Canada, *A Review of the INSERM Report on the Health Effects of Exposure to Asbestos*, Ottawa, 1996 [hereinafter "RSC"]. Canada notes that the RSC formed an international committee of independent experts to review the INSERM report. This committee, which was chaired by Dr. F. Kenneth Fare, Ph.D. (Montreal) was composed of the Canadian Michael Brauer, Sc.D. (Harvard, Berkeley), the American Kenny S. Crump, Ph.D. (Montana State), the Briton John M.G. Davis, MA, Sc.D. (Cambridge), FRC. Path., and Enzo Merler, MD (Padua).

[321] M.Sc., Ph.D., LRSC, ROH.: Gibbs, G., *A Review of the Report: "Rapport d'expertise collective INSERM"*, October 1996 [hereinafter "Gibbs"].

[322] Ph.D.: Dunnigan, J., *Commentaire sur le "Rapport d'expertise collective INSERM"*, September 1996 [hereinafter "Dunnigan"].

[323] Ph.D. Camus, M., *L'amiante et les risques pour la santé*, April 1999.

[324] Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Paris, 1996.

[325] INSERM report, p. 428.

[326] Comments reported in *Le Monde*, 18 October 1997, p.13.

[327] Canada notes that, two months before the appearance of the INSERM report, the Académie nationale de médecine considered it crucial that scientific reports on the risks associated with asbestos should be based on real data, not hypothetical data. According to the Académie: "A cautious attitude should undoubtedly always be adopted with regard to the purity of the air inhaled, but speaking or writing on asbestos in general without taking into account the doses or quantities actually present in the air inhaled is at the best a sign of ignorance and at worst an attempt at blackmail. We therefore refer to quantities measured." (WTO translation) (Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Paris, 1996, p. 10).

[328] INSERM report, p. 232.

now exists within the population".[329] In Canada's view, therefore, the INSERM researchers could only have based their conclusions on hypothetical exposure data. These "hypothetical" conclusions concerning the number of deaths attributable to asbestos among an exposed population (for example 10,000) cannot be applied to the French population because the number of persons exposed to asbestos in France, and the rate of exposure, remain unknown.[330] Canada notes that the Royal Society of Canada (RSC) writes that "… the report fails adequately to address the relevance of the available studies to the key present question: are current exposures associated with increased risk?" (underlined in the original).[331] This shortcoming undermines the usefulness of the INSERM report, prompting the RSC to express its concern over the fact that "… the risk characterization is less satisfactory because actual exposure data were not used".[332] The RSC stresses that the hypothetical estimation of exposure inevitably results in an overestimation of the risks actually incurred by the French population.

> "Not only does the failure to look at realistic exposures result in less specific guidance on the actual situation in France, but the assumed exposures are likely to be much greater than those experienced by the French population. […] INSERM's estimates have been based on permissible occupational and environmental levels in France. This methodology is not wrong, provided that it is clearly understood that the predicted deaths are not based on the exposure profile of the French population. The conditions of exposure are hypothetical. […] the report should have emphasized that actual exposures are in all likelihood substantially lower, and so, correspondingly, are the actual risks facing the French public."[333]

3.220 Canada notes that, when calculating ongoing indoor passive environmental exposure, INSERM applied the high exposure level of 0.025 f/ml.[334] For occupational exposure levels, it applied another very high rate, 0.1 f/ml.[335] Moreover, INSERM applied these exposure levels to the risk models applicable to cohorts for whom the exposure levels were between 2 f/ml and 250 f/ml[336], i.e., at levels that are 20 to 10,000 times higher. In its conclusions and recommendations, INSERM stresses the fact that, besides having used hypothetical exposure rates, the number of persons actually exposed to asbestos – the collective risk of the French population – is unknown and has not been the subject of any research. Canada points out that the conclusions presented as the risk per 10,000 persons refer to a population of 10,000 persons actually exposed to the hypothetical – and exaggerated – levels applied by INSERM:

> "The estimates we have furnished correspond to 'individual' risks; we in fact estimated the probability that a person who *might* find himself in a hypothetical situation of exposure to asbestos would develop lung cancer or a mesothelioma because of this (it is indeed an individual risk, even if it is expressed in terms of 'per 10,000'." [italics in the original]."[337] (WTO translation)

3.221 Canada notes that, according to INSERM, "These figures alone do not give an overall estimate of the number of deaths from cancer in France at the present moment attributable to exposure

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[329] *Id.*, p. 423.
[330] *Id.*, p.235, see also pp. 234, 237, 238.
[331] RSC, *A Review of the INSERM Report on the Health Effects of Exposure to Asbestos*, Ottawa, 1996 p.3 of the English text.
[332] *Id.*, p.4 of the English text.
[333] *Id.*, pp.4 and 12 of the English text. Canada indicates that Dr. Gibbs is of the same opinion as the RSC: "In interpreting the risks provided in the report, it is important to recognize that risk estimates given in the report are, in general, *not based* on actual or estimated exposures but on the current or proposed 'legal' limits in France." (Gibbs, p.2).
[334] INSERM report, p. 232. Canada notes that this level is the maximum legal limit in France for indoor passive exposure. For a critique of this approach, see Camus, M., *L'amiante et les risques pour la santé*, April 1999, p.8.
[335] *Id.*
[336] INSERM report, pp.233-38.
[337] *Id.*, pp.428 and 429.

to asbestos" (WTO translation).[338] The report concludes that "it is essential to obtain information on the number of persons exposed to asbestos […] in order to be able to estimate the number of cases of lung cancer and mesothelioma caused by exposure to asbestos […] in the French population ('collective' risk')."[339] (WTO translation). INSERM estimates the number of cancer deaths in 1996 linked to exposure to asbestos at 1,200. It arrives at this number by applying to all of France the results of a study of the population of Glasgow, without analysing the methodology of this study or the rates of exposure to asbestos of this population.[340] Yet INSERM points out that "[Tr.] France began using asbestos later and used less asbestos than other countries, and no doubt proportionately smaller quantities of amphibole-type fibres. Because of these differences, there is no simple way to transpose to France the results of the projections regarding mesotheliomas [and cancers] recently produced for Great Britain".[341] As for the number of mesothelioma deaths, Canada notes that INSERM does not reveal how it arrived at its estimate of 750. Canada also notes that the French Senate and National Assembly[342] and the *Académie nationale de médecine* estimate this number at 600, of which up to 30 per cent are "unrelated to asbestos".[343] Furthermore, according to the *Académie nationale de médecine*, an exposure of 0.025 f/ml for eight hours a day over 60 years would entail a risk of contracting mesothelioma of "one case per million, a figure equivalent to zero in biological mathematics".[344]

3.222 In Canada's view, INSERM's risk estimates do not pay sufficient attention to the crucial distinction between the effects of amphiboles and those of chrysotile. Moreover, the risk estimations presented as being linked to chrysotile exposure are often based on parameters for exposure to amphiboles or amphibole-chrysotile mixtures. According to Canada, it is well known that the pathogenic potential of amphiboles is much greater than that of chrysotile[345] and, even if it did not pay

[338] *Id.*, p.235. See also p.236.

[339] *Id.*, p.429. INSERM also emphasizes that "this information is practically non-existent in our country and it should now be collected so that we can have an overall estimate of the number of persons concerned by the various situations of exposure to asbestos and the risks they are running because of this". (WTO translation)

[340] De Vos Irvine, H. *et al.*, *Asbestos in Lung Cancer in the West of Scotland* (1993) 306 British Medical Journal, 1503. This study is included in Wilkinson, P. *et al.*, *Is Lung Cancer Associated with Asbestos Exposure When There are no Small Opacities on the Chest Radiograph?* (1995) 345 Lancet 1074. INSERM applied the rate of 5.7 per cent of cancers linked to asbestos in Glasgow to the total 21,617 cancer cases in France in 1996 to arrive at 1,200 deaths by cancer linked to asbestos (INSERM report, p.250). According to the authors of the study, De Vos Irvine, H. *et al.:* "A comparison of international cancer registry data shows that the west of Scotland experiences one of the highest incidence rates of lung cancer in the world." (p.503). The RSC makes a point of the lack of scientific rigour on the part of INSERM with regard to this conclusion. It is of the opinion that "INSERM'S estimates of asbestos-related deaths in France in 1996 [were] based on an estimate from the literature specific for Great Britain without critical analysis of the methodology, or establishment that the estimate was applicable to France (RSC, p.3 of the English text; See also Gibbs, p.13).

[341] INSERM report, p.409. In Canada's view, INSERM's error can clearly be seen in the following example. According to INSERM's conclusions, there would be 543.5 cancers in a population of 10,000 people subject to an occupational exposure of 0.1 f/ml for 40 hours a week over 45 years. However, only 21.5 of these cancers would be linked to exposure to asbestos (INSERM report, p.234). Thus, according to INSERM's data, a little less than 4 per cent of the cancer deaths (21.5/543.5 = 4 per cent) of a population highly exposed to asbestos (0.1 f/ml for 40 hours a week over 45 years) would be linked to asbestos. Why then did INSERM apply the 5.7 per cent from the Glasgow study to the entire French population, which was not subject to exposure of 0.1 f/ml for 40 hours a week over 45 years? Canada notes that, even if one accepts the 4 per cent rate at which INSERM arrived, the number of cancer deaths in 1996 attributable to past exposure to asbestos would be 864 (4 per cent x 21,617), not 1,200.

[342] Le Déaut, J.-Y. et Revol, H., *L'amiante dans l'environnement de l'homme: ses conséquences et son avenir*, Office parlementaire d'évaluation des choix scientifiques et technologiques, National Assembly no. 329 / Sénat no. 41, 1997, p.29.

[343] Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4., pp.8 and 9.

[344] *Id.*, p 9.

[345] Dunnigan, p. 4.

sufficient attention to this fact, the INSERM report nonetheless recognizes the much higher mesothelioma risk associated with exposure to amphiboles, compared to chrysotile exposure.[346] In this regard, Dr. Gibbs remarks that "when they [INSERM] estimate the risk of mesothelioma, they fail to take into account the differences in risk associated with these various fibre types."[347] He continues: "The INSERM report grossly overestimates the mesothelioma risks due to exposure to 'commercial chrysotile' only. The hypothetical risks in the report would be more accurately characterized as those associated with amphibole or mixed commercial amphibole-chrysotile exposures."[348] The comments of the RSC are similar:

> "The Panel *believes* that the risk of mesothelioma from chrysotile exposure is likely overestimated, since it is based on a single study that involved a small amount of crocidolite in addition to chrysotile, and ignored several studies of pure chrysotile exposure, all of which indicate a smaller mesothelioma risk than calculated by INSERM."[349] [italics in the original]

3.223 Canada indicates that, in addition to mentioning the use of risk estimation parameters associated with amphiboles or mixed fibres, Dr. Gibbs points out that INSERM applied the parameters deriving from the exceptionally high risk levels of the textile industry sector, as opposed to the risks posed by the chrysotile-cement sector, which accounted for more than 90 per cent of the modern uses of chrysotile in France prior to the adoption of the Decree:

> "The INSERM authors have chosen to use as their factor for estimating lung cancer risk, a value reflecting risks in the textile industry sector or mixed asbestos fibre industries. The use of such a factor may be reasonable if INSERM reports that the factor reflects mixed exposure or is based on the odd man out – the high textile risk. The INSERM report is misleading in inferring that these are the risks associated with commercial chrysotile. They do not reflect the values which are relevant to the chrysotile friction industry, mining and milling industries or chrysotile asbestos-cement industry."[350]

3.224 Canada states that INSERM examined outdated exposure, but did not consider any risk study based on current chrysotile exposure. Under the misleading sub-title "3.1.1. Estimation of the risks associated with exposure to asbestos" (WTO translation), the report claims that 1,950 deaths were linked to exposure to asbestos in 1996. According to Canada, these deaths are in no way attributable to the current circumstances of exposure to chrysotile. Considering the latency period of 15 to 50 years in the case of mesothelioma and 15 to 30 years in the case of cancers[351], the 1,950 deaths are the result of exposure caused by the outdated practices of the 1950s and 1960s. Moreover, Canada considers that it is very likely that these exposures were to amphibole-chrysotile mixtures and pure amphiboles. Important reservations are in order with regard to this conclusion of INSERM. The RSC states that:

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[346] INSERM report, p.412. The Académie nationale de médecine confirms that amphiboles are "currently considered to be the most dangerous" and that chrysotile is "considered as not very dangerous because it is broken down spontaneously in the human organism […] Chrysotile is a form of asbestos that has only caused mesothelioma in cases of massive and prolonged exposure. This can be explained by its solubility in the organism." (WTO translation). (Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4, p.2).

[347] Gibbs, p. 6. The Royal Society of Canada adds that "the differences between chrysotile and amphiboles may have been underestimated by INSERM, particularly for mesothelioma". (RSC, p.6 of the English text).

[348] Gibbs, p. 8.

[349] RSC, p.12 of the English text.

[350] Gibbs, p.9. See also Camus, M., *L'amiante et les risques pour la santé*, April 1999, p.8.

[351] Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no.4, p.4.

> "the INSERM estimates of 750 deaths in France from mesothelioma and 1,200 from lung cancer in 1996 refer to deaths in 1996 but from occupational exposures at a much earlier date; they are not deaths due to exposures in 1996. Although INSERM is well aware of this, their report is not explicit enough." [underlined in the original][352]

3.225 Canada notes that, according to INSERM, "the immense majority of these deaths can indisputably be explained by circumstances of occupational or para-occupational origin"[353], which is to say, exposure that is neither environmental exposure nor exposure to asbestos indoors[354], and which, according to INSERM itself, poses no risk whatsoever according to the epidemiological data.[355] Canada notes that, two months prior to the publication of the INSERM report, the French Académie nationale de médecine published a study urging calm in the face of the widespread fears incited by exaggerated media coverage of cancer and mesothelioma cases. The Académie resolutely stated that the extremely low current levels of exposure are not a source of health risks.[356] Canada is surprised that INSERM paid no heed to this observation, which was well-known in French scientific circles at the time.

3.226 Canada also points out that INSERM did not investigate the case of intermittent exposure to modern chrysotile applications. According to INSERM:

> "It is clearly established that the highest risks of mesothelioma are now in occupations where conditions of exposure are intermittent … In the 1960s, the main professions affected were the production and use of asbestos […] In contrast, in the 1980s and 1990s, the highest risks concerned work that involved handling materials [i.e. friable materials] containing asbestos."[357] (WTO translation)

3.227 Canada points out that the INSERM report does not look into the question of exposure to chrysotile fibres during intermittent operations on structures made of chrysotile-cement, such as sanding, sawing and drilling. INSERM could only have observed, in accordance with existing studies, that the emission levels in such cases are extremely low or even non-existent.[358] Moreover, structures made of chrysotile-cement, by their nature, require very little maintenance, and when they do, the fibre emissions can be minimized by observing simple procedures and safety precautions. Dr. Gibbs points out that the risks identified by INSERM do not correspond to the values applicable to the

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[352] RSC, pp.6 and 9 of the English text. According to J. Peto, expressing his opinion of the comparison between present and past exposure rates: "It might therefore be thought that none of the data that have been collected permit any truly scientific prediction of the likely effects of the limits to exposure that have now been set. This may indeed be the case." (Doll, R. and Peto, J., *Asbestos: Effects on Health of Exposure to Asbestos,* Her Majesty's Stationery Office, U.K., 1985, p. 44).

[353] INSERM report, p.420. See also RSC, p.9 of the English text.

[354] As emphasized by the RSC on p.9 of the English text.

[355] According to INSERM: "At present there are no solid direct epidemiological data that enable an assessment to be made of the health effects linked to urban passive environmental or building exposures. […] Even without recalling that such studies would have little chance of directly noting a health effect, if it is low, it has to be recognized that we do not have any reliable epidemiological data." (WTO translation) (INSERM report, pp.404 and 405).

[356] Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4, pp.5 and 9.

[357] INSERM report, pp.424 and 400.

[358] See in particular the French study of the *Laboratoire d'hygiène et de contrôle des fibres minérales*: Baujon et Authier, *Détermination des concentrations de fibres d'amiante dans l'atmoshpère lors de la pose sur chantier de plaques ondulées et d'ardoises en amiante-ciment, Laboratoire d'hygiène et de contrôle des fibres minérales*, Paris, July 1993. Canada notes that, according to this study, the use of self-boring screws during the process of installing corrugated panels gives rise to an emission of 0.022 f/ml. Moreover, the installation of roof tiles can give rise to emissions of 0.007 f/ml, depending on the method used. These peak exposure levels, which are well below the exposure standards in effect in France, can be further reduced by dampening the materials. Furthermore, workers can be protected from inhaling the fibres simply by wearing a mask.

friction materials industry, nor to the mining, machining or asbestos-cement industries.[359] Canada also refers to the conclusions of the *Académie nationale de médecine*, which determined that: "[Tr.] no illness due to asbestos has yet been formally proven in France outside an occupational type of exposure".[360] These conclusions run counter to those of INSERM and underscore the growing scepticism with regard to the scientific value of the arguments presented as justification for the banning of chrysotile. According to Canada, these doubts, in fact, originated in the French scientific community.[361]

3.228 Canada states that, in its risk assessment, INSERM used a linear model that over-estimated the risks of low exposure. This model offers a method of extrapolating the risk of low exposure to chrysotile from the risk of high exposure. Canada points out that the epidemiological data, however, indicate no detectable risk whatsoever deriving from low exposure, as INSERM itself acknowledged in the case of environmental exposure and indoors exposure to asbestos.[362] INSERM admits that to date, it does not possess "[Tr.] direct and unequivocal scientific expertise on the value of the risk of lung cancer and mesothelioma that may exist among humans exposed to 1f/ml or lower levels".[363] The estimates that INSERM arrives at "[Tr.] have to be considered as *orders of* magnitude given that there is no definite knowledge regarding the risk of cancer at resulting from exposure to levels below 1 f/ml [italics in the original]."[364] INSERM saw its role as being " [Tr.] to provide scientifically verified elements of knowledge concerning the health risks linked to exposure to asbestos, but risk management is not its responsibility".[365] Nonetheless, INSERM performs extrapolations for low exposure even though "[Tr.] This extrapolation does not produce certain scientific knowledge, but only an aid to understanding the implications for risk management."[366] Canada considers that the INSERM report, however, as a scientific evaluation of the risks, should be more than "an aid to understanding" based on "plausible uncertain estimates"[367] when it leads to the adoption of a Decree instituting a total ban such as that adopted by France.

3.229 Canada notes that Dr. Dunnigan remarks that "the authors of the report themselves acknowledge that the methodological basis used to generate risk data at low levels of exposure to chrysotile asbestos cannot provide 'certain scientific knowledge'."[368] He considers that:

> "the INSERM report alone cannot serve as a sufficiently credible and comprehensive basis on which to conclude that the only way of protecting the health of workers and of the general public is purely and simply to ban all varieties of asbestos and all its uses."[369] (WTO translation)

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[359] Gibbs, p.10.

[360] Académie nationale de Médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol. 180, no. 4, p. 4.

[361] Canada notes that Dr. Jacques Dunnigan characterizes the limited usefulness of the INSERM report as follows: "If it was necessary to ban certain uses of chrysotile (for example, friable materials), this is not the case for other uses of asbestos, in particular chrysotile-cement, in which the fibres are bound in such a way that there is practically no risk of emissions at unacceptable levels, by using known and proven control techniques. We believe that monitoring of hygiene and observance of the standard are a better guarantee of protection than blind use of substitute fibres whose long-term effects are not sufficiently known, as is in fact acknowledged by the authors of the INSERM report." (WTO translation) (Dunnigan**,** p.7).

[362] INSERM report, pp.404 and 405.

[363] *Id.*, 226.

[364] *Id.*, pp.234, 235, 237 and 238.

[365] *Id.*, p.376.

[366] *Id.*, p 239 and 414.

[367] *Id., p.*232.

[368] Dunnigan, p.7. Canada notes that INSERM acknowledges that "the level of occupational exposure envisaged is 10 to several hundred times lower than that existing in the cohorts on which the risk models were elaborated". (WTO translation) (INSERM report, p.233).

[369] Dunnigan, p.7.

3.230 Canada adds that, citing studies in support of his view, Dr. Gibbs also notes the existence of exposure levels below which the health risks are undetectable.[370] In line with the other criticism, the RSC notes the error in the conclusions drawn from the extrapolations of low-exposure risks from high-exposure risk data: "the transfer of risk coefficients calculated from high exposure settings […] involves possible errors".[371] Canada notes that the INSERM conclusions on the risks associated with low exposure are in sharp contradiction to the most recent scientific publications.

3.231 Canada indicates that one of the consequences of the Decree adopted on the heels of the INSERM report has been the replacement of chrysotile fibre by substitute fibre. The ban on chrysotile as the way of managing the risks cannot therefore be viewed in isolation. In this respect, INSERM reveals that the Decree banning asbestos could have unsuspected consequences:

> "It must be noted that the group of experts was unable or unwilling to consider some key questions relating to the problem of risks associated with human exposure to fibres. Because of the short time frame, the health risks associated with exposure to substitute fibres were not addressed […] The problem [the ban on asbestos] is, however, inextricably linked to the choice of substitute fibres […] The group of experts considers that it does not have sufficient information to decide on the possibility of replacing asbestos by a substitute product that is completely without risk in all the situations in question."[372] (WTO translation)

Canada indicates that, after having reviewed the INSERM report, all the experts cited above concluded that the report is not supported by real, current data relative to the exposure of the French population to the modern uses of chrysotile. This report cannot be seen as a credible, scientifically grounded basis for justifying a measure as excessive as the total ban on chrysotile and all its uses.

3.232 Canada points out that, following INSERM's recommendation on further studies on risks associated with substitute fibres, INSERM was commissioned to prepare another report, this time on the health risks of substitute fibres. The Executive Summary of this report was made public in June 1998, a surprising 18 months after the ban on asbestos took effect. As Canada notes[373], the Executive Summary points to the scarcity of data on the substitute fibres and the novelty of their use, stating that little is known about their effects on human health. It also states that, had experiments on asbestos been conducted with exposure levels similar to the ones used for testing substitute fibres, it is likely that the experiments on asbestos would have shown that asbestos poses little, if any, significant risk. The full INSERM report on substitute fibres has still not been published, one year after the release of its Executive Summary.[374] Canada states that, when the WTO consultations were held in Geneva on 8 July 1998, the EC assured the Canadian delegation that the publication of the full report was imminent. In Canada's view, it increasingly appears that France is more concerned with banning chrysotile than informing the French population of the danger of substitute fibres, the use of which is effectively imposed because of the ban on chrysotile. Canada considers that the telling criticisms of the INSERM report by France's Minister for Education, Mr. Claude Allègre, by the French *Académie nationale de médecine*, the Royal Society of Canada, and internationally renowned scientific experts, cast considerable doubt on whether the INSERM report constitutes a credible basis for so extreme a measure as a ban on a hitherto widely used product.

3.233 The **European Communities** emphasize that INSERM ranks among the most important biological and medical research institutes in the world. It comprises some 200 research laboratories

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[370] Gibbs, p.10.

[371] RSC, p.6 of the English text. The RSC also points to the potential for error associated with the integration of different measurement techniques (p.6 of the English text). Regarding the evaluation of measurement techniques, see Camus, M., *L'amiante et les risques pour la santé*, April 1999, p.4.

[372] INSERM report, pp.376 and 428.

[373] See paras.3.174 *et seq.* above.

[374] INSERM report entitled *Effets sur la santé des fibres de substitution à l'amiante*, published in November 1999

employing around 10,000 researchers and covers all fields of biomedical research and all relevant scientific disciplines. It is a government research body, financed by the French State and placed under the dual responsibility of the Ministry of Research and the Ministry of Health, and it is totally independent of economic or other interests linked to the asbestos and substitute fibres industries. In the EC's view, INSERM thus had all the competence and independence required to give a scientific opinion on the threat posed by asbestos to human health. INSERM's report was drawn up by 11 scientific experts from various disciplines, who also gave hearings to several other experts. As its name suggests[375], the report was commissioned by the authorities to provide information on the risks connected with the main types of exposure to asbestos. INSERM's mandate was not to make recommendations on how to combat the harmful effects of asbestos, but to make available the scientific knowledge necessary for any decision to be taken. The INSERM report was based on an analysis of numerous international scientific research projects on the effects of asbestos. The EC emphasize that most of its findings, including all those on which France based its decisions, have been approved by the international scientific community, including the Panel of the Royal Society of Canada, which the Canadian Government commissioned to analyse the contents of the report.

3.234 The EC point out that the INSERM report's principal conclusions, especially those on the carcinogenic nature of chrysotile, the absence of a harmlessness threshold, the importance of intermittent exposure among end-users of asbestos and the very large number of workers affected by this type of exposure, have since been confirmed by recent studies and by international bodies such as the WHO. The first of its kind in France on the subject of asbestos, the INSERM report comprises a critical and well-argued review of the international scientific literature. The methodology and scope of this work (12 chapters of discussion, supported by 1,200 bibliographical references and followed by a summary of some 60 pages) radically distinguish it from any monograph or fragmentary study advocating one or other of the theories which have contributed to the debate. The report itemizes the main effects which exposure to asbestos is known to have on human health: asbestosis, benign pleural damage, bronchial cancer and mesothelioma. Even though 166 new cases were recognized as occupational diseases in France in 1995, asbestosis is a disease whose most serious forms have become rare in industrialized countries as a result of the reduction in levels of exposure. For this reason, the Executive Summary focuses on the risk of bronchial cancer and mesothelioma.

3.235 The EC note that the authors of the report drew the following main conclusions:

(a) Most cases of pleural mesothelioma that have emerged to date in industrialized countries are of occupational or para-occupational origin. Among the occupations affected, the cases which now occur involve the handling of asbestos-containing materials installed in buildings or equipment. The diverse occupations which carry a high risk of mesothelioma include welders, dockers, laboratory technicians, painters and decorators, jewellers, metal workers, car mechanics, railway workers, workers in thermal power stations, etc. If the number of deaths caused by mesothelioma is compared with the number of people in each occupation, it is found that the jobs which are proportionally most affected are sheet-metal workers (including shipyard workers) and industrial coachbuilders; then come plumbers, carpenters and electricians. The building trades alone currently account for one quarter of all deaths from mesothelioma. Since the 1950s and 1960s, the number of cases of mesothelioma has been growing by 5-10 per cent each year, depending on the country. In France the growth rate has been 25 per cent every three years; the rate of seven cases per million inhabitants per year between 1979 and 1981 reached 16 cases per million inhabitants per year between 1991 and 1993. The number of deaths caused by asbestos in France in 1996 is estimated by INSERM at some 1,950 (750 cases of mesothelioma and 1,200 cases of lung cancer). The risks associated

[375] INSERM, *Effets sur la santé des principaux types d'exposition à l'amiante*, INSERM joint report, Paris, INSERM publications, 1997.

with exposure, which may be occupational or para-occupational (domestic cleaning of work-clothes worn by workers handling asbestos) or environmental (geological or industrial in origin), have been incontestably proved. As regards the effects on health of "passive" exposure in buildings, a risk cannot be ruled out even though the epidemiological data are not sufficient to demonstrate what that risk is. As to whether lung cancer can be causally attributed to occupational exposure to asbestos, the group of experts concluded, on the basis of an analysis of available data, that such cancer can develop where no prior fibrosis is present. As regards the role of tobacco, the group of experts pointed out that the proportion of cases of lung cancer attributable to asbestos is identical in smokers and non-smokers. In other words, the fact that a worker who has developed lung cancer smokes does not mean that the cancer is not due to asbestos. It follows that, where an individual has been exposed to asbestos and has developed lung cancer, the fact that the person concerned smokes gives no indication as to the probability of asbestos having had a role in causing the cancer.[376] This information, fundamental to the recognition of the occupational origin of diseases, provided justification for the arrangements implemented under the December 1995 plan.

(b) The group of experts considers that the carcinogenic effects of asbestos fibres cannot be differentiated according to whether the fibres are of the chrysotile or amphibole type. It found that the carcinogenic effects of asbestos fibres marketed under the designation "chrysotile" were just as serious as the effects of fibres of the amphibole type, as far as lung cancer was concerned. As regards the risk of mesothelioma, the effect of chrysotile fibres is incontestable, even though less serious than that of certain amphiboles. The morphological characteristics rather than the geological origin of the fibres seem to be the decisive factors, with the longest fibres being the most carcinogenic. In order to estimate the risk of low levels of exposure (<0.1 fibre/cm^3), INSERM's experts extrapolated to low levels, on a linear basis and without a threshold, the risks observed at high levels of exposure. This hypothesis (i.e. that there is a linear relationship between the risk and the level of exposure and that there is no threshold) is among the theories currently accepted on the subject of carcinogens and is, for example, included in the ILO encyclopaedia. It is therefore the most plausible hypothesis. The estimate is said to be "uncertain" because it is not based on observations which can validate or invalidate it beyond any doubt. INSERM's expert group estimated, on this basis and in line with knowledge to date, what additional risk of cancer would arise over a lifetime from continuous exposure to asbestos in various reference situations, for example: (i) for 10,000 men aged between 20 and 65 who are subject to continuous occupational exposure (1,920 hours) corresponding to 0.1 f/ml or cm^3, the risk is of 30 additional deaths; (ii) for 10,000 people (half of them men, half women) who are subject to continuous passive exposure during their school years (between the ages of 5 and 20) and during their working lives (1,920 hours between the ages of 20 and 65) corresponding to 0.025 f/ml (or 25 fibres per litre), the risk is of nine additional deaths.

3.236 The EC point out that any doubts with regard to the carcinogenicity of chrysotile asbestos have been removed by the joint report: chrysotile is carcinogenic, just as much as amphiboles when it comes to lung cancer but less than amphiboles when it comes to mesothelioma (ratio of 1 to 3 but same order of magnitude). As regards mesothelioma, this information has been largely confirmed by the study published by Camus *et al.*[377] on cancer mortality among women living in close proximity to chrysotile asbestos mines in Quebec. This study shows a net excess of mesothelioma cases (the risk is

[376] Document on the link between tobacco and asbestos.

[377] Camus M. *et al.*, *Non-occupational Exposure to Chrysotile Asbestos and the Risk of Lung Cancer*, New England Journal of Medicine, 1998, vol.338, no. 22: pp.1566-71.

at least seven times higher than among women living elsewhere in Quebec). Moreover, low doses do have an effect. The limit of 0.1 f/ml or cm^3 therefore corresponds to a not negligible risk of 30 extra cancer cases per 10,000 people exposed. The values above which work must be carried out to protect populations (25 fibres per litre) carry a theoretical residual risk of nine extra cases of cancer per 10,000 people exposed. The EC indicate that this figure should be compared with the level of risk which is usually recognized as applying to the population in general, namely one extra case of cancer per 1 million people. The risk population is large. For 1996, the report gave an estimate of 1,950 deaths due to asbestos (750 cases of mesothelioma and 1,200 cases of lung cancer). The vast majority of mesothelioma cases are of occupational or para-occupational origin. However, a new aspect which emerged during the period 1980-1990 was that it was no longer those working in the asbestos industry (i.e. asbestos production and processing), who were most at risk. The highest risk is now observed among people handling asbestos-containing materials (e.g. sheet-metal workers, industrial coachbuilders, plumbers, carpenters, electricians, heating engineers and cable specialists). The EC emphasize that the population concerned comprises all finishing trades in the construction industry, as well as a good number of other occupations, in other words, several million people, of whom (despite a low individual risk) a large number will contract mesothelioma. The French study recently published by INSERM[378] shows that around 25 per cent of men born between 1930 and 1939 have been exposed to asbestos during their working life.

3.237 The EC consider that procedures for controlled use cannot be implemented effectively when hundreds of thousands of people are exposed daily in sectors with little supervision as regards health and safety, such as the building industry, which accounts for at least 25 per cent of mesothelioma cases. The study by Y. Iwatsubo[379] confirms that in France most cases of mesothelioma occur among servicing and maintenance workers. The EC therefore consider that the principle of "controlled use" cannot be applied to the diffuse risks affecting a range of very varied trades practised in extremely diverse situations and involving in particular servicing and maintenance work, where it is not possible to implement rules on "safe use". The EC point out that Canada itself acknowledges the limits of controlled use since it recognizes that certain applications have to be prohibited where exposure cannot be controlled.

3.238 The EC note that "safe" use is not a guarantee even when it is practised. Safe use is contested in two quite official publications:

(a) A study conducted by the Quebec Workers' Health and Safety Commission (CSTT). This study shows that the risk of mesothelioma increased steadily in Canada between 1967 and 1990, principally among servicing and maintenance workers. Of the 120 cases of mesothelioma identified in the study, 49 were miners and mill workers, 50 were workers in the asbestos industry and 21 were servicing and maintenance workers. Of the 25 per cent of these cases which involved short exposure, the most affected group were the servicing and maintenance workers. The study shows that the occurrence of mesothelioma is indeed due to chrysotile asbestos and that the incidence of the disease is growing more rapidly in the servicing and maintenance sector. This shows that, even in Canada, which specializes in safe use, the efficacy of the method remains to be proved. The EC note that, despite the existence of this CSTT study, the Canadian party declared during the consultation meeting held on 8 July 1998 that it did not have any study at its disposal which covered the servicing and maintenance sector.[380]

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[378] Goldberg M. *et al., Past Occupational Exposure to Asbestos among Men in France,* Scandinavian Journal of Work and Environmental Health, 1999 (in press).

[379] Iwatsubo, Y. *et al., Pleural Mesothelioma: Dose-Response Relation at Low Levels of Asbestos Exposure in a French Population-Based Case Control Study*, American Journal of Epidemiology, 1998.

[380] Bégin, R. *et al., Work-Related Mesothelioma in Quebec, 1967-1990,* American Journal of Industrial Medicine, vol.22, 1992, pp.531-542.

(b) an HSE study[381], mentioned in the annex to the report produced for Canada's Royal Academy in 1996 following the publication of the INSERM report. It shows that despite strictly controlled use - it focuses exclusively on production workers -, there was still a 1.28 per cent excess of mesothelioma cases, as opposed to 4.61 per cent among people who had worked prior to 1969, when legislation was introduced in Great Britain. From this it can be concluded that controlled use does not prevent deaths from mesothelioma, even in specific sectors of industry employing limited numbers which are easy to regulate and control.

3.239 The EC point out that the confirmed carcinogenicity of chrysotile and the impossibility of controlling the risk in all situations prompted the French Government to stop the risk spreading by applying the principle laid down at European Union level for carcinogenic risks and also recommended by the WHO[382] and the ILO[383]: replacement by a less dangerous product where technically possible. The European Union, in its general Directive on the health and safety of workers, lays down the principle that a dangerous agent or process should be replaced by a safe or a less dangerous agent or process where one exists. As regards cancer risks, the Community Directive on carcinogens[384] contains the same principle in that it expressly provides for the replacement of a carcinogen by a less dangerous substance where this is technically possible. The WHO press release of 26 July 1996 states that safe substitutes should be used to replace chrysotile whenever this is possible. Moreover, in a "criterion document" dating from September 1998, the WHO states that the risk is probably higher among construction workers and perhaps also among other user groups. The ILO Encyclopaedia of occupational health and safety states that the most effective means of prevention is to avoid the use at the workplace of substances which are recognized as causing cancer in humans.

3.240 The EC assert that the INSERM report thus confirmed the necessity of the measures taken in 1996 in accordance with the guidelines adopted in July 1995. It also provided additional information, on the basis of which the French Government took a coherent set of further measures. The manufacture, import, export and sale of asbestos-containing products, including asbestos-cement, were prohibited with effect from 1 January 1997. This decision was enacted in the form of Decree No.96-1133 of 24 December 1996 laying down a general prohibition on asbestos to apply as of 1 January 1997. Asbestos-cement products were banned totally. A few very limited and strictly regulated exceptions are allowed for industrial uses where no substitute product would ensure the safety of workers and users. The purpose of the ban is to stop the spread of the risk posed by the manufacture and marketing of asbestos-containing products, in other words to prevent the "inflow". The EC emphasize that, contrary to the impression given by Canada, there was never any intention of promoting the systematic removal of asbestos already present. The prohibition measure is based on reasoning similar to that followed by Canada when it banned amphiboles[385]: the aim is to replace a dangerous agent by agents considered less dangerous on the basis of available scientific knowledge. The measure was taken at a time when the *Groupe scientifique pour la surveillance des atmosphères de travail* (G2SAT), working under the Senior Council for the Prevention of Occupational Risks, had already produced a report setting out the hierarchy of the risks from the most suspect replacement fibres (mineral wools and ceramic fibres). Following the prohibition of asbestos, a redundancy programme was needed to assist companies forced to reduce their staff as a result of ceasing to

[381] Hutchings, S. *et al., Asbestos-Related Diseases*, Occupational Health Decennial Supplement, London, Health and Safety Executive, 1996, pp.127-152.

[382] *Chrysotile Asbestos evaluated by Health Experts*, Press Release 51 of 26 July 1996, WHO.

[383] *Encyclopedia of Occupational Health and Safety*, 4th edition 1998, ILO, Geneva (Chapter 2 by P. Boffeta, pp.2 and 3). This concept has been in the Encyclopedia since the 1983 version.

[384] Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work.

[385] See para.3.54 above.

manufacture asbestos-based products. Three firms were affected: of a total of 1,370 employees, 490 found themselves surplus to requirements but 400 of them qualified for early retirement. One establishment employing 126 people was closed.

3.241 The EC indicate that the authorized exposure threshold, applicable to the manufacture of products containing chrysotile, was brought down to 100 fibres per litre (as opposed to 300, the limit which was originally to apply until 1 January 1998). Since 1994, the limit for occupational exposure in the United States has been set by the Occupational Safety and Health Administration at 0.1 fibre/cm^3 (or ml). France adopted the same value in 1996 since it was the lowest limit value obtained by phase-contrast optical microscopy. A lower value would have required the replacement of all existing measuring equipment.[386] This provision was designed to reduce further exposure to the inhalation of asbestos dust in manufacturing or processing plants which qualified for an exemption.

3.242 The EC explain that a certification procedure by an accredited organization was introduced at the beginning of 1997 for firms called upon to remove or to contain asbestos. This procedure makes it possible to verify the quality of the work carried out and the quality of the measures taken to protect the health of the workers. The certificate is issued following a study carried out within the company to investigate working methods, the training provided for managers and workers, and the equipment available; the study is followed by an on-site audit to assess the quality of actual practice. Since the summer of 1997, companies have only been allowed to carry out the removal of "friable" asbestos (such as flocked asbestos or lagging) if they possess a certificate qualifying them to do so. The aim of this measure is to tighten up the management of the serious risks involved in asbestos removal (especially removal of flocked asbestos). The surveillance measures applicable to flocked asbestos and lagging have been extended to false ceilings. The EC emphasize that at no time was it planned, as in the United States, to call for the systematic removal of all asbestos. On the contrary, information was widely circulated stating that a higher risk could be created if asbestos were removed too quickly or in the wrong circumstances.

3.243 The EC point out that technological and scientific monitoring was stepped up. Two measures were adopted: (i) epidemiological monitoring of mesothelioma cases was introduced, with the assistance of INSERM, in order to ascertain the conditions in which tumours appear and to measure the actual risks of exposure; and (ii) INSERM was asked to produce a joint experts' report on the risks linked to the fibres used as substitutes for asbestos. The EC note that, in any event, the use of replacement products classed as dangerous is subject to legislation on chemical hazards (obligation to conduct risk assessment and protect workers, recommended limit values, etc.). If the replacement products are classed as carcinogens, the rules are even stricter and the principle of replacement by a less dangerous product where technically possible applies.

C. LEGAL ARGUMENTS

3.244 The **European Communities** claim that, according to the general procedural rule applicable to the settlement of disputes, first spelled out by the Appellate Body in its report on *United States – Measure affecting Imports of Woven Wool Shirts and Blouses from India*[387], and since restated on several occasions[388], it is for the complaining party to establish inconsistency with a provision of a WTO Agreement before the burden of proving consistency with that provision shifts to the defending party. In this instance, Canada has not produced any convincing evidence to show that the contested measure infringes any of the provisions invoked. In particular, Canada has not produced any evidence

[386] The EC note that the average concentration of asbestos fibres in the air inhaled by workers is measured over eight hours.

[387] Report adopted on 23 May 1997, WT/DS33/AB/R, p.14 of the English text.

[388] See in particular *EC Measures concerning Meat and Meat Products (Hormones)*, Report of the Appellate Body, WT/DS26/DS48/AB/R, adopted on 13 February 1998, para.104.

that so-called "safe" use offers a feasible and reliable way of protecting the health of all those affected.

1. Agreement on Technical Barriers to Trade ("TBT" Agreement)

(a) Applicability of the TBT Agreement

3.245 **Canada** contends that the main objective of the TBT Agreement is to prevent technical regulations and standards from creating unnecessary barriers to international trade. Canada also recognizes the right of Members to take the necessary measures to ensure the protection of people's health and lives. According to Canada, the Decree is subject to the disciplines of the TBT Agreement and is incompatible with its Article 2.2, 2.4, 2.8 and 2.1. More specifically, the Decree is an unnecessary barrier to trade. It is neither based on existing international standards nor on the performance of asbestos fibres and products containing such fibres. Finally, the Decree prevents these products being imported into the French market and is discriminatory in the domestic market with respect to these same imported products.

3.246 Canada contends that the TBT Agreement applies to the Decree because it is a "technical regulation" within the meaning of Annex 1 to the TBT Agreement. The Decree is a technical regulation because it considers all asbestos fibres and all materials, products or devices that contain such fibres, with the exception of four, as products that are supposed to pose risks for people's health and safety. The Decree prohibits all chrysotile products for which there is a substitute that represents "a lesser occupational health risk than chrysotile fibre" and which, for the purposes of the end-use, gives "technical guarantees of safety" equivalent to the guarantees for chrysotile fibre. More specifically, the Decree is a technical regulation because it contains several aspects of the above definition. It is a document that sets forth a characteristic of a product, a process and a production method for a product, and administrative provisions applicable to a product. The document also deals with labelling requirements. Moreover, compliance with the contents of the document is mandatory.

3.247 According to Canada, the ordinary meaning of the word document is "anything … written … relied upon to record or prove something".[389] The Decree contested is something written, i.e. a general administrative instrument issued by the Executive and designed to make the public aware of the Government's decision to consider unacceptable any risk of exposure to all varieties of asbestos. The Decree was issued by the French Prime Minister. It was published in the Official Journal of the French Republic. It is therefore a document, in accordance with the definition. The ordinary meaning of the word "characteristic" is "that which constitutes a recognizable distinctive feature".[390] The Decree describes a recognizable distinctive feature of the products. In fact, in accordance with its purpose, which is to ban asbestos totally, the main provisions of the Decree are designed to prohibit asbestos fibre, regardless of whether it is amphibole fibre or chrysotile fibre, in the manufacturing and processing of materials, products and devices that are placed on the French market. The characteristic of these materials, products and devices, as laid down in the Decree, is the absence of asbestos fibres. The Decree refers in particular to the processing of all varieties of asbestos fibres, whether or not included in materials or products. By so doing, it imposes restrictions on the processes and production methods related to asbestos fibres, including chrysotile fibres. On an exceptional and temporary basis, chrysotile fibre is permitted in the manufacturing and processing of four products, if there is no supposedly less harmful substitute fibre. Moreover, the Decree stipulates that these manufacturing and processing activities are subject to the standards governing exposure to asbestos dust in places of business.[391] With respect to the aspects in the second part of the definition, Canada

[389] *Dictionnaire Robert, (Robert* French Dictionary*),* 1993 edition.
[390] *Id.*
[391] Article 4 of the Decree. This incorporates and refers back to Decree No.96-97 of 7 February 1996 concerning the protection of the population against the health risks associated with exposure to asbestos in buildings.

points out that the Decree includes administrative provisions applicable to products which, exceptionally, contain chrysotile fibre. In Article 3, the Decree provides for a sophisticated declaration mechanism for the purpose of obtaining an exemption from the ban on asbestos.[392] The Decree also deals with the labelling requirements for a product. It sets out rules for labelling chrysotile-containing products that are covered by a temporary exemption from the ban.[393] Finally, with respect to the mandatory aspect of the document, it is prescribed that all the above provisions of the Decree are binding. Compliance with the characteristics of the products and their related processes and production methods, as well as with the applicable administrative formalities, is mandatory. Article 5 provides for the penalties applicable in the event of a breach.

3.248 Canada claims that the fact that the Decree qualifies as a technical regulation under the TBT Agreement is confirmed in France's notification to the Committee on Technical Barriers to Trade. France gave notice of the measure it took pursuant to Article 10.6 of the TBT Agreement on 21 February 1997.[394] It also recognized the applicability of the TBT Agreement in the notification document. According to Canada, the EC also recognized the applicability of the TBT Agreement in the justification given pursuant to Article 2.2 thereof.[395] They maintained that the Decree was not more trade-restrictive than was necessary in order to fulfil legitimate objectives, i.e. the protection of human health and safety, taking account of the risks non-fulfilment would create. Finally, at the consultations on 8 July 1998, in his opening statement, the representative of the EC conceded the applicability of the TBT Agreement to the French measure. The relevant passage is as follows:

> "The only relevant provisions therefore seem to be those of the TBT Agreement. It is for that reason, indeed that the EC notified the French measures as technical regulations under the TBT Agreement."[396]

3.249 Canada concludes that, by describing the characteristics of the products, by specifying the related processes and production methods, by setting up a declaration mechanism for the purpose of obtaining exemptions from the ban on asbestos, by the labelling provisions for chrysotile-containing products covered by an exemption, as well as by its mandatory nature, the Decree banning asbestos falls within the meaning of "technical regulation" under Article 1 of Annex 1 to the TBT Agreement. According to Canada, the EC themselves recognized the applicability of the TBT Agreement in official documents to the WTO and during the consultations which preceded the establishment of the Panel.

3.250 The **European Communities** maintain that the Agreement on Technical Barriers to Trade (TBT) does not apply to the Decree. Even if the Panel were to consider that the TBT Agreement is applicable, the EC maintain that the Decree is not incompatible with the provisions of the said Agreement.

3.251 The EC claim that, contrary to Canada's argument, the Decree cannot be construed as a "technical regulation" within the meaning of the TBT Agreement, which does not cover general prohibitions on the use of a product for reasons to do with the protection of human health. In order to interpret the provisions of this Agreement correctly, it should be remembered that the "customary rules of interpretation of public international law", in particular those arising out of the 1969 Vienna Convention on the Law of Treaties, must be used to interpret the provisions of the General Agreement and of the WTO Agreement. Those rules call for an examination of the ordinary meaning of the terms of a treaty, read in their context and in the light of the object and purpose of the treaty considered.

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[392] Order of 24 December 1996 on the declaration form for exemptions from the ban on asbestos.

[393] Article 4 of the Decree. This incorporates and refers back to Decree No.88-466 of 28 April 1988 concerning products containing asbestos.

[394] Notification G/TBT/Notif. 97.55, 21 February 1997.

[395] European Commission, Directorate General III (Industry), Office A, "Industrial Policy", Unit III/A/1 "International industrial relations", Document III/A/1/MPP/CR/amp/fcanada (dated 15 April 1997), p.2.

[396] Opening statement by the representative of the European Communities at the consultation held in connection with this case, Geneva, 8 July 1998 (document submitted to the Panel by Canada).

The Appellate Body has indicated in this regard that "A treaty interpreter must begin with, and focus upon, the text of the particular provision to be interpreted. It is in the words constituting that provision, read in their context, that the object and purpose of the states parties to the treaty must first be sought."[397] Therefore, an interpreter is not free to adopt a reading that would result in reducing whole clauses or paragraphs of a treaty to redundancy or inutility.[398]

3.252 The EC contend that the TBT Agreement does not cover general prohibitions. It follows from the preamble (notably the third and fifth paragraphs), from the background to the TBT Agreement and from the actual wording of several of its provisions that the fundamental objective of this Agreement is to monitor the adoption and application of the "standards" and "technical regulations" that cover the detailed characteristics of products or their methods of production. The TBT Agreement could, for example, be applied to monitor a "technical regulation" that set a minimum resistance level for seat belts. Another example would be a "technical regulation" that laid down percentages for ingredients in chocolate and prescribed methods of production. On the other hand, it is not the object and purpose of the TBT Agreement to deal with general prohibitions such as that applied by the French Decree to asbestos and asbestos-containing products. According to the EC, this specific object and purpose of the TBT Agreement can be seen clearly in Annex 1 thereto, which gives the definition of what should be understood by "technical regulation": "Document which lays down product characteristics or their related processes and production methods …". In this specific case, the definition means that the TBT Agreement cannot apply to the Decree. It follows from the above definition that a technical regulation is a document which lays down the characteristics or processes and production methods with which a specific/identified product must comply, in particular if it is to be released for free circulation on a given market.

3.253 The EC claim that the definition of technical regulation should not therefore apply to prohibition measures that cover all products in general. These products should continue to be covered by the General Agreement alone. To adopt any other approach would be equivalent to nullifying the effect of certain provisions of the GATT, in particular Articles I and III, which are applicable in cases of general prohibitions. The TBT Agreement must be considered as the specific application of the principles of the GATT 1994 to technical regulations. In the EC's view, it is inconceivable that the negotiators of the TBT Agreement wished it to apply in every case to Members' regulatory measures affecting products, and in particular to general prohibition measures. The position of the EC is fully supported by the position taken by other Members and other Panels. The Panel report on *United States - Gasoline* noted that:

> "The United States argued that the TBT Agreement had been designed to elaborate on the disciplines of Article III of the General Agreement for a very specific subset of measures (technical regulations, standards and conformity assessment procedures). The fact that a measure was in writing, mandatory and applied to products did not make it a technical regulation. Excise taxes, for instance, met all these criteria but were not 'technical regulations'. Similarly, the term 'technical regulation' was not so broad as to cover all government regulatory actions affecting products. For example, government regulations requiring factory smokestacks to have devices to reduce emissions were not technical regulations, though they were in writing, mandatory and specified 'characteristics'. [....] The United States concluded that the complainants were interpreting the term 'technical regulation' out of context and such an interpretation, if accepted, would introduce into the TBT Agreement many measures which were in fact not intended to be covered."[399]

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[397] *United States – Import Prohibition of Certain Shrimp and Shrimp Products* (hereinafter *United States – Shrimps*), Report of the Appellate Body, WT/DS58/AB/R, adopted on 6 November 1998, para.114.

[398] *United States – Standards for Reformulated and Conventional Gasoline*, (hereinafter *United States – Gasoline*), Appellate Body and Panel Report, WT/DS2/9, adopted on 20 May 1996.

[399] *United States – Gasoline*, Appellate Body and Panel Report, WT/DS2/9, adopted on 20 May 1996, para.3.77.

3.254 The EC claim that the French Decree is not a "technical regulation" within the meaning of the TBT Agreement. The Decree, taken as a whole, is a general ban on asbestos fibres and asbestos products. The prohibition applies to production, processing, importation, exportation, disposal, supply, sale, and marketing. The Decree specifies neither the characteristics nor the production processes and methods for asbestos fibres, asbestos-containing products nor the products exempted from the prohibition measure.

3.255 The EC contend that the Decree does not lay down "product characteristics". The EC fully agree with Canada's conclusion that the Decree constitutes a document, but they are surprised by Canada's choice of a definition for the word "characteristic". According to the very *Robert* dictionary on which Canada's argument is based, the word "characteristic" may be used either as an adjective or a noun. The first definition given by Canada ("which constitutes a recognizable distinctive feature") is the definition corresponding to the adjective. On the other hand, the second definition (that which serves to characterize) given by *Robert*, and strangely forgotten by Canada, specifically corresponds to the noun. It is on the latter definition that the Panel should base its analysis because, in the above-mentioned definition in Annex 1, the word "characteristic" is used as a noun and not as an adjective. In the light of this definition, the French Decree cannot be regarded as "laying down product characteristics". The EC note that Canada maintains that the characteristic is "the absence of asbestos fibres" and that the products covered are "materials, products and devices that are placed on the French market". However, the EC do not consider that in the French measure the words "the absence of asbestos fibres" serve to characterize products placed on the French market because "the absence of asbestos fibres" does not constitute a characteristic, much less the characteristic of products placed on the French market. One of the critical weaknesses of Canada's argument lies in the fact that it has eliminated the existence of a possessive phrase, as denoted by the word "of", between "the characteristics" and "a product". For the Decree to be able to lay down the "characteristics" of a product, it would have in one way or another to designate the product(s) to which the said "characteristics" relate. The Decree does not designate any product but lays down the principle of prohibition. It follows that the contested measure cannot be examined on the basis of the TBT Agreement as it has general scope and does not concern any specific product whose characteristics are spelled out in the French Decree. In the light of the foregoing, for the EC it is clear that the Decree does not lay down the "characteristics" of asbestos fibres but simply prohibits their use on French territory. It is equally clear that the Decree does not lay down the "characteristics" of asbestos-containing products. Nor does the Decree define the technical characteristics of the products, which may enjoy an exemption from the general prohibition laid down. Such products may or may not contain asbestos.

3.256 The EC assert that the Decree does not lay down "production processes and methods relating to a product". The term "process" may be defined as a "means, a practical method of doing something, of obtaining a result".[400] The term "method" may be defined as a "logically ordered set of principles, rules or stages making it possible to reach a result".[401] The Decree does not lay down any means or ordered set of rules governing the production (extraction and processing) of asbestos fibres. The prohibition applies to asbestos fibres, so it is not possible to say how they should be produced because they may no longer be produced. The same is true of asbestos-containing products. In terms of the definitions given for production "process" and "method", the Decree does not specify any means nor lay down any ordered set of rules governing the manufacture of asbestos-containing products. It merely bans any type of asbestos-containing product. In other words, the prohibition applies to asbestos-containing products, and nothing is said about how they should be produced. Nor does the Decree define the production processes and methods for the products that may be exempted from the general ban. Such products may or may not contain asbestos. The EC therefore conclude that the Decree is not a technical regulation within the meaning of the TBT Agreement, neither for asbestos fibres nor for asbestos-containing products, nor even for products enjoying temporary

[400] *Larousse* French dictionary.
[401] *Id.*

exemptions. This conclusion follows logically from the object and purpose of the TBT Agreement, which is not to cover general prohibition measures.

3.257 According to the EC, the fact that France has notified the Decree to the Committee on Technical Barriers to Trade in no way prejudges the applicability of the Agreement. The Decree was notified, in good faith, for the sake of transparency vis-à-vis all the Members of the WTO and in response to repeated requests by Canada. Any other interpretation would create additional obligations for WTO Members and would induce them to discontinue, or at least reduce, notifications of their general legislation to WTO Committees. According to the EC, Members must therefore continue to notify their legislation, without notification as such having any legal consequences for the status of the measure concerned or entailing any obligations to which Members are not normally held.

3.258 **Canada** reiterates that the TBT Agreement applies to the Decree and claims that the EC's interpretation, based on Article 31 of the Vienna Convention on the Law of Treaties, is incorrect. In this regard, Canada points out that the three third parties to the dispute unanimously recognize the applicability of the TBT Agreement in this case. The EC are therefore alone in disputing its applicability. Canada maintains that the EC's interpretation is not based on Article 31 of the Vienna Convention and the Decree falls specifically within the scope of the TBT Agreement because it represents the type of measure covered by the definition of "technical regulation" in Annex 1 to the Agreement. Including general prohibitions within the scope of the TBT Agreement is not contrary to either its object or its purpose, which are to prevent technical regulations and standards from creating unnecessary obstacles to international trade.

3.259 Canada claims that the EC depart from the ordinary meaning of the terms of the definition of "technical regulation" and refer to the preamble and history of the TBT Agreement to assert that its object and purpose are not to deal with general product prohibitions, but to lay down the characteristics or processes or production methods which a specific product must meet. This distinction made by the EC between prohibitions that apply to all products without distinction and measures aimed particularly at a specific product is not supported by the TBT Agreement. There is no provision which stipulates that general prohibitions do not fall within the scope of the TBT Agreement. The EC's interpretation of Annex 1 to the Agreement is contrary to the principle of effectiveness.[402] According to this principle, a treaty must be given the interpretation which renders it meaningful and effective, rather than that which would render it ineffective. However, in Canada's view, the consequence of the EC's interpretation would be that it would suffice to give a measure intended to hinder trade the form of a general prohibition in order to allow that measure to evade the disciplines of the TBT Agreement. Thus, as the United States notes, by manipulating the form of a measure, it would be possible to render the TBT Agreement ineffective. Contrary to what the EC claim, their interpretation in such circumstances is not supported by the precedents. The excerpt from the Panel Report in *United States – Gasoline* cited by the EC does not relate to a position taken by the Panel but rather to an aspect of the American arguments in this case. The Panel that examined this case never sanctioned this American claim and did not discuss it. Furthermore, this excerpt, cited out of context, is contradicted by the position expressed by the United States in this dispute. In interpreting the TBT Agreement as applying only to a description of characteristics or of processes and production methods specific to a particular product and not to general prohibitions that apply to any product without distinction, the EC take into account only one part of the provisions of the Decree, in this case those concerning the ban on asbestos, and fail to mention the transitional provisions. However, in Canada's view, in order to determine whether the Decree satisfies the criteria of the definition of "technical regulation", all its provisions must be examined, both those concerning the ban on asbestos and those dealing with exceptions to this ban.

[402] *United States – Gasoline*, Report of the Panel, WT/DS2/R, adopted on 20 May 1996, *Japan – Taxes on Alcoholic Beverages*, Report of the Panel, WT/DS8/R, WT/DS10/R, WT/DS11/R, adopted on 1 November 1996, para.6.22.

3.260 Canada maintains that the Decree is a "technical regulation" as this expression is defined in Annex 1 to the TBT Agreement. Five of the elements of the definition of a "technical regulation" are found in the Decree. These are: (i) a description of the characteristics of a product, including by the negative; (ii) a description of the related processes and production methods; (iii) a description of the administrative provisions which apply to a product; (iv) the marking or labelling requirements which apply to a product; and (v) mandatory compliance.

3.261 Firstly, Canada points out that the term "characteristic" means "a distinguishing trait, quality or property".[403] In this sense, the Decree describes a distinctive characteristic of a product. Indeed, in accordance with its objective, which is to prohibit asbestos totally, the main provisions of the Decree are intended to prohibit asbestos fibres, regardless of whether they are of the amphibole or chrysotile variety, in the manufacture and processing of materials, products and devices marketed in France. The characteristic of these materials, products or devices, in whose manufacture and processing asbestos fibre may not be incorporated, is thus laid down in the Decree. This characteristic is that no product shall contain asbestos. Secondly, the Decree also covers the processing of all types of asbestos fibres, whether or not they are incorporated in materials or products. In so doing, it imposes restrictions on processes and production methods involving asbestos fibres, including chrysotile fibres. The principle of a total ban is accompanied by a limited number of exceptions. Chrysotile fibres are permitted in the manufacture and processing of products when no substitute fibre deemed less harmful exists. The Decree stipulates that the manufacture of chrysotile-based products is subject to the standards of exposure to asbestos dust in buildings.[404] Hence, the Decree lays down a production process for products containing chrysotile as defined by the EC. Thirdly, by instituting a reporting mechanism to obtain or maintain an exemption from the ban on asbestos, the Decree specifies the administrative provisions applicable to products. Canada considers that the EC confirm this point when they describe in detail the registration procedure under the annual reporting process in the context of exemptions from the ban on asbestos. Fourthly, the Decree also deals with requirements regarding marking or labelling of a product. It sets out labelling standards for chrysotile-based products that are the subject of a provisional exemption from the ban.[405] Fifthly, compliance with the main provisions of the Decree is mandatory. Products which are marketed in, offered for sale in or imported into France must not contain asbestos. Compliance with the ban on asbestos is mandatory, unless the public authorities agree to grant a waiver, in which case compliance with the terms and conditions of the exception are mandatory. Fines are applicable in case of non-compliance.

3.262 Canada claims that, by notifying the Committee on Technical Barriers to Trade, the EC recognized that the Decree is a technical regulation and consequently the TBT Agreement applies.[406] Furthermore, the EC provided the Committee on Technical Barriers to Trade with a justification of the Decree based on the disciplines of Article 2.2 of the TBT Agreement.[407] The EC certainly considered this Committee the competent forum to receive the notification and the justification. The EC's most recent official statement concerning the applicability of the TBT Agreement was made during the consultations of 8 July 1998, when the representative of the EC stated that the provisions of the TBT Agreement were the only provisions invoked by Canada that seemed relevant to contesting

[403] Canada notes that the EC try to show that the Decree does not define the characteristics of a product because Canada made a mistake by citing the definition of the adjective rather than the noun "characteristic". Having made the necessary correction, this in no way alters the sense of Canada's argument.

[404] Article 4 of the Decree. This incorporates and refers back to Decree No.96-97 of 7 February 1996 concerning the protection of the population against the health risks associated with exposure to asbestos in buildings.

[405] Article 4 of the Decree. This incorporates and refers back to Decree No.88-466 of 28 April 1988 concerning products containing asbestos.

[406] Notification G/TBT/Notif.97.55, 21 February 1997.

[407] European Commission, Directorate General III (Industry), Directorate A, Industrial Policy, Unit III/A/1 Industrial aspects of international trade relations, Document III/A/1/MPP/CR/amp/fcanada (dated 15 April 1997), p. 2.

the Decree.[408] Canada concludes that, in the light of the foregoing, it is clear that the Decree is a "technical regulation" and, therefore, subject to the TBT Agreement.

3.263 The **European Communities** contend that the TBT Agreement does not cover general prohibitions. A measure cannot fall within the TBT Agreement unless it satisfies, in particular, the definition of "technical regulation" contained in Annex 1 to the Agreement. The fact that the definition of "technical regulation" is narrow is not a matter of chance, but signifies that the authors intended to limit the scope of the Agreement. This is equally apparent from the text of Article 1.2 of the TBT Agreement itself. The object and purpose of the TBT Agreement, like that of the TBT Agreement of 1979, is to "further the objectives of the GATT 1994" (second preambular paragraph) in the fields of standardization and conformity assessment in order to ensure that technical regulations and standards do not create unnecessary obstacles to international trade (third and fifth preambular paragraphs). According to the EC, it follows from the above that the purpose of the TBT Agreement is to deal with technical regulations and standards.[409] It is not to solve market access problems linked with general prohibitions. However, this does not result in a legal vacuum for measures of this type inasmuch as they continue to be covered by other legal provisions, in particular Article III of the GATT.

3.264 The EC maintain that the Decree does not fall within the scope of the TBT Agreement. As far as asbestos fibres are concerned, it is not the purpose of the Decree to lay down the characteristics of asbestos or of processes and methods of asbestos production. The Decree purely and simply bans asbestos as a product or a raw material. As far as other products are concerned, the Decree means that they may not contain any asbestos. This, however, would not be enough for the Decree to be equated with a "technical regulation" within the meaning of the TBT Agreement. In fact, where these products are concerned, the EC emphasize that the Decree does not identify the products that must not contain asbestos. All products, without more precise identification, are subject to the ban. This applies both to cement and to any other product (for example, tennis rackets). Furthermore, the EC repeat that the Decree is not concerned with the characteristics of other products (whether or not containing asbestos). In fact, the horizontal prohibition on incorporating asbestos in products has the effect of prohibiting, on French territory, products that contain asbestos. The general prohibition eliminates these products from the French market. A technical regulation, on the other hand, presupposes that the product concerned can always be supplied on the market. This is comparable, for instance, to a situation where a domestic law prohibits in general and without discrimination the production, importation and use of drugs, alcohol, etc. on grounds of public health. The EC note that even Canada does not dispute the fact that the declared objective of the Decree is to protect human health; Canada only disputes the existence of a risk in this case, not the intention of the French authorities to protect human health. Thus, in the EC's view, it cannot be maintained that the Decree lays down the characteristics of a product which no longer exists. The same applies to the production processes and methods for the product, which are linked to its characteristics. The Decree does not lay down production processes and methods for a product which no one any longer has the right to manufacture.

3.265 The EC therefore reaffirm their conclusion that the TBT Agreement is not applicable to a measure imposing a general ban on a product, in this case asbestos and asbestos-containing products.

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[408] Opening statement by the representative of the European Communities at the consultations held in connection with this case, Geneva, 8 July 1998 (document submitted to the Panel by Canada).

[409] The EC note that, on its Web site www.wto.org/eol/e/wto03/wto.3_5.htm, the WTO describes a "technical regulation" as follows:

> "Technical regulations and standards set out specific characteristics of a product – such as its size, shape, design, functions and performance, or the way it is labelled or packaged before it is put on sale. In certain cases, the way a product is produced can affect these characteristics, and it may then prove more appropriate to draft technical regulations and standards in terms of a product's process and production methods rather than its characteristics *per se*."

As regards the provisions of the Decree concerning exemptions from the ban, the EC reiterate that these provisions do not fall within the scope of the TBT Agreement. The EC have already pointed out that the Decree does not define either the technical characteristics of the products that may be exempted from the general ban adopted. These products may or may not contain asbestos. In addition, this very limited number of products will anyhow be phased out as soon as substitute products that can ensure a lower level of risk and guarantee the same security for users become technically available. So, even in the case of limited and transitional exceptions, the sole preoccupation of the French authorities has been to protect human health because, for the time being, there are no alternative products that can guarantee a lower level of risk to human health (for example, the risk of accidents if the use of asbestos were to be banned immediately in situations of exposure to very high temperatures, etc.) The EC add that the Decree does not define either the production processes and methods for the products that may be exempted from the general ban adopted. These products may or may not contain asbestos. It follows from these two observations that the provisions of the Decree concerning exemptions from the general ban do not fall within the scope of the TBT Agreement either. In fact, it is neither the purpose nor the effect of the French measure to lay down the characteristics of these products or to impose production processes or methods for their manufacture.

(b) Article 2.1 of the TBT Agreement

3.266 **Canada** claims that the Decree is incompatible with Article 2.1 of the TBT Agreement because it subjects chrysotile fibre and chrysotile-cement products imported from Canada and from any other country to less favourable treatment than like PVA, cellulose and glass fibres, and like fibro-cement products, of French or foreign origin. Article 2.1 of the TBT Agreement restates the principles of non-discrimination set forth in Articles I:1 and III:4 of the GATT. In order to determine incompatibility with Article 2.1 of the TBT Agreement, the Panel must determine: (i) that the measure in question is a technical regulation; (ii) that the products involved are like products; (iii) that these like products are of French origin or originate in any other country; and (iv) that, by virtue of the technical regulation, imported chrysotile fibre and chrysotile-cement products are subject to less favourable treatment than like products. Given that the allegations of incompatibility with Article 2.1 of the TBT Agreement are being submitted to examination by a Panel for the first time, Canada maintains that examination of the matter should take into account the precedents relating to Articles I:1 and III:4 of the GATT 1947 and the GATT 1994.[410]

3.267 Canada asserts in the first place that, as it has shown in the paragraphs regarding the applicability of the TBT Agreement, the Decree banning asbestos is a "technical regulation" and is subject to the application of Article 2. Secondly, as Canada has pointed out in relation to Article III:4[411], Canadian chrysotile fibre is like PVA, cellulose and glass fibre. Similarly, chrysotile-cement products are like fibro-cement products. Thirdly, Canada contends that there are substitute fibres of French origin that are "like products" to chrysotile fibre. There are also fibro-cement products of French origin that are "like products" to chrysotile-cement products of Canadian origin. PVA fibres from China, Korea and Japan intended for the manufacture of fibro-cement products are also imported into France. Lastly, in 1997, France imported over 157,000 tonnes of fibro-cement products originating in "any other country".[412]

3.268 Canada contends that chrysotile fibres and the products containing them are subject to less favourable treatment than substitute products of French or foreign origin. Following the criteria

[410] Canada indicates that, in so doing, it relies on the interpretation of the status of panel reports, whether or not adopted, by the Appellate Body in its Report *Japan – Taxes on Alcoholic Beverages*, WT/DS8/AB/R, WT/DS10/AB/R, WT/DS11/AB/R, adopted on 6 November 1996.

[411] Canada refers in general to the arguments it puts forward below in relation to Article III:4 of the GATT.

[412] Tariff Classification 6811. Source: Eurostat, CD-ROM.

applied to Article III:4 of the GATT, a technical regulation is incompatible with Article 2.1 of the TBT Agreement if this regulation subjects imported chrysotile fibre and chrysotile-cement products to treatment less favourable than that accorded to like PVA, cellulose and glass fibres, and to like fibro-cement products of national origin or originating in any other country.[413] The terms of Article 2.1, providing that "treatment no less favourable" be accorded, are identical to the terms of Article III:4 of the GATT: "shall be accorded treatment no less favourable". In Canada's view, the inclusion in the TBT Agreement of terms similar to those of the GATT reveals the intention of the Members to have them interpreted in the same manner. Article 2.1 thus includes the same obligation with respect to national treatment as that set forth in Article III:4 of the GATT. Article 2.1 also requires the Members to treat like products respecting the principle of most-favoured-nation treatment. It provides for treatment no less favourable than that accorded to like products originating in any other country to be accorded. The wording of Article 2.1 also repeats in full the concept set forth in the disciplines of Article I of the GATT, namely, that any advantage granted to any product originating in any other country shall be accorded to the like product originating in the territory of all other contracting parties.

3.269 Canada points out that the fact that the expression "no less favourable" was repeated throughout the GATT Agreements was highlighted by the Panel in the case *United States – Section 337 of the Tariff Act of 1930.* The relevant passage is as follows:

> "These words are to be found throughout the General Agreement and later agreements negotiated in the GATT framework as an expression of the underlying principle of equality of treatment of imported products as compared to the treatment given either to other foreign products, under the most favoured nation standard, or to domestic products, under the national treatment standard of Article III."[414]

The use of the same wording indicates that the disciplines of Article 2.1 of the TBT Agreement are the same as those of Article III:4 of the GATT and that they are applied in the same manner. In order to address the question of whether less favourable treatment is accorded to products of Canadian origin than that accorded to like products originating in any other country, Canada considers that the Panel should examine the criteria of "the actual equality of the opportunities offered". As Canada has already stressed, the Decree affects areas that are governed by a technical regulation as defined in the TBT Agreement. There is no similar measure on PVA, cellulose or glass fibres nor on fibro-cement products. In fact, it is undeniable that the prohibitions ordered in the French technical regulation with regard to chrysotile fibre and products containing it constitute a denial of the actual equality of the opportunities for competition offered to chrysotile fibre and chrysotile-cement products on the French market. The bans do not apply to PVA, cellulose or glass fibres nor to fibro-cement products imported into France. Canada concludes that the Decree banning asbestos is incompatible with the provisions of Article 2.1 of the TBT Agreement because it discriminates against chrysotile fibre and chrysotile products, as opposed to PVA, cellulose and glass fibre and fibro-cement products.

3.270 The **European Communities** draw attention to the following points presented as an alternative, should the Panel consider that the TBT Agreement is applicable to the French measure, which they nevertheless contest.

3.271 The EC point out that Article 2.1 of the TBT Agreement may be considered as a specific application to technical regulations of Articles I and III of the GATT 1994. The sole argument put forward by Canada is the claim that a measure's compatibility with Article 2.1 of the TBT Agreement should be examined taking "into account the precedents relating to Articles I:1 and III:4 of the GATT

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[413] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para.5.11. See also *United States – Gasoline*, adopted on 20 May 1996, WT/DS2/9, para.6.10, and *Canada – Import, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, adopted on 18 February 1992, BISD 39S/27, para.5.6.

[414] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para.5.11

1947 and the GATT 1994". As the EC show in the section relating to the application of Article III:4 of the GATT, the Decree does not discriminate between imported products and like national products.

3.272 **Canada** emphasizes that Article 2.1 of the TBT Agreement can be considered as a specific application to technical regulations of Articles I and III of the GATT 1994 and that the EC are in agreement on this point. Canada refers back to its previous arguments on the issue of the applicability of the TBT Agreement, on the one hand, and on the issue of likeness on the other. These arguments are the same as those made with respect to Article III:4 of the GATT. Canada notes that, unlike the case of Article III:4, the origin of like products is of no consequence for Article 2.1 of the TBT Agreement as this Article covers national treatment and most-favoured nation treatment. Finally, on the issue of the less favourable treatment of imported products compared to like products, Canada refers to the arguments it puts forward in relation to Article III:4 of the GATT.

(c) Article 2.2 of the TBT Agreement

3.273 **Canada** emphasizes that Article 2.2 of the TBT Agreement requires the Members of the WTO to ensure that technical regulations are not adopted with a view to or with the effect of creating unnecessary obstacles to international trade. A technical regulation creates an unnecessary obstacle to international trade if its objective is not legitimate or if the regulation is more trade-restrictive than necessary to fulfil this objective, taking account of the risks that non-fulfilment would create. In Canada's view, in order to determine whether a technical regulation is compatible with Article 2.2, the Panel must first determine if the objective that the regulation is supposed to fulfil is part of the range of legitimate objectives listed in Article 2.2. If the objective is not on this list, the regulation is incompatible with Article 2.2. If it is determined that the objective is part of the range of objectives stipulated in Article 2.2, the Panel must then determine whether the technical regulation is more trade-restrictive than is necessary.

3.274 The **European Communities** point out that a reading of Article 2.2 reveals two basic criteria enabling a WTO Member to adopt a restrictive technical regulation: (i) there must first be a legitimate objective, such as the protection of human health; and (ii) then the Member's technical regulation must not be more trade-restrictive than is necessary to fulfil this legitimate objective, taking account of the risks that non-fulfilment would create. According to the EC, the Decree meets those two conditions. The EC refer the Panel to the arguments they put forward in Section III.B and in relation to Article XX(b) of the GATT. A legal analysis relating to Article XX(b) of the GATT also applies in the context of Article 2.2 of the TBT Agreement as far as the test of necessity is concerned.

(i) Legitimate objective

3.275 **Canada** considers that, in this case, the objective claimed by France, namely, the protection of the health of workers and consumers, corresponds to the objectives identified in Article 2.2.

3.276 The **European Communities** claim that, as they emphasize in connection with Article XX(b) of the GATT, the aim of the French measure is to halt the spread of the risks associated with the use of asbestos fibres and asbestos-containing products and thus reduce the number of deaths among the French population. The Decree is therefore perfectly in keeping with policies designed to protect human health. The EC note that Canada does not dispute this.

3.277 **Canada** states that it has acknowledged that the objective sought by France when adopting the Decree, namely, the protection of human health, is one of the objectives included in Article 2.2 of the TBT Agreement. However, contrary to what the EC would like one to believe, Canada did not acquiesce in the argument that the objective is to halt the spread of the risks associated with the use of asbestos fibres and asbestos-containing products. The examples in the list of objectives set out in Article 2.2 of the TBT Agreement include protection of human health and safety. Halting the spread of the risks associated with asbestos can be a way of protecting human health. This is not, however, a

legitimate objective within the legal framework of the TBT Agreement. Inasmuch as Canada does not dispute the legitimacy of the objective, understood as being the protection of human health, the question which is submitted to the Panel for examination in this case under Article 2.2 is whether the Decree is more restrictive than is necessary to fulfil this objective, taking account of the risks non-fulfilment would create.

3.278 The **European Communities** point out that, contrary to Canada's claims, they have neither changed nor modified the objective of the Decree: the objective in banning asbestos was to stop the spread of the risk of asbestos-related diseases for the purpose of protecting human health so the objective is the same.

(ii) "For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create …" (Article 2.2, second sentence)

3.279 **Canada** maintains that the applicable test, for the purposes of determining if the technical regulation is more trade-restrictive than necessary to fulfil the objective claimed by France, consists of two different criteria. The Panel must first determine if the Decree makes it possible for the objective claimed by France to be fulfilled, in other words, if there is a rational link between the Decree and the objective. Then, to the extent that this first criterion is met, the Panel must ask itself if the trade effects of the technical regulation are necessary, taking account of the risks that the absence of this technical regulation would create. For this purpose, it is essential to consider the existence of alternative regulatory approaches, less trade-restrictive, that would make it just as possible to achieve the objective being pursued as the technical regulation being challenged. Canada maintains that the Decree banning asbestos creates an unnecessary obstacle to the international trade in chrysotile fibre and products containing it. First of all, the Decree has no rational link with the objective of protecting the health of workers and consumers sought by France. Secondly, its detrimental effects on trade are not necessary if the actual risks that would exist in the absence of a total ban are taken into account. Controlled use is an alternative likely to be less restrictive to the competition opportunities in the French market. Although a violation of Article 2.2 of the TBT Agreement exists if only one of the two criteria is not met, Canada contends that the Decree imposing the total ban on asbestos does not meet either of the two criteria. Canada adds that the Decree is not in compliance with the applicable international standards, so the EC do not benefit from the presumption in Article 2.5 of the TBT Agreement.

3.280 Canada claims that the first question before to the Panel is whether there is a rational link between the Decree and the objective of protecting the health of workers and consumers being pursued by France. In other words, does a total ban make it possible to fulfil the objective of protecting people's health? This stage of the analysis is essential in order to prevent technical regulations that only have tenuous links – or even no links at all – with the objective being pursued from finding any justification. Canada maintains that the Decree does not make it possible to fulfil the objective of protecting the health of workers and consumers, that is to say that there is no rational link between the Decree and the objective, for the following three reasons: firstly, the risks against which the Decree is supposed to protect workers and consumers are linked to uses of asbestos fibres that were already prohibited when the Decree was adopted; secondly, chrysotile fibre and modern products containing it do not present any detectable risk for health; and thirdly, the Decree replaces the undetectable risk of modern chrysotile-based products with the unknown – and perhaps greater – risk of substitute products for asbestos.

3.281 Canada states that the first difficulty in terms of the rational link is the fact that asbestos problems are derived from old uses of asbestos fibres such as the use of sprayed asbestos, which was prohibited in France in 1978. The current risks to human health are linked to exposure to asbestos dust released from brittle materials found in asbestos-treated buildings. The Decree does not achieve the protection of the population against the risks of asbestos already installed. Canada considers that

there is no rational link between the ban on hard chrysotile products and the protection of the health of workers and consumers because these products do not present any detectable risk for health. Nothing in the INSERM report links a total ban approach to any risk that might be derived from these chrysotile products. This is an essential element in determining the existence of a rational link because France has invoked this report as the only justification for its measure. INSERM has only evaluated hypothetical risks linked to past uses of asbestos, covering all varieties of fibres.[415] The concentrations of asbestos measured in the atmosphere today and on which INSERM was supposed to base its risk projections almost exclusively contain fibres released by brittle materials installed over 20 years ago. Canada maintains that the INSERM report, on which the ban is based, is therefore not relevant to the decision to adopt a policy on a ban. The only epidemiological data recorded in the report concern workers whose illnesses appeared several decades after exposure to asbestos fibres as the health effects of asbestos take 20 to 35 years on average to emerge. Moreover, the INSERM report explicitly states that almost all deaths attributable to asbestos nowadays are the result of past exposure caused by uncontrolled processing or spraying.[416] The decision to ban modern chrysotile products does not lead to reduced risks resulting from past uses nor does it even mitigate the damaging effects of brittle materials that are still to be found in certain buildings

3.282 Canada contends that the second difficulty in terms of the rational link is that INSERM has not evaluated whether the production or use of modern products containing chrysotile poses a risk for the health of workers and consumers. Such a study would undoubtedly have led INSERM to conclude that modern uses of chrysotile do not pose an actual health risk given the negligible emission of chrysotile-cement products. As Canada emphasized in its factual arguments (see Section III.B above), the health risks associated with modern chrysotile products are undetectable. Moreover, Canada notes that the EC have admitted that the practice of the controlled use of chrysotile is effective and appropriate in asbestos extraction and processing industries.[417] INSERM does not draw any conclusions on the harmless nature of the production and use of dense and non-brittle chrysotile products.[418] Nowhere is there any discussion on the specific risks related to the banned chrysotile-cement products. However, that is the necessary implication of the French statement according to which "while the principle of controlled use in the asbestos industry can be admitted, on the other hand, it is not possible to control the risk incurred in occupations related to the construction industry and in other occupations concerned".[419] (WTO translation) This statement implies, wrongly, that exposure to chrysotile-cement products is hazardous for construction industry workers. In Canada's view, the context that gave rise to the announcement and the adoption of the Decree proves that, in order to appease public opinion, the French Government used INSERM's report, which takes

[415] See Section III.B.7 above.

[416] INSERM report, p.400 and pp. 419 and 420.

[417] European Commission (G. Lohan, DG III), European justification of Decree No.96-1133 to the Canadian authorities (15 April 1997) following French Notification G/TBT/Notif.97.55, p.2. Canada notes that the French Académie nationale de médecine also recognizes that "recent important epidemiological studies, going back for 20 years or more, show that the carcinogenic or co-carcinogenic effect of asbestos (lung cancer) is no longer detected among large protected industrial populations working in the conditions prescribed by the regulatory texts. These conditions are laid down in practical leaflets published by the ministries concerned, Labour and Safety, for use by persons in occupations exposed to at least 1f/ml and in recent decrees, in 1996, concern persons working in buildings containing asbestos". (WTO translation) Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol.180, no. 4, 1996, pp. 5 and 6.

[418] Canada states that INSERM omitted to consider the many studies which conclude that modern chrysotile products are harmless. See, in particular, Spurny, K., *et al.*, *Measurement of the Fibrous Dusts in West Germany: Fiber Concentration in the Vicinity of Objects and Buildings with Asbestos-Containing-Building Materials* [Ger]. Zentralblatt Fur Bakteriologie, Mikrobiologie Und Hygiene – Series B, Umwelthygiene, Krankenhaushygiene, Arbeitshygiene, Präventive Medizin 1988; Vol. 187(2), p.136 .

[419] European Commission (G. Lohan, DG III), European justification of Decree No.96-1133 to the Canadian authorities (15 April 1997) following French Notification G/TBT/Notif.97.55, p.2.

into account the consequences of past and prohibited uses of asbestos, in order to assign risks incorrectly to modern uses of chrysotile fibre and products containing it. The Decree does not make any distinction between hard chrysotile products, for which health risks are at undetectable values, and asbestos-based brittle products, used as insulating material in the 1970s. The use of free fibres in insulating products, or products where the fibre is not encapsulated, was prohibited in view of the difficulty of controlling the dust caused by these applications. According to Canada, it is essential to note that in the modern uses of chrysotile fibre, for instance in chrysotile-cement products and chrysotile-reinforced plastics, the fibre is sealed in a matrix and cannot be released into the environment.

3.283 Canada asserts that the third difficulty in terms of the rational link between the order and the protection of health is the blind faith placed in substitute fibres for asbestos. The human health effects of most of the fibres used to replace chrysotile fibre are not known. According to Canada, the data prove that some substitutes that have been the subject of careful studies are often as, or even more, harmful than chrysotile. The total ban on chrysotile fibre and products containing it, and their replacement with substitute products, implies that substitute products are safe. However, INSERM has not been able to determine if these fibres are safe in view of the lack of epidemiological data currently available on this subject. The ban substitutes the undetectable risk of hard chrysotile products for the unknown – and perhaps greater – risk of substitute fibres. A consistent approach to risk management would have required the French Government, in the case of exposure to fibres and substitute products, to try to ensure a degree of health protection equivalent to what it intended through the total ban on chrysotile. In other words, a consistent approach would have required exposure to substitute fibres to be controlled in the same way as chrysotile. Based on the foregoing, Canada maintains that there is no rational link between the Decree and the objective of protecting public health being pursued by France. Firstly, the Decree does not address the true problem of asbestos in France: work on the sprayed asbestos products in place for at least 20 years. Secondly, the Decree ignores the scientific fact that products containing chrysotile imprisoned in a matrix are harmless. Thirdly, the Decree imposes substitute products whose risks are unknown, which in itself puts the objective being pursued by France in jeopardy.

3.284 Canada concludes that, inasmuch as the conditions of the first criterion (namely a rational link between the Decree and the objective claimed by France) have not been met, the Decree is incompatible with Article 2.2 of the TBT Agreement. Nevertheless, should the Panel conclude that there is a rational link between the Decree and the objective claimed by France, the Decree would still be incompatible with Article 2.2 of the TBT Agreement because, as Canada shows below, its effects are more trade-restrictive than necessary, taking account of the risks non-fulfilment of the objective would create. Canada asserts that an alternative solution less prejudicial to competition opportunities in the French market and with similar effects on the health of workers and consumers was available, i.e. controlled use.

3.285 Canada contends that the detrimental effects of the Decree on competition opportunities are not necessary, in view of the risks that the absence of technical regulations would create. The words "technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create" in Article 2.2 of the TBT Agreement imply a necessity criterion. Canada notes that the two factors to be considered when examining necessity are, on the one hand, the risks that the absence of technical regulations would create and, on the other, the existence of a less trade-restrictive alternative measure that would make it possible to attain the objective being pursued just as effectively. As regards whether there are risks involved in not fulfilling the objective being pursued which could result from the absence of the technical regulations in force, the third sentence of Article 2.2 contains a non-exhaustive list of relevant factors that must be taken into consideration. In the context of this dispute, the scientific and technical information available, as well as the intended end-uses of products, in other words, chrysotile fibre and the products containing it, must be considered. By applying this criterion to the facts of this dispute, Canada maintains that the total ban on asbestos, without distinction as to fibres, completely eliminates

the French market for chrysotile fibre and products containing it, whereas the practice of controlled use of asbestos fibres, in terms of the types of fibre and their uses, allow fulfilment of the French objective of protecting the health of workers and consumers while authorizing certain safe uses of chrysotile fibre and products containing it. Accordingly, Canada claims that controlled use is an alternative that is less trade-restrictive and makes it possible to fulfil the objective claimed by France in the same way as the Decree. Consequently, if the actual risks of the modern uses of chrysotile are considered in light of the relevant criteria, specifically the scientific information and the intended end-uses, in Canada's view it becomes clear that the total ban on asbestos is not necessary, inasmuch as there is a less trade-restrictive measure that makes it possible to fulfil the objective claimed by France.

3.286 Canada states that, in the first place, there is no credible scientific information supporting a total ban on asbestos. The scientific information on which the Decree is based are included in INSERM's report, but this does not constitute a credible basis for justifying a total ban on all varieties and all uses of asbestos. INSERM's report attempts to use circumstances of high levels of exposure to a mixture of amphiboles and chrysotile in an effort to extrapolate the risks for a population that no longer experiences such exposure. Although this technique can in itself be deemed dubious, INSERM's report also raises a number of other questions when it is subjected to the criticism of peers in the scientific community. In Canada's view, INSERM's report contains conclusions that do not stand up to criticism. First, the report does not study the data on exposure actually sustained by the French population. The INSERM researchers relied on hypothetical data. Moreover, INSERM's risk assessments do not adequately make the distinction between the effects of amphiboles and the effects of chrysotile. The risk assessments presented as being linked to exposure to chrysotile are often based on parameters of exposure to amphiboles or to amphibole-chrysotile mixtures. The lack of a study of the risks posed by current exposure to chrysotile appears clearly in light of the alarmist conclusions of the report on cancer cases in France attributable to asbestos. These deaths are linked to past occupational exposure and not to current circumstances of exposure to dense products containing chrysotile. The INSERM researchers did not look at exposure to asbestos dust during incidental and/or intermittent work on structures where chrysotile-cement was used. INSERM used a linear model in its evaluation of the risk, extrapolating from cases of low exposure to chrysotile the risk involved in cases of high exposure to amphiboles or mixtures of fibres. However, as recognized by INSERM, the epidemiological data in cases of environmental exposure and exposure indoors do not indicate any detectable risk for low exposures. Finally, one of the effects of the Decree is to force the use of substitute fibres even though health risks associated with exposure to such fibres have not been addressed by INSERM.

3.287 Secondly, Canada asserts that the intended end-uses of modern products containing chrysotile fibre have not been taken into consideration in the evaluation of the human health risks. However, the intended end-uses of chrysotile, chrysotile-cement products for instance, do not present any detectable health risk. INSERM did not identify any risk linked to the modern uses of chrysotile fibre and products containing it. In assessing the risks, France has not taken into consideration the intended end-uses of modern products containing chrysotile. The known assessments of the risks linked to the modern uses of chrysotile indicate that the risks faced by an individual are so small as to be undetectable. According to Canada, the ILO confirms this as follows: "The handling of products containing asbestos in which asbestos fibres are solidly fixed in a bonding material so that dust cannot form does not present a health hazard."[420] The assessments of the risks faced by workers who come into contact with chrysotile-cement products once the material is installed indicate that the risks are undetectable.

3.288 Thirdly, Canada contends that the total ban on asbestos is the most restrictive measure from an international trade standpoint. It leads to a complete closure of the domestic market for these products. In France, in the case of asbestos, the ban has caused the entire French market for chrysotile

[420] International Labour Organization, *Safety in the Use of Asbestos*, International Labour Conference, Report VI (1), 71st session, 1985, Geneva, (first edition 1984), p.29.

fibre and products containing it to disappear. As the statistical tables in the section on French imports of chrysotile fibre from Canada show, the French market for Canadian exports has disappeared. Canada maintains that there is an alternative solution that makes it possible to fulfil the objective of protecting human health while being significantly less trade-restrictive. This alternative to the ban, i.e. controlled use, does not result in the effects previously described. Canada indicates that the practice of the controlled use of asbestos is based on recognized scientific principles and on an international consensus. Controlled use was available to France as a means of fulfilling the objective of protecting against risks associated with the uses of asbestos, without creating an unnecessary obstacle to international trade. In fact, that was the approach adopted by France until the adoption of the ban. Controlled use is an internationally endorsed regulatory approach based on scientific data applicable to an entire range of risk-related materials. The principles underlying this approach are that only products and materials that can be controlled in such a way that the associated risks are maintained at an acceptable level throughout their entire life cycle are authorized. In the case of asbestos, controlled use involves, in particular, maximum reduction of the quantity of dust released in a work environment, the adoption of specific work methods, the prohibition of amphiboles (crocidolite and amosite) and low-density brittle insulation products and the prohibition of processes or products that release dust. On the other hand, this form of regulation would allow the use of chrysotile fibre and high-density products such as chrysotile-cement. Controlled use is considerably less trade-restrictive than the ban on asbestos. The drop in Canadian chrysotile asbestos exports in 1997, the year immediately following the adoption of the Decree, clearly shows that the controlled use practices that had been implemented in France prior to the ban on asbestos did not create the same obstacles to trade as those created by the total ban on asbestos as soon as it was adopted.

3.289 Canada maintains that the total ban on asbestos, without distinction as to the types of fibre, completely eliminates the French market for chrysotile fibre, even though the practice of the controlled use of asbestos fibres, in terms of the types of fibre and their uses, allows the manufacturing of safe chrysotile products, while having the same effects on human health as the ban. The detrimental trade effects of the ban are not necessary in order to fulfil France's objectives just as effectively as the Decree. The measures based on controlled use that existed in France at the time of the announcement of the ban, would make it possible to fulfil the objective of protecting human health without creating unnecessary obstacles to trade. Canada considers that the excessive effects of the ban can only be explained by the political desire of the French Government to respond in a spectacular way to the pressure of public opinion. Canada claims that the Decree banning asbestos is incompatible with Article 2.2 of the TBT Agreement. Firstly, the Decree does not make it possible to fulfil the objective being pursued by France, that is the protection of the health of workers and consumers. Secondly, the detrimental effects of the total ban are not necessary in view of the actual risks resulting from the modern uses of chrysotile. The ban has done nothing more to protect health than the controlled use already in place.[421] The only uses allowed at the time of the Decree's adoption were the use of chrysotile fibre in dense materials, which, according to the available scientific information and considering the end-uses, did not pose – and still does not pose – detectable risks for people's health. Canada therefore concludes that the Decree is an excessive measure because

[421] Canada notes that the French Académie nationale de médecine wrote "A measure viewed so radically by public opinion as the total ban on asbestos does not in any way change the situation in a country. It does not resolve any of the problems raised by this material and may even mean neglecting the essential measures that should be taken immediately", (WTO translation), Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol.180, no.4. 1996, p.8. Also see pp.5 and 6 of the same report: "recent important epidemiological studies, going back for 20 years or more, show that the carcinogenic or co-carcinogenic effect of asbestos (lung cancer) is no longer detected among large protected industrial populations working in the conditions prescribed by the regulatory texts. These conditions are laid down in practical leaflets published by the ministries concerned, Labour and Safety, for use by persons in occupations exposed to at least 1f/ml and in recent decrees, in 1996, concern persons working in buildings containing asbestos". (WTO translation).

controlled use is a less trade-restrictive alternative that makes it possible to fulfil the objective being pursued by France.

3.290 The **European Communities** respond that the distinction made by Canada between, on the one hand, the need to determine whether the Decree permits the fulfilment of the objective cited by France ("rational link" in Canada's own words) and, on the other, whether the effects of the technical regulation are necessary, taking account of the risks that non-fulfilment would create, is artificial and at variance with the actual text of Article 2.2. of the TBT Agreement. The wording of Article 2.2 shows that the test laid down therein is in line with that used in connection with Article XX of the GATT and developed by Panel practice. In following the terms of Article 2.2 of the TBT Agreement, according to the EC, a dual examination has to be carried out: (i) determine whether the measure is the only one that allows the objective set by the Member to be attained, or whether there is a less restrictive measure whereby this objective can also be achieved; (ii) assess the risks which a failure to take the measure concerned would create, taking account, in particular, of available scientific and technical information or end-uses of products. The EC claim that, applied to the Decree, these two criteria show that the measure is compatible with Article 2.2.

3.291 The EC note that Canada repeats throughout its submission that a less restrictive measure (namely the "safe" use of asbestos) would enable the objective chosen by the French authorities to be achieved. However, the factual arguments of the EC, like their comments relating to Article XX(b) of the GATT, emphasize that "safe" use is: (i) insufficient to halt the spread of the risks linked to exposure to asbestos in the production and processing industries, even though the number of workers in those industries is limited and they are therefore, in principle, easy to supervise and monitor (this means an excess of mesotheliomas even with "safe" use); (ii) ineffective in halting the spread of the risks linked to occasional, and often unwitting, exposure to asbestos. The principle of "safe" use cannot apply where the risks affect a range of very varied occupations operating in a wide variety of situations (this means that it is genuinely impossible to ensure "safe" use among do-it-yourself enthusiasts and those exposed to para-occupational risks). For further details, the EC refer the Panel to the comments made in the factual section and those relating to Article XX(b) in their legal arguments. On that basis, the EC consider that the Panel should also conclude that the prohibition of asbestos and asbestos-containing products is the sole measure that will enable the objective set by the French authorities to be achieved.

3.292 The EC claim that failure to ban asbestos and asbestos-containing products would create risks for human health. The EC assert that, even though the burden of proof lies on Canada, the latter has done nothing to show that the replacement of the horizontal prohibition by "safe" use would not create risks to human health. In the EC's view, the risks that would be created by a failure to impose a ban are evident in the light of the available scientific information, the available technical information and the end-uses of asbestos and asbestos-containing products.

3.293 The EC maintain that the consequence of using asbestos and asbestos-containing products is to expose certain sections of the population to asbestos to a degree which scientific studies recognize as dangerous to human health. The spread of the risks linked to such exposure cannot be halted by "safe" use. In the mining and processing industries, in principle the easiest to monitor, the limits to the "safe" use of asbestos are already apparent. For example, the 1996 study of the British HSE, mentioned in the factual section, finds a significant excess of deaths due to mesothelioma among workers who began working in asbestos mines after the introduction of "safe" use. The EC note that, throughout its submission, Canada considers that asbestos inhalation is a threat only to production and processing workers and affects several thousand persons at the most. In the para-occupational and domestic context, however, hundreds of thousands of persons are exposed to asbestos (very often unwittingly) and may even be subject to exposure levels greatly in excess of the current limit values for asbestos dust. For example, as the EC indicated in Section III.B, a roofing worker using a grinder in the open air to repair corrugated roof sheeting made of asbestos-cement is exposed to a peak level of 41 f/ml, 410 times in excess of the limit value. The EC point out that a 1992 study by the Quebec

CSST shows that the risk of mesothelioma has been rising steadily in Canada since 1967, chiefly among repair and maintenance workers. This finding is even more relevant to those persons exposed to asbestos inhalation in a non-occupational context. The publication by Camus *et al.* shows a net excess of mesotheliomas in women living near chrysotile asbestos mines in Quebec, seven times higher than the level found among other women in Quebec. Canada never quotes this study.

3.294 The EC point out that, as they indicated in the factual section (see Section III.B) and in their comments on Article XX of the GATT, all these findings were taken into account in the INSERM Report. These findings are also in line with the most recent scientific studies. In the EC's view, Canada cannot discharge the burden of proof by trying to justify the "safe" use of asbestos by reference to texts which are over 15 years old and do not guarantee an adequate level of protection, given the health objectives adopted by the vast majority of countries. The EC emphasize in this connection that recent texts, not quoted by Canada, confirm the ineffectiveness of such "safe" use. This can be clearly seen in the 1998 WHO report, which states:

> "Some asbestos containing products pose particular concern and chrysotile use in those circumstances is not recommended. These uses include friable products with high exposure potential. Construction materials are of particular concern for several reasons. The construction industry work force is large and measures to control asbestos are difficult to institute. In-place building materials may also pose risk control to those carrying out alterations, maintenance and demolition. Minerals in place have the potential to deteriorate and create exposures."[422]

3.295 The EC state that the technical information indicates that "safe" use cannot halt the spread of the risks linked to exposure to asbestos, in particular where persons are unwittingly exposed (repeatedly or occasionally). The fact that "safe" use cannot halt the spread of the risk follows logically from the fact that it would be completely unrealistic to apply to the general public the extremely stringent rules applicable to a small "targeted" population (primary users). In fact, as the EC have already stated, it is impossible to implement "safe" use effectively when hundreds of thousands of persons are exposed every day in areas of activity with little supervision in terms of health, such as the construction industry, which accounts for at least 25 per cent of the cases of mesothelioma occurring in France, not to mention the millions of do-it-yourself enthusiasts unwittingly exposed to asbestos inhalation when performing everyday tasks such as cutting. As regards the specific means of ensuring the effectiveness of "safe" use, the EC point out that Canada, even though it bears the burden of proof, considers that the risk of asbestos fibres escaping during cutting or sawing of asbestos-containing products would not exist if items were supplied "pre-cut".

3.296 The EC note that Canada also refers to an ISO standard which is over 15 years old. Canada states that "… the cutting of plates or tiles for roof covering is not a source of emission if the simple techniques of standard ISO-7337 are followed". The EC note that these "simple" techniques include "the use of chains that break the pipes by the effect of pressure, low-speed saws and saws equipped with a vacuum extractor, as well as the moistening of the materials prior to any action". Use of these techniques also presupposes that do-it-yourself enthusiasts will put on a "diver's suit" before starting any operation that will bring them into contact with asbestos. In reality, these techniques are not sufficient to halt the spread of the risks. The EC emphasize that, in the real world, not all items are pre-cut. In the real world, the thousands of people who are unwittingly exposed to asbestos inhalation will not put on protective clothing to perform everyday tasks. In the EC's view, the fact that Canada is unable to demonstrate any specific or realistic methods of halting the spread of the risk linked to asbestos exposure, without a total ban on asbestos and asbestos-containing products, is due to the absence of any scientific basis. Once products are placed on the market, there is no longer any realistic means of monitoring the use of asbestos, and in particular the everyday operations (cutting, sawing, etc.) in which many persons may be engaged. The EC maintain that the "safe" use of asbestos advocated by Canada is therefore inapplicable and does not enable the legitimate objective

[422] *IPCS Environmental Health Criteria (203) on Chrysotile* WHO, Geneva, 1998, point c), p.144.

set by France to be achieved. Furthermore, the EC note that Canada states that the French Decree means "blind recourse" to substitute fibres. According to the EC, this statement reflects a misunderstanding of the French legislation. In practice, manufacturers carry out technical tests with a view to replacing asbestos products by substitute products. If these tests are inconclusive, and if the manufacturers can demonstrate that there are no substitute products with the same technical characteristics as asbestos, they can submit an application for a waiver so that they can continue to use asbestos. The Decree provides for such waivers, which are granted after a detailed assessment.

3.297 Concerning the intended end-uses of the products, the EC note that Canada maintains that the "modern" uses of chrysotile fibre are such that the fibre is bound in a matrix and cannot be released into the environment. The EC point out in this connection that Canada is claiming that this is an innovation when it is not. As the EC have already indicated, for the past forty years the production of asbestos-cement has consisted of "encapsulating" asbestos in cement (10 per cent of asbestos fibres in 90 per cent of cement). The EC emphasize that, in talking of "modern" use or of "modern" products, Canada is misleading the Panel by trying to promote a "clean" image of chrysotile asbestos; although "chrysotile asbestos" sounds better than "amphibole asbestos", chrysotile is also classified by the WHO as a "category I" product known to cause cancer in man. The Panel should know that the "encapsulation" in question by no means guarantees the harmlessness of asbestos-cement, for example. Once the use of asbestos-cement is authorized, it is no longer possible to monitor such use. A variety of operations such as cutting, sanding, crushing or sawing are bound to be applied to asbestos-cement, in the occupational, para-occupational and domestic contexts. During these operations, large numbers of carcinogenic fibres will be released in the form of dust. Consequently, the EC conclude that the "modern" use of chrysotile asbestos, to which Canada refers in its submission, is illusory and can only conceal the grave risks linked to the use of asbestos-cement, in particular by persons who are subject to unwitting, repeated or occasional exposure.

3.298 **Canada** emphasizes that, once it is acknowledged that an objective is legitimate, it must be determined whether the technical regulation constitutes a rational and necessary measure. A measure is said to be rational if it is carefully designed, based on the legitimate objective. It must be neither arbitrary nor based on irrational considerations. A measure is said to be necessary if it is not more trade-restrictive than is necessary to fulfil the legitimate objective, taking account of the risks non-fulfilment would create. The measure must therefore have a minimal impact on trade. The risks that the absence of a measure would entail must also be assessed. The foregoing is based directly on the text of Article 2.2, particularly the second sentence. In Canada's view, the application of this provision requires that the following three questions be answered: (i) does the technical regulation make it possible to "fulfil" the "legitimate objective" (rational measure); (ii) is the technical regulation "more trade-restrictive than necessary" to fulfil the legitimate objective (necessary measure); and (iii) have the alleged harmful effects ("the risks non-fulfilment would create") been assessed in light of the "available scientific and technical information" and the "intended end-uses of products"? Unlike the United States,[423] Canada considers that the obligation under Article 2.2 does not have to be interpreted in a similar way to Article 5.6 of the Agreement on the Application of Sanitary and Phytosanitary Measures ("SPS Agreement"). Article 5.6 of the SPS Agreement refers to a specific test that the United States suggests be transposed to Article 2.2 of the TBT Agreement, even though the terms of each Article are different, calling for separate approaches. To cite only one example, contrary to the footnote to which Article 5.6 of the SPS Agreement refers, Article 2.2 of the TBT Agreement does not require the demonstration of the existence of another applicable measure that is "significantly" less restrictive to trade. Canada notes that the EC subscribe to this viewpoint as they propose to interpret the criterion of necessity in Article 2.2 of the TBT Agreement in a similar way to the criterion of necessity in Article XX of the GATT 1947 and 1994.

3.299 Canada considers that the question that must be answered is whether the technical regulation embodied by the Decree has been carefully designed to fulfil France's objective? This stage of the

[423] See Section IV below.

analysis is essential in order to prevent the justification of technical regulations that only have tenuous links with the stated objective. Canada maintains that there is no rational link between the Decree and France's objective and that the total ban on asbestos does not allow this objective to be attained for three reasons: (i) the Decree does not address the real problem of asbestos in France, which is the amount of contact with friable materials containing amphiboles that have been in place for at least 20 years; (ii) the Decree ignores the indisputable scientific evidence concerning the safety of products in which chrysotile fibres are trapped in a matrix; and (iii) the Decree imposes substitute products whose risks are unknown, thereby compromising France's objective. These three points will be addressed in turn.

3.300 Regarding the first point, Canada contends that the risks associated with asbestos in France are attributable to amphibole asbestos and to sprayed-on applications, both of which are no longer used. When setting out its arguments on controlled use and workers in the servicing and maintenance sector in the factual section (Section III.B above), Canada emphasized that, in the industrialized countries, it is the friable asbestos products inherited from the past which represent by far the major potential for exposure and risk today and in the years to come. That is the situation in France, where the health problems associated with asbestos are essentially attributable to friable materials containing amphiboles (or a mixture of amphiboles and chrysotile), used in the 1950s, 1960s and 1970s in processes such as spraying and insulation. The French Académie nationale de médecine came to this conclusion earlier, in April 1996, in its report on the protection of the populations exposed to the inhalation of asbestos fibres in public and private buildings. The relevant passage reads as follows:

> "A number of epidemiologists have found that unprotected contacts with the parts of buildings containing asbestos expose, even today, too many professionals to diseases comparable to those described prior to the current regulations. This is unfortunately a simple statement of the fact that improper working conditions pose the same hazards as the working conditions of the 1950s."[424] [Translation by Canada]

3.301 According to Canada, inasmuch as the hazard already exists, France, like the other industrialized countries, cannot prevent it. France has already ordered a mandatory survey of apartment buildings containing sprayed-on asbestos. Construction workers will be able to refer to this register and take the appropriate measures. France banned spraying in 1978 and amphiboles in 1994. The Decree therefore has the effect of prohibiting chrysotile-cement and other non-friable chrysotile-based products. In Canada's view, it is obvious that the Decree does not in any way constitute a solution to France's public health problem, which is associated with amphiboles and friable products containing asbestos. Canada maintains that there is no rational link between the objective, which is to solve the health problems caused by the large quantities of friable asbestos materials in place in existing buildings, and the Decree, which is obviously not designed to fulfil this objective.

3.302 Regarding the second point, Canada states that chrysotile fibre and high-density non-friable products do not pose any detectable health risk. Nor is there a rational link between the ban on high-density products and the protection of health because these products do not pose any detectable health risk. Today, 97 per cent of chrysotile fibres are used in high-density non-friable materials. Asbestos-cement products account for 90 per cent of the world market. Brake linings represent about 7 per cent of the market. Various products, such as plastics, seals, etc. account for the remaining 3 per cent market share. These products are non-friable and only chrysotile fibres are used. In these products, the fibres are firmly bound physically and chemically to the matrix of the composite and cannot easily be released in biologically significant concentrations. Canada contends that the health risks associated with these non-friable high-density chrysotile products are undetectable. The word "undetectable" here means "below the limit of detection". This expression means that, by using the

[424] Académie nationale de médecine (Étienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés*, Bulletin de l'Académie nationale de médecine, Vol.180, no.4-16,23,30 April 1996, p.7.

most recent methods and techniques and the most rigorous statistical analyses, the risk associated with conditions of exposure is so low, if there is even any risk at all, that it is "below the limit of detection". The source of the asbestos risk which the French want to stop from spreading does not come from these high-density chrysotile-based products. In Canada's view, there is no rational link between the objective of protecting human health and the Decree, whose objective is to prohibit the marketing, sale and importation of non-friable high-density chrysotile products because their health risks, if any, are undetectable.

3.303 Thirdly, Canada claims that the Decree replaced the "known" and undetectable risk of non-friable chrysotile-based products with the "unknown" risk of substitute fibres, thereby increasing the risk to human health. The absence of a rational link is even more obvious if it is considered that the Decree encourages the replacement of chrysotile by substitute fibres. As a result of the Decree, the undetectable risk associated with high-density chrysotile-based products has been replaced by the unknown risk of substitute fibres. The ban on chrysotile asbestos thus creates a false sense of security in the population, lowering the vigilance of workers and of the public who are the most likely to come into contact with the substitute products. Canada notes that the EC claim that the harmlessness or less harmful nature of substitute fibres is proven. As it emphasized in its arguments concerning substitute fibres, Canada maintains that not only does this claim not stand up to analysis, but the description given by the EC is incorrect. The EC are endeavouring in this manner to justify the irrationality of the total ban on chrysotile fibres and their ill-considered replacement by substitute fibres. According to Canada, the WHO is of the opinion that replacement must be done whenever it is possible to replace chrysotile fibres with "safe substitute materials". Canada recalls that on several occasions it has emphasized that the chrysotile substitutes used in France are not "safe" products or products whose "harmlessness" or "less harmful" nature are proven. Nor is chrysotile asbestos replaced by products which, according to the ILO, should be "harmless or less harmful". The fact that substitute products do not contain asbestos is not sufficient grounds to believe that these products are safe or less hazardous. In many cases, fibrous substitute materials are assumed to be safe by users and safety measures such as dust control and removal are not observed. Canada considers that banning a material whose risks are known, and even over-estimated, and replacing it indiscriminately with substitutes whose effects are unknown seems to be an odd choice given France's objective of protecting public health. Canada maintains that there is no rational link between the objective of protecting human health and the Decree, whose effect is to replace a product - chrysotile - whose risks are known and undetectable with substitutes - fibres or products - whose risks are unknown. The Decree does not result in increased protection of public health; it contributes rather to fostering in the population a false sense of security and potentially a greater risk to human health.

3.304 Canada concludes that, inasmuch as it has no rational link with France's objective, the Decree is inconsistent with Article 2.2 of the TBT Agreement. However, in the event that the Panel should find that there is a rational link between the Decree and France's objective, the Decree would nonetheless be inconsistent with Article 2.2 of the TBT Agreement because, as demonstrated below, its effects on trade are more restrictive than is necessary, taking account of the risks that non-fulfilment of France's objective would create. An alternative solution that is less trade-restrictive and fulfils the same objective of protecting human health was available, namely controlled use.

3.305 Canada maintains that the prejudicial effects of the Decree on trade are not necessary, taking account of the risks that the absence of a technical regulation would create. The terms of Article 2.2 of the TBT Agreement - "technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create" - suggest the application of a criterion of necessity. The two factors to be considered in examining necessity are, on the one hand, the risks that the absence of a technical regulation would create and, on the other, the existence of a less trade-restrictive alternative measure that would make it possible to fulfil the stated objective just as effectively. According to Canada, the Panel must therefore first determine what risks the absence of a Decree would create. To assess these risks, the relevant factors to take into consideration include the available scientific and technical information and the intended end-uses of

the products. In this respect, Canada is of the opinion that the protection of human health would be just as effectively ensured if the ban on chrysotile prescribed by the Decree were replaced by controlled use measures, considering the undetectable risks of the high-density chrysotile-based products which account for virtually the entire market. To determine whether the effects of the technical regulation on trade are necessary, taking account of the risks that its absence would create, Canada considers that it is essential to consider the existence of less trade-restrictive alternatives that would make it possible to fulfil the objective just as effectively as the disputed measure. In examining whether the prejudicial effects of the technical regulation are appropriate given the stated objective, the Panel must consider the existence of a less trade-restrictive alternative solution that would make it possible to fulfil the desired objective just as effectively. In Canada's view, the controlled use of asbestos is a less trade-restrictive alternative which, nonetheless, makes it possible to fulfil the objective of protecting human health.

3.306 Canada contends that the Decree is not based on scientific information. It notes that that there are two types of "asbestos" risk in France: (i) the risk of diseases that might occur among those exposed while working with modern high-density products containing chrysotile; (ii) the risk of diseases that might occur among persons working in buildings containing friable asbestos materials. The risks and diseases associated with friable materials that were put in place in France using a process – spraying – that is now banned are not affected by the Decree and are therefore not the subject of this debate. Indeed, France banned spraying, amphiboles and friable products well before the date of the Decree. The only risks and diseases concerned by the Decree are those associated with contact with modern high-density products containing chrysotile. None of the "available scientific and technical information" supports the total ban on asbestos (in fact, chrysotile asbestos) adopted by France. Canada maintains that the risk assessment used by France as a basis for the ban on chrysotile – the INSERM report – does not take into consideration the scientific information concerning products in which chrysotile fibres are solidly set in a binder in such a way that no dust can be released. Furthermore, using models derived from exposures to high doses of asbestos dust containing amphiboles, INSERM claims to make an assessment of the risks of modern applications of chrysotile. It assumed that the risk is proportional to the exposure for levels considerably lower than those that have been the subject of epidemiological study. Canada considers that such extrapolations are scientifically unfounded. According to the INSERM group of experts, this is the "most plausible uncertain" risk assessment.

3.307 Canada states that the figures obtained by INSERM based on these models are average values subject to large variations. INSERM did not consider the risks of the intermittent or discontinuous exposures that occur while working with high-density products in which chrysotile fibres are incorporated, such as asbestos-cement, the composite in which more than 90 per cent of chrysotile fibres imported into France were incorporated before the adoption of the Decree. In this application, chrysotile fibres are solidly bound to the cement in such a way that no asbestos dust is released into the ambient air. Most manufacturers now offer products pre-cut and pre-drilled in the plant. Special techniques such as pre-cutting are used to avoid any cutting operations. When cutting or drilling cannot be avoided, work methods exist which make it possible to limit the dust emissions to a level significantly lower than the safe exposure values. This is also true for the other modern chrysotile-based products in which the fibres are incorporated or encapsulated in a matrix. According to Canada, the EC have not demonstrated that chrysotile fibres encapsulated or incorporated in a cement matrix or a plastic composite pose a health risk. Canada states that it has refuted all the studies on which the EC rely in order to argue that controlled use is not effective in keeping risks to human health to an undetectable level during all stages of the life cycle of modern chrysotile-based products (extraction of chrysotile, processing, incorporation in manufactured products, distribution, sale, use and disposal). On the other hand, credible scientific information indicates that emissions of asbestos dust from non-friable high-density chrysotile-based products are minimal and represent, for those exposed, an undetectable level of risk. Canada contends that INSERM did not correctly assess the risk to human health from the manufacture or use of high-density chrysotile-based products. Such a study would

undoubtedly have prompted INSERM to conclude that modern uses of chrysotile do not pose a genuine health risk.

3.308 Canada maintains that high-density chrysotile-based products do not pose a risk to human health in light of their intended end-uses.[425] Canada also claims that France dismissed controlled use, a practice less trade-restrictive than a total ban on chrysotile, even though controlled use is equally effective in protecting human health. Canada emphasizes that the array of measures aimed at controlling the use of asbestos in place in France when the total ban on asbestos was adopted enabled the objective of protecting human health to be attained without creating an unnecessary obstacle to trade. The French legislative provisions on controlled use were quite elaborate. Several measures had been taken by the public authorities, including: (i) a ban on sprayed-on applications of asbestos for all buildings; (ii) a ban on the marketing, use and importation of all varieties of amphiboles; (iii) rigorous control of the average concentrations of asbestos fibres in the workplace (exposure limit value of 0.1 f/ml); (iv) a ban on an entire range of products containing asbestos; and (v) a mandatory survey of apartment buildings containing sprayed-on asbestos and insulation. This array of measures offered optimal protection of human health.

3.309 Canada claims that France did not have to ban asbestos completely. It merely had to continue to apply the measures already in place. In fact, the use of relatively simple methods and rules is sufficient to ensure safe use of chrysotile at each stage of its life cycle, as can be seen in the case of chrysotile-cement, which accounts for virtually all of the world market for products in which chrysotile is incorporated. Canada notes that controlled use makes it possible, to borrow the expression of the EC, to halt the spread of the risk associated with exposure to chrysotile in the production and processing sectors. The following control measures are effective in maintaining emissions of chrysotile dust below the permitted limit values: dust control equipment, regular verification of chrysotile concentrations, wet process, confinement, policy on work clothing, showers and medical examination. Similarly, during the installation and maintenance of chrysotile-cement products, controlled use affords workers a level of protection corresponding to an undetectable risk. If the methods prescribed by Standard ISO-7337 are followed, the exposure levels generated during cutting, sawing, drilling or sizing operations on chrysotile-cement products can be maintained well below values that represent a detectable risk. Canada claims that the total ban on asbestos constitutes the most restrictive possible measure from the standpoint of international trade. It has resulted in the total closure of the French market to chrysotile asbestos. In the case of high-density chrysotile-based products, controlled use is entirely practicable, effectively protects human health and has a less drastic effect on international trade. That is why controlled use is a preferable alternative to a ban in the context of Article 2.2 of the TBT Agreement. Canada states that when, in accordance with Article 2.2 of the TBT Agreement, the risks of modern uses of chrysotile are taken into consideration in light of the scientific information and the intended end-uses of the products, the total ban on asbestos is not justifiable in terms of this Article because controlled use is less trade-restrictive and makes it possible to fulfil the objective of protecting human health.

3.310 Canada maintains that the preamble to the TBT Agreement cannot be invoked to justify non-compliance of a technical regulation with Article 2.2. The preamble to the TBT Agreement cannot be used to justify the Decree. The preamble outlines the goals and rationale of a treaty. It does not confer any rights and does not impose any obligations. In the case of the preamble to the TBT Agreement, the statement that the Members can choose the measures necessary for the protection of health is explicitly limited by the obligations contained in the Agreement. Paragraph 6 of the preamble to the TBT Agreement stipulates that the principles outlined therein (notably that no country should be prevented from taking "…measures necessary for the protection of human … health") are subject to two requirements. First of all, the measures in question must not constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail nor a disguised restriction on international trade (in this connection, see also Canada's arguments in the section

[425] See Section III.B above.

dealing with Article XX(b) of the GATT). Secondly, the measures adopted must comply with the obligations contained in the TBT Agreement, notably Article 2.2. In Canada's view, it is clear that the preamble cannot be invoked to justify a technical regulation which, like the Decree, is inconsistent with Article 2.2.

3.311 With regard to the precautionary principle, to which the EC refer, Canada notes that it was recently mentioned by the Appellate Body in *Japan – Measures Affecting Agricultural Products* that the preamble and Articles 3.3 and 5.7 of the SPS Agreement refer to the precautionary principle. However, again according to the Appellate Body, the precautionary principle cannot, in itself, justify a violation of any of the obligations of the SPS Agreement. If this is true in the case of the SPS Agreement, it is even more true in the case of the TBT Agreement, which cites this principle much more vaguely. Nor can the precautionary principle be invoked to justify the attainment of a zero risk.[426]

3.312 Canada concludes that the Decree is inconsistent with Article 2.2 of the TBT Agreement. The Decree does not make it possible to fulfil France's objective, namely, better protection of human health. The prejudicial effects on trade of the total ban prescribed by the Decree are neither necessary nor justifiable. The ban has done nothing more to protect health than the controlled already in place. The only uses allowed at the time of the Decree's adoption were those in which chrysotile fibres are incorporated in high-density materials. Yet these materials, according to the available scientific information and considering their end-uses, at the time of the adoption of the Decree did not pose - and still do not pose - a detectable health risk. To summarize, the Decree is an excessive measure in view of the fact that controlled use is a less trade-restrictive alternative that enables the French objective of protecting human health to be attained. Neither the preamble to the TBT Agreement nor the precautionary principle can justify the measure taken by the French Government in breach of the obligations contained in the TBT Agreement.

3.313 The **European Communities** respond that it is important to be aware that a Member of the WTO can establish the level of health protection it deems appropriate in its territory. In this connection, the EC point out that, for example, the sixth paragraph of the preamble to the TBT Agreement clearly states that Members are free to choose the level of health protection they deem appropriate. This principle was noted by the Appellate Body, which pointed out that:

> "WTO Members have a large measure of autonomy to determine their own policies on the environment (including its relationship with trade), their environmental objectives and the environmental legislation they enact and implement. So far as concerns the WTO, that autonomy is circumscribed only by the need to respect the requirements of the *General Agreement* and the other covered agreements."[427] [italics in the original]

3.314 The EC claim that the Members of the WTO benefit from a similar "large measure of autonomy" in the field of human health protection. The question might arise whether this appropriate level is limited by the word "necessary" or by the fact that the measure must not be applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade. In this respect, the EC consider it important to make a distinction between the "level" deemed appropriate by the Member and the "measure" taken by that Member to achieve the chosen level. The EC note that, in the context of Article XX(b) of the GATT, all the panels which have examined the concept of necessity have concluded that it was not the necessity of the objective pursued by the measure concerned that should be examined but whether or not it was necessary to submit the imported

[426] See the comments of Sir Leon Brittan, para.3.475 below.

[427] *United States – Gasoline*, Report of the Appellate Body, adopted on 20 May 1996, WT/DS2/AB/R, in particular pp.30 and 31 of the English text.

products to the measure contested.[428] In this connection, the Panel on *United States - Restrictions on Imports of Tuna* stated that:

> "… Article XX(b) allows each contracting party to set its own human, animal or plant life or health standards. The conditions set out in Article XX(b) which limit resort to this exception, namely that the measure taken must be 'necessary' and not 'constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade', refer to the trade measure requiring justification under Article XX(b), not however to the life or health standard chosen by the contracting party."[429]

3.315 According to the EC, it follows from the above that whereas the trade measure that makes it possible to achieve the desired objective must satisfy certain conditions, there is no restriction on the level of protection chosen by the Member. Accordingly, the EC consider that France was free to choose the level of protection it deemed appropriate in the present case, i.e. to halt the spread of the risk linked with the use of asbestos fibres and products containing such fibres.

3.316 The EC maintain that the test of "necessary" in Article 2.2 of the TBT Agreement is a formalization of the previous practice relating, in particular, to Article XX(b) of the GATT. The EC would, however, like to point out that, even though the test of necessity within the context of Article 2.2 of the TBT Agreement corresponds, in particular, to the test in Article XX(b) of the GATT, it nonetheless remains true that the burden of proof, within the context of the TBT Agreement, lies with the party which invokes a specific provision of the latter.[430] As the EC pointed out above, the Panel on *United States - Gasoline* introduced into the GATT case law concerning the test of necessity established in the GATT 1947. In particular, the Panel noted that:

> "… the term 'necessary' had been interpreted in the context of Article XX(d) by the panel in the *Section 337* case which had stated that: a contracting party cannot justify a measure inconsistent with another GATT provision as 'necessary' in terms of Article XX(d) if an alternative measure which it could reasonably be expected to employ and which is not inconsistent with other GATT provisions is available to it. By the same token, in cases where a measure consistent with other GATT provisions is not reasonably available, a contracting party is bound to use, among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions."[431] [italics in the original]

3.317 The EC note that the Panel on *Thailand – Cigarettes* adopted the same reasoning when examining a measure under Article XX(b). That Panel saw no reason not to adopt the same interpretation of "necessary" under Article XX(b) as under Article XX(d), stating that:

> "The import restrictions imposed by Thailand could be considered to be 'necessary' in terms of Article XX(b) only if there were no alternative measures consistent with the General Agreement, or less inconsistent with it, which Thailand could reasonably be expected to employ to achieve its health policy objectives."[432]

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[428] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para.5.26, *Thailand – Import Restrictions and Internal Taxes on Cigarettes* (hereinafter *Thailand – Cigarettes*), adopted on 7 November 1990, BISD 37S/200, para.75; *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, paras.6.22-6.24.

[429] *United States – Restrictions on Imports of Tuna*, report circulated on 3 September 1991, not adopted, BISD 39S/155, para.5.27.

[430] The EC note that this principle was underlined by the Appellate Body within the context of the SPS Agreement, (*EC Measures Concerning Meat and Meat Products (Hormones*), Report of the Appellate Body, WT/DS26/DS48/AB/R, adopted on 13 February 1998, in particular para.109.

[431] *United States – Gasoline*, Appellate Body and Panel Report, adopted on 20 May 1996, WT/DS2/9, in particular para.6.24.

[432] See, in particular, *Thailand – Cigarettes*, adopted on 7 November 1990, BISD 37S/200, para.75. The EC also note that this approach is being followed in practice. The document entitled "Streamlined

3.318 The EC consider that the concept of necessity under Article XX(b) of the GATT is similar to that in Article 2.2 of the TBT Agreement. The criterion of necessity under Article 2.2 of the TBT Agreement is also based on whether or not the measure adopted is more restrictive than necessary to fulfil a legitimate objective. In this sense, Article 2.2 echoes the test of necessity in Article XX(b) of the GATT which involves, *inter alia*, examining whether a measure consistent or less inconsistent with the GATT (and hence less restrictive) is available and could be employed to fulfil the Member's objective.

3.319 As for the second sentence of Article 2.2 of the TBT Agreement, which reads "… taking account of the risks non-fulfilment would create", the EC consider that, here again, this is an integral part of the implementation of the test of necessity under Article XX(b) of the GATT. In fact, according to the EC, a restrictive measure is "necessary" only if there are risks associated with the non-adoption of the measure in question. The purpose of this sentence is to deny Members the possibility of adopting measures, under cover of protecting human health, without having taken into account the risks associated with the use of the product banned. Such risks should be assessed, in particular, on the basis of the available scientific and technical information. Clearly, then, the degree of necessity depends on the nature of the objective, as well as on the risks its non-fulfilment would create. As the EC claimed, under the so-called "safe" use policy there continues to be a significant excess of deaths in the asbestos production and processing sector. Moreover, this policy does not provide protection for the secondary populations exposed to asbestos (carpenters, electricians, do-it-yourself enthusiasts, etc.), although the number of deaths caused by asbestos in these groups has steadily increased and now accounts for more than a quarter of deaths due to asbestos.

3.320 The EC note that France, through the INSERM report, analysed the risks associated with the use of asbestos when it adopted its Decree. Furthermore, the scientific evidence[433] predicted an increase in the annual number of deaths by mesothelioma in France up to the year 2020. It is estimated that in France the total number of deaths by mesothelioma over the whole of the period 1996-2020 will be 20,000 for men and 2,900 for women. Furthermore, the study by Peto *et al*[434], which analyses mesothelioma mortality in England and Wales during the period from 1979 to 1990, shows that about 95 per cent of all the deaths during that period involved workers belonging to the "secondary" user group. It follows that, in the present case, the risks created by non-fulfilment are mortal risks. Accordingly, as so-called "safe" use is inapplicable and ineffective[435], the EC maintain that banning asbestos and asbestos-containing products was the only measure that could be employed to achieve the level of protection deemed appropriate by France, which is to halt the spread of the risk associated with the use of this product. The EC therefore conclude that the test of necessity is the same under Article XX(b) of the GATT 1994 as under Article 2.2 of the TBT Agreement.

3.321 The EC point out, however, that the fact that the test of necessity should, in substance, be applied in the same way in each of the above-mentioned provisions does not mean that the distribution of the burden of proof is the same under each of these provisions. Within the context of Article 2.2 of the TBT Agreement, as distinct from Article XX(b) of the GATT, the burden is on the complaining party to first establish a violation. Article 2.2 of the TBT Agreement cannot be

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mechanism for reconciling the interests of contracting parties in the event of trade-damaging acts" provides, in particular, that "A measure taken by an importing contracting party should not be any more severe … than necessary to protect the human, animal or plant life or health involved, as provided in Article XX(b)" Document C/M/236, BISD 36S/67, point 1.

[433] Gilg Soit Ilg, A., *et al*., *Estimation of the Past and Future Burden of Mortality from Mesothelioma in France*, Occupational Environmental Medicine, 1998; 55:760-765.

[434] Peto, J. *et al*., *Continuing Increase in Mesothelioma Mortality in Britain*, Lancet, 1995, vol.345, p.535.

[435] Hutchings, S., *et al*., *Asbestos-Related Disease*, Occupational Health Supplement, London, Health and Safety Executive, 1996, pp.127-152.

understood as an exception to another provision of the TBT Agreement. Considering the structure and context of the TBT Agreement, the Report of the Appellate Body in the *Hormones*[436] case is particularly relevant. In fact, the complaining Member must first demonstrate the availability of a consistent or less inconsistent alternative measure that can be employed to achieve the level of protection deemed appropriate by the defending Member.[437] The EC consider that Canada has not shown that the French measure was not necessary, within the meaning of Article 2.2 of the TBT Agreement, to protect human health in accordance with the level of protection deemed appropriate by France.

3.322 **Canada** contends that, contrary to the requirements of Article 2.2 of the TBT Agreement, the Decree has no rational link with France's stated objective: it does not protect the health of French workers or of the public in general. The requirement for such a link flows naturally from the text of Article 2.2, which states that regulations shall not create "unnecessary obstacles to international trade". As the preamble to the TBT Agreement prescribes, the rational link element ensures that measures are not "applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination". Three facts supported by science demonstrate the lack of a rational link: (i) the risks posed by the high-density chrysotile products at issue in this case are undetectable; (ii) amphiboles are far more dangerous than chrysotile; and (iii) substitute fibres have not been shown to be harmless. Canada addresses each of these factual issues in turn.

3.323 Canada notes, first of all, that high-density chrysotile products do not threaten the health of French workers, but are nonetheless wrongly targeted. The Decree banning such products therefore has no rational connection with the protection of human health. According to Dr. Henderson, chrysotile-cement products pose a "negligible risk to health" because of their normal weathering, erosion or general degradation. "… there is little or no dispute among experts on this issue".[438] To illustrate the relative risk, Dr. Henderson states that: "A greater risk to health would arise from […] falling from or through the roofs".[439] At the meeting with the parties on 17 January 2000, he added that the risk of cancer and mesothelioma is consistently higher with friable products than with high-density products and that the risk associated with manufacturing high-density chrysotile-cement products was "extremely low." Canada further states that interventions on the high-density products at issue, namely chrysotile-cement exterior construction panels, roofing tiles and pipes, are rarely, if ever, required. Moreover, with the adoption of proper working procedures and the use of proper tools as recommended in international standards, such interventions pose no detectable risk to human health. According to Canada, the WHO specifically targets past uses as being problematic: "There is potential for widespread exposure of maintenance personnel to mixed asbestos fibre types due to large quantities of friable asbestos materials still in place."[440] One of the five conclusions of the WHO 1998 Report on asbestos is: "Some asbestos-containing products pose particular concerns [...] these uses include friable products with high exposure potential."[441]

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[436] *EC Measures Concerning Meat and Meat Products (Hormones*), Report of the Appellate Body, WT/DS26/DS48/AB/R, adopted on 13 February 1998, in particular paras.99-109.

[437] The EC indicate that equally relevant, by analogy, is the position of the Appellate Body in *Japan – Measures Affecting Agricultural Products*, adopted on 19 March 1999 (WT/DS76/AB/R, para.126), according to which the complaining Member must show that the contested measure is more trade-restrictive than necessary to fulfil a legitimate objective taking into account the risk which non-fulfilment would create.

[438] See Section V, reply by Dr. Henderson to question 1(b) from the Panel. [Note: in the context of this dispute, the Panel consulted four independent experts in accordance with Article 13 of the Understanding. The written replies by the experts to the questions from the Panel can be found in Section V of this report. Annex VI contains a transcription of the meeting held by the Panel on 17 January 2000 with the experts and the parties].

[439] *Id.*

[440] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.139.

[441] *Id.*, p.144.

3.324 Secondly, Canada claims that the Decree has no rational connection with the objective because it targets chrysotile, whereas amphiboles are the real danger. It does nothing either to address the serious problem posed by the enormous quantity of friable products containing amphiboles still in place. The ban merely relieves public pressure on the French Government to find a solution to the real problem. According to Canada, three of the four experts agree that a clear distinction should be drawn between the toxicity of amphiboles and chrysotile. Amphiboles may be up to 100 times more dangerous than chrysotile for the induction of mesotheliomas.[442] At the meeting of 17 January, Dr. Henderson repeated that "most if not all these mesotheliomas are a consequence of exposure to asbestos-containing materials that included a mixture of asbestos types" [sic].[443] Canada notes that a 1997 report of the French Ministry of Labour (*Ministère du Travail, Comité G2SAT*), submitted to the Panel by the EC, recognizes that, as a result of the chemical dissolution process that takes place in the lungs, chrysotile's carcinogenic activity is practically nil:

> "It has been shown that chrysotile is much more easily eliminated from the human lung than other forms (amphiboles). Moreover, it has practically no carcinogenic activity."[444] (WTO translation)

3.325 Thirdly, Canada contends that the Decree has no rational connection with the protection of human health because it imposes use of substitute fibres that are not proven to be safe. Canada notes that, at the meeting with the experts, Drs. Henderson, de Klerk and Infante agreed that, perhaps with the exception of glass fibres, which should be presumed to be carcinogens, the information on substitutes is meagre. This is confirmed in the recently published INSERM Report on substitute fibres, which "underlines some grave concerns that should rapidly be dissipated".[445] At the second substantive meeting with the parties, Canada drew to the Panel's attention the key conclusions of the INSERM report on substitute fibres. Canada notes that, in this report, INSERM admits that very little is known about their potential impact on human health:

> "Fibres on which very few toxicological data exist are today being used … on a large scale as a replacement for asbestos; the novelty of their use for such applications is accompanied by a lack of data on their potential effects on human health."[446] (WTO translation)

3.326 Canada points out that INSERM concluded that, in epidemiology, no significant excess risk of cancer has ever been detected from exposures to asbestos at the same exposure levels used to evaluate the carcinogenicity of substitutes: "No significant increase in the risk of cancer due to exposures to asbestos at levels comparable to those estimated for substitute fibres has ever been detected."[447] (WTO translation) Canada notes that, at the meeting, the experts did not deny this statement. INSERM also concluded that it was unable to demonstrate that substitute fibres are not carcinogenic:

> "Globally, it was not possible to reach a firm conclusion for any of the types of fibre or any type of cancer […]
> It must, however, be strongly emphasized that the data available do not allow the existence of a risk of cancer caused by exposure to substitute fibres to be eliminated […]
> On the basis of the epidemiological data currently available, therefore, no conclusion can thus be drawn concerning the carcinogenicity of various types of substitute fibre."[448] (WTO translation)

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[442] See Section V, replies by Dr. Musk and Dr. de Klerk to question 3 from the Panel.
[443] *Id.*, reply by Dr. Henderson to question 1(e) from the Panel.
[444] INRS, *Rapport du Groupe scientifique pour la surveillance des atmosphères de travail (G2SAT)*, 1997, p.47.
[445] INSERM, *Effets sur la santé des fibres de substitution à l'amiante*, INSERM joint report, Paris, 1999.
[446] *Id.*, p.v.
[447] *Id.*, p.411.
[448] *Id.*, pp.178-181.

3.327 Canada points out that, based on these findings, INSERM recommends that all proposed substitutes be suspected of inducing pathologies: "Any new fibre proposed as a substitute for asbestos or for any other use should *a priori* be suspected of being pathogenic."[449] (WTO translation) Canada adds that a host of other studies also show that many substitute fibres present substantial health risks. According to the United States Occupational Safety and Health Administration (OSHA), glass fibres "are reasonably anticipated to be a carcinogen".[450] The United States Environmental Protection Agency (EPA) has further concluded that refractory ceramic fibres (RCF) present a significant risk of serious harm to human beings from cancer.[451] This is consistent with the findings of the WHO's International Agency for Research on Cancer (IARC), which has classified glass wool, rock wool, slag wool, and refractory ceramic fibres as "possibly carcinogenic to humans".[452] Finally, Dr. Infante has concluded that: "on a fiber-per-fiber basis, glass fibers may be as potent or even more potent than asbestos".[453] Canada notes that, at the meeting with the experts, Dr. Infante reiterated that glass fibres should be presumed to be carcinogenic. Canada submits that there is a convergence of opinions within the scientific community that there is no solid scientifically validated evidence to support the allegation that the use of substitutes is safe. Thus, the Decree has replaced the undetectable risk of chrysotile with the unknown risks of substitute fibres. The French ban is not rationally connected with its objective of protecting human health because the risk of substitutes has not been addressed.

3.328 Canada contends that the ban is not necessary because a less trade-restrictive measure is available. Why is it so "necessary" for France to protect its citizens against the undetectable risk posed by chrysotile high-density products, but not against the risks of substitutes? Canada notes that several variations of the word "necessary" have been put forward to justify France's ban on chrysotile. In Canada's view, however, necessity, in the WTO context, is not and should not be understood as political necessity "to be seen to be doing something" in order to assuage public opinion. The French National Assembly and Senate clearly acknowledged these facts in a joint report on asbestos published in 1997:

> "The climate in society changes as a result of pressure from shaken public opinion [page 19] … [The Decree is] a decision which concerns public opinion and whose aim is to provide reassurance [page 57]."[454] (WTO translation)

3.329 Canada contends that necessity, in the WTO context – and more specifically in the context of the TBT Agreement– is a narrower concept than France and the EC suggest. A contested measure, to be in compliance with Article 2.2 of the TBT Agreement, must be "necessary to fulfil a legitimate objective", i.e. to protect human health, not to meet the French population's concerns about health. The TBT Agreement was not negotiated to allow governments to legislate to appease public opinion. It was specially negotiated to counter such recourse to technical barriers to trade in the absence of scientific evidence. Canada considers that a decision in favour of the EC would eviscerate the TBT Agreement. Under the necessity test of Article 2.2 of the Agreement, a measure will be found

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[449] *Id*., p.398.

[450] See United States Department of Labor (OSHA), *Synthetic Mineral Fibers: Hazard Description*, on line: OSHA <http://www.osha.gov/oshinfo/priorities/synthetic.html> (access date: 22 June 1999). The OSHA Report states that: "Several epidemiologic studies have demonstrated statistically significant elevations in the risk of lung cancer and other respiratory system cancers among workers employed in fibrous glass and mineral wool manufacturing facilities."

[451] See United States Department of Labor (OSHA), *Synthetic Mineral Fibers: Hazard Description*, on line: OSHA <http://www.osha.gov/oshinfo/priorities/synthetic.html> (access date: 22 June 1999) citing: EPA, Refractory Ceramic Fibres: initiation of Priority Review, Federal Register, Vol.

[452] World Health Organization, *Man-made Mineral Fibres*, IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, 1988, 43:39-171. Lyon, France.

[453] Infante, P.F. *et al.*, *Fibrous Glass and Cancer*, Wiley-Liss, 1994.

[454] Le Déaut, J.-Y. and Revol, H., *L'amiante dans l'environnement de l'homme: ses conséquences et son avenir*, Office parlementaire d'évaluation des choix scientifiques et technologiques, *Assemblée nationale* No.329/*Sénat* No.41, 1997.

inconsistent if a less trade-restrictive means is available to reach the same policy objective. As a GATT Panel formulated the rule in respect of Article XX of the GATT, a measure will be deemed necessary only "if there were no alternative measure consistent with the General Agreement, or less inconsistent with it, which [the Party] could reasonably be expected to employ to achieve its health policy objectives". In other words, even assuming that the chosen end is legitimate, the measure must not be an excessive or over-reaching means to achieve a legitimate end. [455]

3.330 Canada claims that a ban is the most extreme and restrictive trade measure available. The Decree, as it stands, is excessive and does not meet the necessity criterion because a less trade-restrictive alternative could have properly achieved the protection of human health. France could have reached the same objective by setting up a regulatory regime under which prohibitions and authorizations of asbestos products were decided not on the basis of the existence or non-existence of substitutes, as the Decree does, but rather in the light of two guiding principles: (i) an assessment of risk made on a product-by-product and use-by-use basis; and (ii) an analysis of the non-feasibility and ineffectiveness of controlled use for each product. Canada claims that France could and should have used these two guiding principles to determine which chrysotile products are to be authorized in France, instead of the criterion of the non-availability of substitutes. If it had, the range of chrysotile products and their uses authorized in France would have been broader and international trade less restricted.

3.331 Canada contends that, first of all, the Decree is not based on a credible risk assessment and, secondly, that decisions to ban or exceptionally to authorize asbestos products under the Decree do not stem from an analysis of the feasibility and effectiveness of controlled use.

3.332 Canada considers that, if France had based its chrysotile policy on a credible product-by-product and use-by-use risk assessment, it would not have banned high-density chrysotile products. At the very least, such a risk assessment would have led the French authorities to authorize the use of a certain number of high-density chrysotile products. Canada claims that the INSERM report certainly cannot be considered a credible and sufficient risk assessment of high-density chrysotile products. The French Government used the INSERM report as the scientific basis to justify its ban on high-density chrysotile products, even though INSERM did not recommend banning them. Irrespective of the fact that the text of the report does not support the ban on high-density products, its serious deficiencies, the timing and circumstances of its adoption relative to the announcement of the French ban, and the strong criticism to which it has been subjected by members of the French and international scientific communities cast very real doubt on its credibility and its sufficiency as a scientific basis for the French ban.[456] Canada notes that critics have identified six major problems with the INSERM report:

- INSERM's risk assessment is based on hypothetical data and therefore has no real factual relation to the situation actually prevailing in France today.

- INSERM's risk assessment is often misleadingly based on data from exposure to amphiboles or mixed fibres, instead of to chrysotile fibres alone.

- The report does not make clear that, because of the long latency period for asbestos-related diseases, the estimated deaths in the 1990s and after are almost exclusively the result of occupational and para-occupational exposures in the 1950s and 1960s.

- The report did not even examine what is surely the key issue relating to the ban, namely, exposures to current chrysotile products.

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[455] *Thailand – Cigarettes*, BISD 37S/200, report adopted on 7 September 1990, para.75.
[456] See Canada's arguments in Section III.B.7 of this report.

- INSERM's extrapolations from data based on high exposure levels and exposures to friable products greatly exaggerates the risk from low exposure levels to products where chrysotile is encapsulated in a hard matrix, specifically chrysotile-cement and friction products.

- Finally, the INSERM report acknowledges that, "This problem is, however, indissociable from the choice of substitute fibre" (WTO translation) for which little information is available.[457] It was only in November 1999, almost three years after the ban on chrysotile took effect, that INSERM's report on substitutes was published, concluding that there was a lack of information on substitutes. It should also be recalled that INSERM did not recommend banning high-density chrysotile products.

3.333 Canada emphasizes that all available scientific evidence indicates that there is no detectable risk of mesothelioma or lung cancer as a result of exposure to chrysotile in the manufacture or use of friction products or in the manufacture of high-density chrysotile- cement products. The same is true for the use of high-density cement products. One of the most challenging issues in international trade law is striking the right balance between keeping markets open and allowing States to regulate in order to accomplish other legitimate goals, such as the protection of human health. In Canada's view, one manner of resolving this issue – which has been used by WTO panels – is to determine whether the formal scientific analysis on which the decision to adopt trade-restrictive measures is based constitutes a credible and sufficient justification for the measure in question. It is often unrealistic to expect a panel of trade experts to resolve a complex scientific controversy. In fact, it is not its role to do so. In this case, there is so little scientific evidence for a ban that the Panel can only reasonably conclude that France has not conducted a credible and adequate scientific evaluation to justify this extremely trade- restrictive measure. Consequently, in assessing the WTO consistency of the French ban, Canada asks that the Panel disregard the INSERM report.

3.334 Canada also points out that, at the meeting on 17 January 2000, the experts mentioned two seemingly anomalous studies. Neither overcame the great weight of contrary evidence. First, Dr. Henderson in particular relied on the Australian Mesothelioma Register (Leigh *et al*., 1999). However, this is not a controlled study but simply a set of observations. It might be expected that any large enough subset of the population (such as garage workers or schoolteachers or lumberjacks) would experience some instances of mesothelioma or lung cancer. The question that must be asked is whether the number is more than expected? The only way to know for sure is by observing controls. According to Canada, other more carefully conducted studies suggest that Leigh's data do not show excess risk. An examination by electron-microscopy of lung tissue in 221 definite or probable cases of mesothelioma in the Register and of 339 age-and-sex-matched controls (Rogers *et al*. 1991) suggest that the mesothelioma cases in the Register cannot be attributed to chrysotile exposure. Dr. Henderson puts a lot of emphasis on the Australian Mesothelioma Register to justify the non-feasibility of controlled use at all stages of the lifecycle of asbestos-cement products. But, in addition to criticism by Dr. McDonald regarding the use of such data, Canada stresses that the Australian experience is unique and that it is not prudent to draw general conclusions applicable elsewhere. Crocidolite amphiboles were used massively until the end of the 1970s in Australia, while amosite was used until the mid-1980s. Many houses were built with asbestos-cement products containing mainly amphiboles. Leigh *et al.* write that:

> "From about 1940 to the late 1960s all three types of asbestos were used in [the asbestos-cement manufacturing industry], crocidolite then being phased out. Amosite was used until mid 1980s. Much of this industry output remains in service today in the form of 'fibro' houses and water and sewage piping. By 1954 Australia was number four in the Western world in gross consumption of asbestos-cement products, after USA, UK and France, and clearly first on a per capita basis. After World War II to 1954, 70,000 asbestos-cement houses were built in the State of New South Wales alone (52% of all

[457] INSERM report, p.428.

houses built). In Australia as a whole, until the 1960's, 25% of all new housing was in asbestos-cement."

3.335 Secondly, Canada maintains that the apparently high risk of lung cancer in the Charleston cohort, where exposure was predominantly to chrysotile, has only been observed in two other textile plants where substantial amounts of amphibole fibres were used. The "textiles mystery", as it has been called by Dr. McDonald (1998), is anomalous and has yet to be explained. However, it is evident that it is limited to the textile process. Perhaps the numerous very long and fine fibrils produced in carding or the use of carcinogenic mineral oil spray for dust control and facilitation of weaving are responsible. These factors are peculiar to the textile industry and have no relevance whatsoever to friction or high-density cement products. In Canada's view, it is evident that the French ban is not supported by credible and sufficient scientific evidence.

3.336 Canada contends that a balanced assessment of high-density chrysotile products would have forced the French authorities to conclude that this type of product is not dangerous for the public. Canada notes that, according to the experts appointed by the Panel, the risk to human health associated with the various uses of chrysotile throughout its life cycle is "overwhelmingly a workplace issue".[458] The INSERM report on asbestos also supports the view that the asbestos issue concerns occupational and para-occupational exposures.[459] Chrysotile-cement products do not pose a health risk from normal weathering, erosion or general degradation, and "there is no dispute among experts on this issue" [sic].[460] The removal of chrysotile-cement products does not pose any danger either, except in Dr. Infante's view. Nor do these products endanger the general public via environmental exposure. As for the French do-it-yourself enthusiast, he will rarely, if ever, come into contact with a chrysotile-cement pipe, an exterior construction panel on a commercial building or brake linings, let alone saw or puncture one of these. Canada notes that, as Dr. Henderson confirmed, a do-it-yourself enthusiast therefore runs very little risk. The experts agree that one must turn to cumulative exposure to assess the risk.[461] It can readily be understood that the cumulative exposure of do-it-yourself enthusiasts is inconsequential because, for the few who may be exposed, this is probably nothing more than a once-in-a-lifetime exposure to chrysotile from high-density products. Canada concludes that banning high-density chrysotile products allegedly because they subject the general public to risk is not supported by a balanced, product-by-product, use-by-use risk assessment.

3.337 Canada points out that a balanced risk assessment of high-density chrysotile products would have led the French authorities to conclude that these products are not dangerous to workers for two reasons. Firstly, most workers are not in contact with high-density chrysotile products and, when they are, their exposure is intermittent and therefore the cumulative exposure is very low. Secondly, controlled use is both feasible and effective. The term "worker" encompasses quite a diverse group of people. The Panel, in its questions to the experts, grouped workers in the following categories (see Question 1): (i) miners and millers; (ii) workers in the manufacturing industry (friction materials and chrysotile-cement products); (iii) employees of the textile industry; (iv) workers in the construction industry; (v) workers in the renovation, maintenance and heat insulation industry; and finally (vi) workers in the asbestos removal industry. Canada points out that it is defending high-density chrysotile products, not asbestos textiles. Therefore whether or not these workers are at risk is irrelevant to this proceeding. Regarding miners and millers, there has been no mining or milling activity in France since 1965. Canada also contends that these workers are not at risk.[462] Workers manufacturing high-density chrysotile products likewise are not at risk. Article 2.2 of the TBT

[458] See Section V, reply by Dr. Henderson to question 1(b) from the Panel.

[459] INSERM Report: "the vast majority of these deaths can indisputably be explained by occupational or para-occupational exposure" (WTO translation) (pp.419 and 420).

[460] See Section V, reply by Dr. Henderson to question 1(d) from the Panel.

[461] See Dr. Henderson's comments, Section V.C.1(i), citing *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998. See also the EC's comments on the replies by the experts, Section V.D.2.

[462] See in particular paras.3.155 *et seq.*

Agreement specifically points to the analysis of the risks that "related processing technology" entails. Canada concurs with the EC and the experts that, with controlled use, processing technologies used to manufacture high-density products pose no threat to human health.[463]

3.338 According to Canada, no epidemiological studies show that workers in the high-density chrysotile products manufacturing industry incur excess risks of lung cancer or mesothelioma. As Dr. Thomas concluded for an asbestos-cement factory, "the population of the chrysotile-cement factory studied are not at any excess risk in terms of total mortality".[464] Studies of the friction products manufacturing industry show no chrysotile-related increase in lung cancer risk for persons exposed to the equivalent of up to 9 f/ml for 40 years. Workers in the maintenance, renovation, asbestos removal and heat insulation sectors, as well as electricians, are likely to be in contact with in-place friable asbestos and amphiboles, not primarily high-density chrysotile products. In Canada's view, banning high-density chrysotile products is not necessary to protect these workers against the risks of amphiboles and friable products. Authorizing high-density chrysotile products in France does not increase the level of risk for these workers. The WHO specifically identifies the threat of friable asbestos and amphiboles for maintenance personnel.[465] Dr. Henderson is of the view that, for these workers, mesotheliomas are almost invariably associated with amphiboles:

> "… for data on mesotheliomas among electricians, carpenters, plumbers, insulation workers and so forth (it is acknowledged that most if not all these mesotheliomas are a consequence of exposure to asbestos-containing materials that included a mixture of asbestos types, including chrysotile and one or more of the amphiboles) ..."[466]

3.339 Canada maintains that the ban on high-density chrysotile products is not necessary to protect workers in the maintenance, renovation, asbestos removal and heat insulation sectors, and electricians. Banning high-density chrysotile products on the grounds that such products increase the risks for this category of workers is inconsistent with a balanced product-by-product, use-by-use risk assessment. Some workers and do-it-yourself enthusiasts may encounter high-density chrysotile products intermittently, for example, some construction workers who might occasionally intervene, depending on the nature of their work, on cement pipes, cement external wall panels or cement roof tiles; or perhaps mechanics who handle brake linings; or a do-it-yourself enthusiast who is occasionally exposed when working on his home. Canada considers that, in most cases, infrequent exposures lead to such low cumulative exposures that, even without the use of proper tools and procedures, the experts have agreed that the health of workers is not in danger. In the other cases, application of controlled use, including procedures and the use of tools prescribed by international standards, reduces the risk to an undetectable level.

3.340 Canada asserts that the French ban is not based on evidence that controlled use in unfeasible and ineffective. The regulatory system established by the Decree does not determine bans and authorizations for asbestos products in the light of a product-by-product examination of the feasibility and efficacy of controlled use. Canada notes that, if this were the case, France would have authorized high-density chrysotile products for which it has been established that controlled use is applicable and effective, for example, asbestos-cement pipes and brake pads and linings. Before commenting on controlled use as applied to work on asbestos-cement pipes and brake linings, Canada wishes to return to the meeting of 17 January 2000 with the experts and then describe briefly the concept of controlled use.

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[463] European Commission (G. Lohan, DG III), European justification of Decree No.96-1133 to the Canadian authorities (15 April 1997) following French Notification G/TBT/Notif.97.55.

[464] Thomas, H.F., Benjamin, I.T., Elwood, P.C. and Sweetnam, P.M., *Further Follow-up Study of Workers From an Asbestos-cement Factory* (1982) 39:3 British Journal of Industrial Medicine, 273, p.275.

[465] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.139.

[466] See Section V, reply by Dr. Henderson to question 1(e) from the Panel.

3.341 Canada claims that controlled use is an approach that is not specific to the asbestos industry. It is a general method of risk management for all products or technologies which, in the absence of controls or regulations, might involve risks. Moreover, the experts confirmed this when they specifically recommended the controlled use of substitute fibres. The experts also recommended applying the principles of controlled use as a way of dealing with the sensitive issue of amphiboles and friable products already in place. Canada notes that Dr. Musk referred to the principles of controlled use as a way of dealing with the problem of asbestos in place, in particular friable products and products containing amphiboles. The implementation of controls, the issue of permits and best work practices have already been advocated by Dr. Musk. Canada also notes that Dr. Infante refers to the principles of controlled use in the context of use of substitute fibres. He suggested that best work practices (use of low-speed cutting tools and wearing a mask) should be used to reduce the levels of exposure. This also forms part of controlled use as applied to the chrysotile industry. He also referred to United States standards for the control of nuisance dusts such as glass fibre. Dr. Infante also declares at the same time, paradoxically, that controlled use is unfeasible for chrysotile products because workers are not sufficiently informed or do not use the recommended equipment. If controlled use is applicable and effective for substitutes, amphiboles and friable material already in place, Canada wonders why it would not be applicable and effective for high-density chrysotile products.

3.342 Canada notes that, during the meeting with the experts, the question of whether it could be expected that regulations on controlled use would be respected was raised. In Canada's view, official decisions should definitely not be taken on the basis of a hypothesis that the law will not be observed. Dr. Infante nevertheless commented that controlled use was not feasible in the United States due to the high number of breaches of the two United States standards on exposure to asbestos established by the OSHA. Canada wishes to point out in this respect that, of the 3,349 breaches of the two standards recorded during the period 1998-1999, only 16 concerned exceeding the United States exposure standard of 0.1 f/ml. Even more significantly, these 16 breaches were exclusively related to exposure to friable materials already existing within buildings. They bear no relation to the products concerned by this case.

3.343 Canada maintains that controlled use can be summarized by the three major recommendations in ILO Convention 162. Firstly, exposure should be brought down to levels that do not involve any health risk. Low levels of exposure allow asbestos-related diseases to be eliminated. Secondly, use of crocidolite should be banned. In general, scientific studies show that exposure to chrysotile is much less dangerous than exposure to amphiboles. Thirdly, friable asbestos materials such as sprayed and insulating materials should be banned. Asbestos-related diseases appear in the secondary production industries, when installing insulation containing asbestos and in building work involving friable asbestos materials. The fixing of an exposure limit in the workplace is only one aspect of protecting the health of workers. The means used to ensure observance of the exposure limit are of course an important part of the effort. These means include dust collection, monitoring, employing best work practices and, if necessary, using protective breathing equipment. Proper monitoring of exposure limits in workplaces is an essential criterion for correct application. Lastly, other aspects of protection in the workplace specifically concern secondary users, for example, building workers, servicing and maintenance workers, who work with asbestos-cement, or mechanics who handle brake linings. Controlled use mainly involves reducing the number of situations in which fibres are released (for example, by pre-cutting of asbestos-cement pipes) and eliminating unprotected work on high-density products.

3.344 Canada points out that the means employed for controlled use effectively reduce exposures, which then fall within the exposure limits, as recognized by the WHO;

> "Exposure is dependent upon such factors as the extent of control, the nature of the material being manipulated and work practices […]

> Levels dropped considerably between the 1930's and the late 1970's and have continued to decline substantially to the present day, owing to the introduction of controls."[467]

3.345 Canada notes that the WHO goes further and states that even partial application of controlled use methods, techniques or procedures is effective because it brings exposure levels down below 0.5 fs/ml. If personal protective equipment is used, the exposure levels drop even lower:

> "Data from industries where control technologies have been applied demonstrated the feasibility of controlling exposure levels generally below 0.5 f/ml. Personal protective equipment can further reduce individual exposure where engineering controls and work practices prove insufficient."[468]

3.346 Canada notes that the WHO also indicates that controls eliminate fibre suspended in the air when it becomes necessary to work on high-density chrysotile products, as may occasionally be the case for certain workers in the construction industry.[469]

3.347 Canada adds that, according to the OSHA as well, controlled use is effective:

> "There is substantial information available concerning both health effects and current exposure levels, and the potential for risk reduction is great using control methods already in use in some workplaces where mineral fibers or asbestos are manufactured or used."[470]

3.348 Canada draws attention to the study by J. Peto, which shows the effectiveness of regulations, one aspect of controlled use. The 1995 study shows that only 5 per cent of the cases of mesothelioma recorded were in jobs subject to regulation.[471] Taking into account the latency period, the British regulation of the asbestos industry in the 1960s, even though it allowed high levels of exposure and the use of friable materials and amphiboles, already constituted an effective way of limiting the risks of using asbestos. J. Peto underlines the greater effectiveness of the regulations in the 1980s by highlighting the marked decrease in exposure levels. For example, the 1995 regulations in France, i.e. before the adoption of the Decree, sufficed to protect the population against risks related to high-density chrysotile products. Canada points out that it stressed, and the experts agreed, that for primary users, namely, workers involved in the mining and processing of chrysotile products such as asbestos-cement and friction materials, occupational exposure levels are low because of controlled use and, consequently, the risk that these workers will contract an asbestos-related disease is undetectable. Canada acknowledges that it is aware of the EC's objective and the experts' concerns regarding controlled use. It is not so much the risk during mining of chrysotile and manufacturing that are the cause of concern, but the risks linked to occupational exposure of secondary users. Canada declares that, in order to show that the EC's objection to controlled use among secondary users is excessive, it will comment on both products, namely, asbestos-cement pipes and friction materials.

3.349 Canada asserts that no-one can seriously contest that controlled use is as effective as a ban for the protection of human health against risks caused by working with asbestos-cement water pipes buried in the ground. Asbestos-cement pipes are almost never cut during their installation. They are delivered on-site ready to use and it is not necessary to carry out any work likely to produce dust. Prefabrication of elements subsequently assembled on the spot thus makes it possible to eliminate exposure of the workers to chrysotile fibres. If the pipes have to be cut, the use of hand tools or tools with vacuum dust extractors allows the risks to be eliminated. Workers use hand tools or low-speed mechanical tools, which create large dust particles or chips, rather than machines that work through

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[467] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.137.
[468] *Id*., p.144.
[469] *Id*., p.29.
[470] See United States Department of Labor (OSHA), *Synthetic Mineral Fibers: Hazard Description*, on line: OSHA <http://www.osha.gov/oshinfo/priorities/synthetic.html> (access date: 22 June 1999).
[471] Peto, J. *et al*., *Continuing Increase in Mesothelioma Mortality in Britain*, Lancet, 1995, vol.345, cited in *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.123.

abrasion. High-speed mechanical tools are equipped with an effective and specially designed vacuum dust extractor. According to the OSHA, the application of control measures leads to average levels of exposure of 0.00253 f/ml for those working with asbestos-cement pipes.[472] Canada adds that the risk of asbestos-related disease is based on the hypothesis of persistent exposure. There are no data on cumulative "lifetime" levels for persons exposed intermittently. Workers using asbestos-cement pipes are, however, exposed intermittently. In Canada's view, the EC will readily acknowledge that few handymen have to work with asbestos-cement pipes. Workers usually install asbestos-cement pipes by heavy machinery and not manually. Buried in the ground, asbestos-cement pipes are quite safe. They can also be taken out of the ground mechanically. Canada asserts that controlled use is also feasible and effective for mechanics working on brake linings. They are in contact with the brake linings intermittently so their cumulative exposure to chrysotile is very low. In addition, simple methods such as moistening and vacuum dust extractors make it possible to reduce exposure to levels at which the risk is undetectable, as already indicated in studies cited by Canada and discussed with the experts.

3.350 Regarding the next objection that, according to some theoretical models not empirically verified, workers in general are subject to risks even if cumulative exposure is within the limits laid down under controlled use policies, Canada responds that the lower the exposure, the lower the risk. The question is to what extent levels of exposure to a substance can be lowered in order to achieve a significant and measurable reduction in the risk for workers? Canada notes that the most recent data published, as well as the latest retrospective reviews on the relationship between exposure and the effect of chrysotile asbestos are revealing: when levels of exposure to around 40 f/ml over 20 years (or 20 f/ml over 40 years) are reached, the excess risk of lung cancer related to chrysotile asbestos, although it still exists, has become undetectable. If a safety factor is introduced by imposing a level that is ten times lower, for example, 2 f/ml over 40 years, it is obvious that the risk, although it still exists, remains undetectable. Canada points out that Drs. de Klerk and Musk agree that current epidemiological data does not show an excess health risk at low levels of exposure to chrysotile, lower than the exposure limits under controlled use. Dr. Henderson acknowledges that "no increase in risk of mesothelioma has been identified at very low-level exposures". A review of eight studies of cohorts exposed to chrysotile by Browne and Gibbs led the authors to conclude that "there exist levels of exposure below which risks are for practical purposes zero".[473]

3.351 Canada maintains that, if France had based its asbestos regulations on a serious examination of the feasibility and effectiveness of controlled use product-by-product, it would – at the very least – have authorized asbestos-cement pipes and friction materials. But this is not the case: the French Decree bans asbestos-cement pipes and friction materials, two products which handymen and non-specialized workers never or only exceptionally use and for which controlled use is feasible and effective. The Decree is therefore not based on any serious examination of the feasibility and effectiveness of controlled use product-by-product, which means that it does not meet the necessity criterion in Article 2.2. According to Canada, France could have regulated the application and use of asbestos through non-discriminatory technical regulations dealing *inter alia* with monitoring the average concentrations of asbestos fibres in the workplace, which France in fact does for the exemptions allowed. In addition, France could have regulated the manufacture of high-density materials by eliminating work likely to release dust, just as the construction industry gives workers proper training on how to handle these materials. The effect or the purpose of such measures would not have been to create unnecessary obstacles to international trade and at the same time would have enabled the objective of protecting health to be attained.

[472] See OSHA, on line OSHA <http://www.osha.slc.gov (access date: 22 June 1999), Tables 5 and 6.

[473] Browne, K., and Gibbs, G., *Chrysotile Asbestos – Thresholds of Risk*, in Chiotany, K., Hosoda, Y., Aizawa, Y., eds. Advances in the Prevention of Occupational Respiratory Disease, Elsevier, Amsterdam, 1998.

3.352 To conclude on Article 2.2 of the TBT Agreement, Canada points out that its examination shows that the French ban on chrysotile asbestos does not enhance the protection of human health. The objective sought by France is not achieved by a ban. There is no rational link between the French ban on chrysotile and France's objective. Moreover, within the meaning of Article 2.2 of the TBT Agreement, the French measure is not necessary in regard to the objective sought. The ban does not address the real health problem associated with asbestos: the friable products and the amphiboles already in place. It is a bold step for the ban to replace chrysotile by the risk of substitute fibres. Furthermore, the ban, by covering high-density chrysotile products, does nothing to raise the level of protection of human health. The French Decree is an excessive measure "more trade-restrictive than necessary" to achieve France's objective because the objective could be achieved by a measure that is less trade-restrictive and which Canada has presented: a regulatory system that is, first of all, really based on a rigorous examination of the risks product-by-product and use-by-use and then by an examination of the feasibility and effectiveness of controlled use product-by-product.

3.353 The **European Communities** wish to recall that any Member of the WTO has the right to establish the level of health protection it deems appropriate in its territory. The EC note that, within the context of Article XX(b) of the GATT, all the Panels which have examined the concept of necessity have concluded that it was not the necessity of the objective pursued by the measure concerned that should be examined but whether or not it was necessary to submit the imported products to the measure contested in order to achieve the chosen level of protection (e.g. *United States - Section 337*, *Thailand - Cigarettes* and *United States - Gasoline* Panel reports). It follows that, whereas the trade measures that make it possible to achieve the desired objective must satisfy certain conditions, there is no restriction on the level of protection chosen by the Member. Accordingly, the EC consider that France was free to choose the level of protection it deemed appropriate in the present case, i.e. to halt the spread of the risk linked with the use of asbestos fibres and products containing such fibres. The EC again point out that, even though the test of necessity within the context of Article 2.2 of the TBT Agreement corresponds, in particular, to the test in Article XX(b) of the GATT, it nonetheless remains true that the burden of proof within the context of the TBT Agreement lies with the party which invokes a specific provision of the Agreement to establish the inconsistency. The EC indicate that the arguments it develops on the necessity criterion are also applicable in the context of Article XX(b) of the GATT.

3.354 The EC maintain that the necessity criterion under Article 2.2 of the TBT Agreement involves, *inter alia*, examining whether a less restrictive measure is available to a Member and could be employed to fulfil that Member's legitimate objective. The EC note in this respect that, in their written and oral replies, the scientific experts all agreed that banning the use of all types of asbestos, including high-density asbestos-containing cement products, to which Canada attempts to limit the scope of this dispute, was in fact the only real option available to France to achieve its legitimate objective of protecting human health. This is because all types of asbestos are classified as proven human carcinogens and because the so-called "controlled use" advocated by Canada is in practice unfeasible and unrealistic. The EC note that Dr. Henderson gave a number of reasons why it is unrealistic and impossible to apply such a use in practice and cited examples of concrete cases in which he personally observed the absence of any kind of "controlled use". Dr. Infante also explained that in the United States several hundreds of violations continue to arise, whether in the manufacturing of asbestos-containing cement products or in subsequent downstream situations, despite the controls exercised and the fines applied by the United States authorities. Dr. de Klerk, when discussing this issue, said that "at best it is imprudent" to wish to continue exporting asbestos, for example to least developed or developing countries, because it is impossible for them to apply such a controlled use.

3.355 The EC also recall that, since the beginning of this dispute, Canada has been avoiding a precise definition of what it means by the term "controlled use". As a last attempt to confuse the legal

debate, in its comments on the replies of the experts[474], Canada finally defined the way it understands the concept of "controlled use". But that description of "controlled use" has never been explained in such detail until now, none of the experts chosen by the Panel have ever heard of it before, and they have explicitly stated that they know of no international standard or recommendation suggesting that such a use will substantially reduce or eliminate the risks of asbestos-related diseases. In addition, all the experts found that the conditions of use mentioned by Canada in its comments are impossible to apply in practice in a way that will enable the level of protection chosen by France to be attained. According to the EC, Dr. Henderson and the other experts agreed with the EC's argument that the problem France faces because of the existing asbestos in place and the risks associated with its removal do not in any way justify the continued use of asbestos and the perpetuation of the serious risks to human health through the further introduction of asbestos into the environment. France, like other countries, has been trying to deal in the best way possible with the problems for human health posed by the asbestos in place and it took measures for this purpose a long time ago. But experience and science have shown that these measures cannot eliminate the risks to human health. In the EC's view, there is no provision in the TBT Agreement nor in the WTO Agreements that could oblige France to continue using chrysotile asbestos, due to the difficulties it (like other countries) faces in eliminating the risks from past mistakes when the use of chrysotile asbestos was allowed.

3.356 As for the second sentence of Article 2.2 of the TBT Agreement ("taking account of the risks non-fulfilment would create"), the EC consider that, here again, this is an integral part of the implementation of the test of necessity under Article XX(b) of the GATT. In fact, a restrictive measure is "necessary" only if there are risks associated with the non-adoption of the measure in question. The purpose of this sentence is to deny Members the possibility of adopting measures, under cover of protecting human health, without having taken into account the risks associated with the use of the product that is banned. Such risks should be assessed, in particular, on the basis of the available scientific and technical information. The EC comment that they have shown, and all the experts have agreed, that under the so-called "safe use" policy there continues to be a significant excess of deaths in the asbestos production and processing sector. Moreover, this policy does not offer any meaningful and realistic protection, in particular for the secondary or downstream users exposed to asbestos (carpenters, electricians, do-it-yourself enthusiasts, etc.) because they cannot be aware of the risks in all situations and the risks frequently become apparent many years after exposure. The EC point out that they have also asserted (and all the experts have agreed) that there exist several safer alternative products that can replace nearly all the uses of asbestos. Indeed, all the scientists agreed with Dr. Infante and Dr. Henderson that the available scientific evidence shows that none of the substitute non-fibrous or fibrous products is dangerous to human health or as dangerous as asbestos, including chrysotile asbestos. Dr. Infante also stated that it is unreasonable to continue using chrysotile asbestos simply because there exist some doubts about some fibrous products.

3.357 The EC also wish to respond to Canada's claim, completely unjustified in their view, that the French ban on asbestos was taken for reasons of "political necessity", not out of real concern to protect human health. This is plainly wrong and contradicts all the scientific evidence coming from so many countries that already banned asbestos before France and from so many international institutions such as the WHO, the IARC, the ILO, etc., which all recommend that asbestos be banned and replaced. The EC ask whether Canada can really argue that all these countries and all these international institutions have done so for reasons of political necessity? Certainly not in the EC's view.

(d) Article 2.4 of the TBT Agreement

3.358 **Canada** maintains that Article 2.4 lays down the principle that, where technical regulations are required and relevant international standards exist, Members shall use them, or the relevant parts of them, as a basis for their technical regulations if they are effective and appropriate for the

[474] See Section V.D.1, comments by Canada concerning question 5(a) from the Panel.

fulfilment of the objective being pursued. Under Article 2.4, it is up to the Panel to determine: (i) whether a technical regulation on chrysotile is required; (ii) whether there are international standards concerning chrysotile; (iii) whether the international standards are an effective and appropriate means for the fulfilment of the objective pursued; and (iv) whether the Decree is based on international standards. Canada recognizes that it is important for governments to take action to manage the risks associated with the use of asbestos fibre. Therefore, Canada does not dispute the fact that action is required to manage the risks associated with asbestos fibres and their uses. However, in this case, it is the excessive nature of the French action that is being challenged. Such action must be based on existing international standards that recognize the controlled use of asbestos, which, in practice, eliminates any health risk, i.e. the objective pursued by France. Canada submits that, in the case of chrysotile fibre, a regulation and not a ban is required pursuant to Article 2.4. Canada points out that it in fact implements and encourages the regulation of the "safe" or "controlled" use of chrysotile fibre, the required and approved form of action. Prior to the adoption of the Decree, France practised controlled use. Canada has already emphasized that a set of measures existed prior to the adoption of the Decree and guaranteed the protection of people's health in France.

3.359 Canada claims that international standards, within the meaning of Article 2 of Annex 1 to the TBT Agreement, exist for the controlled use of chrysotile fibre. Convention 162 and Recommendation 172 of the International Labour Organization concerning safety in the use of asbestos by workers constitute such international standards.[475] They set forth rules and guidelines for the use of asbestos, in particular chrysotile fibre, as well as processes and production methods for products containing it. The ILO Code of Practice on Safety in the Use of Asbestos – endorsed by Convention 162 and Recommendation 172 - constitutes another international standard.[476] The Code contains standards and practical instructions aimed at preventing the risks faced by workers using chrysotile. These standards govern all the stages of exposure to asbestos by proposing safe procedures and methods; from the extraction of the fibre to the transportation of products containing it, from the manufacturing of products containing fibre to their maintenance. Standards for the use of chrysotile-cement materials are included in the Code for chrysotile-cement products – Guidelines for On-Site Work of the International Organization for Standardization (International Standard ISO-7337).[477]

3.360 Canada contends that existing international standards are effective and appropriate for fulfilling the objectives of protecting human health. International standards such as those in

[475] ILO, *Convention concerning Safety in the Use of Asbestos* (Convention 162), adopted on 24 June 1986, International Labour Conference, Geneva; ILO, *Recommendation concerning Safety in the Use of Asbestos* (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva.

[476] *ILO, Code of Practice on Safety in the Use of Asbestos*, International Labour Organization, Geneva, 1984.

[477] Canada notes that, in the area of public works, chrysotile-cement pipes are used in the construction of piping systems. These pipes are machined into varied lengths that can meet the specifications of buyers and are equipped with couplers that can ensure the linkage between two pipes without the need for cutting or grinding. In the event that the cutting or grinding of chrysotile-cement pipes nonetheless turns out to be inevitable, there are simple techniques, described by standard ISO-7337 that can guarantee the safety of workers on sites. Standard ISO-7337 was designed to be applied at the time of the cutting or grinding of any hard chrysotile-cement product. For example, the cutting of plates or tiles for roof covering, is not a source of emission if the simple techniques of standard ISO-7337 are followed. These techniques consist, in particular, of the use of chains that break the pipes by the effect of pressure, low-speed saws and saws equipped with a vacuum dust extractor, as well as the moistening of the materials prior to any action. The cutting or grinding of a cement pipe, whether or not it contains chrysotile, can also release silica in the air. The International Agency for Research on Cancer (IARC) rates silica among group 1 carcinogens (proven for humans), like asbestos. A worker who cuts any cement pipe therefore has an interest in following the instructions recommended in standard ISO-7337. See also the studies Baujon, Authier & Thomazo, *Détermination de concentrations de fibres d'amiante dans l'atmosphère au voisinage de construction en amiante ciment,* (October 1993*),* and *Détermination de concentrations de fibres d'amiante dans l'atmosphère lors de la pose sur chantier de plaques ondulées et d'ardoises en amiante-ciment,* (July 1993), *Laboratoire d'hygiène et de contrôle des fibres minérales*, Paris.

Convention 162, Recommendation 172, the ILO Code of Practice and standard ISO-7337 provide for controlled and safe use of asbestos. The wording of these standards indicates very clearly that asbestos fibres should only be replaced if it is established that this is necessary to protect the health of workers and if it is technically feasible. However, replacement of chrysotile asbestos fibre in modern materials or products, where it is sealed in a matrix and cannot be released into the environment, is not necessary to ensure the protection of workers' health because these products do not pose any detectable risks against which workers would need to be protected. Canada states that it has already clearly shown the absence of a detectable health risk linked to the controlled use of chrysotile fibre, including its incorporation in safe modern materials. As the measures set forth in the international standards described above are, with respect to controlled use, both effective and appropriate to protect people's health from the risks posed by exposure to chrysotile fibre, the total ban on the modern uses of chrysotile was not necessary.

3.361 Canada asserts that the Decree is not in compliance with international standards because it imposes a total ban on chrysotile fibre rather than providing for the controlled and safe use of this fibre and of its uses. Canada contends that a ban is not necessary to protect people's health and, consequently, is not in compliance with the relevant international standards. International standards impose an approach that is quite different from the complete ban without distinction as to the type of fibre or its use. International standards impose an approach whereby regulation of asbestos must take into account the type of fibre, the products in which a type of fibre is incorporated and the intended uses of each product. Convention 162 and Recommendation 172 provide for the banning of crocidolite[478] and materials containing brittle sprayed asbestos[479], as well as the elimination of certain other uses (work processes), if the national authority deems these measures to be necessary for the protection of workers,[480] but only if the substitute products have undergone a thorough scientific evaluation of their effects on health.[481] According to Canada, the EC have recognized that controlled use would ensure adequate protection of the health of workers in the chrysotile industry (extraction, manufacturing of chrysotile-cement, for example).[482] Canada considers that, given this recognition of the effectiveness of the principles of controlled use upon which international standards are based, the EC must prove that the international standards are ineffective and inappropriate in order to comply with Article 2.4. Canada submits that the burden of proof rests with the EC. Canada also maintains that the Decree is not necessary pursuant to Convention 162 or Recommendation 172 because, according to the EC themselves, there are only certain specific categories of workers, on projects involving brittle materials containing asbestos, that are at risk. The Decree does not resolve the problem that these workers face. Canada also indicates that the EC cannot claim that Convention 162

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[478] ILO, *Convention concerning Safety in the Use of Asbestos* (Convention 162), adopted on 24 June 1986, International Labour Conference, Geneva, Article 11.

[479] *Id.*, Article 12.

[480] Article 10 of *Convention 162* reads as follows:

"Where necessary to protect the health of workers and technically practicable, national laws or regulations shall provide for one or more of the following measures:

(a) replacement of asbestos or of certain types of asbestos or products containing asbestos by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful, whenever this is possible*;*

(b) total or partial prohibition of the use of asbestos or of certain types of asbestos or products containing asbestos in certain work processes."

[481] Paragraph 12 of *Recommendation* 172 reads as follows:

"12. (1) The competent authority, wherever necessary for the protection of the workers, should require the replacement of asbestos by substitute materials, wherever possible. (2) Before being accepted for use in any process, all potential substitute materials should be thoroughly evaluated for their possible harmful effects on health. The health of workers exposed to such materials should be continuously supervised, if judged necessary."

[482] European Commission, Directorate General III (Industry), Office A, *Industrial Policy* to the Canadian authorities as further information for Notification G/TBT/Notif.97.55 made by France to the WTO Committee on Technical Barriers to Trade on 21 February 1997.

or Recommendation 172 are ineffective or inappropriate when the Decree does not offer the same objective safety warranty with respect to substitute products. In fact, the Decree takes for granted that any product replacing asbestos is safer than chrysotile, whereas Convention 162 and Recommendation 172 require that the replacement be carried out only if it has been "scientifically" and "thoroughly" evaluated that each substitute product proposed is safer. In providing that no asbestos shall be used in the manufacture and processing of materials, products and devices, without distinction as to the variety of fibre or its use, the Decree is the most restrictive type of technical regulation that can exist. The international community has nevertheless developed standards that are less trade-restrictive. These standards enable people's health to be protected in an effective and appropriate manner. France has chosen to ignore these international standards and opted for a total ban. In view of the foregoing, the Decree banning asbestos violates the provisions of Article 2.4 of the TBT Agreement.

3.362 The **European Communities** contend that, for the purposes of the TBT Agreement, the term "standards" has the precise meaning it is given in Annex 1 to the Agreement. In this case, however, the international texts referred to by Canada (the ILO, WHO, ISO texts) do not meet the definition concerned. In any event, the EC consider that the French authorities used the texts referred to by Canada in its submission "as a basis" for their Decree, within the meaning of Article 2.4 of the TBT Agreement.

3.363 The EC point out that, as already stated, the object and purpose of the TBT Agreement, as derived from its preamble, its background and the actual wording of several of its provisions, are to monitor the adoption and application of "standards" and "technical regulations" which cover the detailed characteristics of products or their methods of production. The object and specific purpose of the Agreement are bound to have an impact on the meaning to be given to the term "standards" mentioned in Article 2.4 of the TBT Agreement. This impact is moreover recognized by the Agreement itself, whose Article 1.1 and 1.2 are particularly explicit. As Annex 1 contains a definition of "standard", according to the EC, the drafters of the TBT Agreement must have wished to use a specific definition of "standard" for the purposes of the Agreement's application. This specific definition appears in Annex 1 and it follows from this definition that the TBT Agreement encourages the use of international standards, but solely those which can provide rules, guidelines or characteristics for products or related processes and production methods. But in this case, the EC note that the international texts referred to by Canada do not satisfy the definition contained in Annex 1 to the TBT Agreement and cannot therefore be used "as a basis" for technical regulations. Neither the ILO and WHO documents nor the ISO standards can be considered as laying down the characteristics of asbestos fibres or an ordered set of rules for the manufacture of this product. Even less can they be considered as laying down the characteristics of asbestos-containing products or an orderly set of rules for the manufacture of those products. These are texts that certainly do not satisfy the definition of "standard" within the meaning of the TBT Agreement.

3.364 In the alternative, the EC maintain that, even if the Panel were to consider that the texts cited by Canada in its submission are "standards" within the meaning of the TBT Agreement, it has to be recognized that these texts were used "as a basis" for the adoption of the Decree. The phrase "as a basis for" could be compared with the term "on the basis of" used in the SPS Agreement, a term for which the Appellate Body (Hormones) indicated: "... we disagree with the Panel's interpretation that 'based on' means the same thing as 'conform to'."[483] "A thing is commonly said to be 'based on' another thing when the former 'stands' or is 'founded' or 'built' upon or 'is supported by' the latter."[484] If this definition is followed, the EC conclude that the international texts quoted, or sometimes not quoted, by Canada serve "as a basis" for the Decree.

3.365 The EC indicate that, as early as 1986, ILO Convention 162 stated:

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[483] *EC Measures concerning Meat and Meat Products (Hormones)*, report of the Appellate Body, WT/DS26/AB/R and WT/DS48/AB/R, adopted on 13 February 1998, para.166.

[484] *Id.*, para.163.

> "Where necessary to protect the health of workers and technically practicable, national laws or regulations shall provide for one or more of the following measures:
>
> (a) replacement of asbestos or of certain types of asbestos or products containing asbestos by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful, whenever this is possible.
>
> (b) total or partial prohibition of the use of asbestos or of certain types of asbestos or products containing asbestos in certain work processes."[485]

3.366 Similarly, ILO Recommendation 172 also indicated in 1986 that:

> "… asbestos should be used only when its risks can be prevented or controlled; otherwise, it should be replaced, when technically feasible, by other materials or the use of alternative technologies, scientifically evaluated as harmless or less harmful."[486]

3.367 The EC note that, more recently, a WHO report specifically dealing with chrysotile was even more categorical. The summary of its conclusions and recommendations states:

> "Exposure to chrysotile asbestos poses increased risks for asbestosis, lung cancer and mesothelioma in a dose dependent manner. No threshold has been identified for carcinogenic risks. […] Where safer substitute materials are available for chrysotile, they should be considered for use. […] Some asbestos containing products pose particular concern and chrysotile use in those circumstances is not recommended. These uses include friable products with high exposure potential. Construction materials are of particular concern for several reasons. The construction industry work force is large and measures to control asbestos are difficult to institute. In-place building materials may also pose risk control to those doing alterations, maintenance and demolition. Minerals in place have the potential to deteriorate and create exposures."[487]

3.368 The EC conclude from these texts that: (i) the banning or replacement of asbestos fibres or asbestos-containing products may be decided in cases where this is necessary to protect the health of workers and is technically feasible; (ii) where substitute materials are considered safer, they must be used to replace asbestos; (iii) control of the use of asbestos, including chrysotile, in the construction industry is difficult to introduce. According to the EC, this conclusion by the WHO contradicts Canada's statements that the "safe" or "modern" use of asbestos would do away with any risk connected with its use. The Decree is completely in line with these conclusions. The EC add that Article 2.4 of the TBT Agreement also provides that international "standards" must be ignored when they are "ineffective or inappropriate". Such is clearly the case and the ISO standard provides a perfect illustration of this point. At the time it was published in 1984, this standard represented a major step forward in relation to the arrangements prior to that date, but it does not guarantee sufficient levels of protection in the light of the health objective adopted by the vast majority of countries, and by France in particular. In the light of the foregoing, the EC therefore maintain that the Decree is compatible with Article 2.4 of the TBT Agreement.

3.369 **Canada** asserts that Article 2.4 of the TBT Agreement sets out the principle that, where technical regulations are required and relevant international standards exist, Members shall use them, or the relevant parts of them, as a basis for their technical regulations when such international standards are an effective and appropriate means for the fulfilment of the objective pursued. This

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[485] ILO, *Convention concerning Safety in the Use of Asbestos* (Convention 162), adopted on 24 June 1986, International Labour Conference, Geneva. ILO, *Recommendation concerning Safety in the Use of Asbestos* (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva.

[486] *Recommendation concerning Safety in the Use of Asbestos* (Recommendation 172), adopted on 24 June 1986, International Labour Conference, Geneva.

[487] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.144.

means that, in this case, the Panel must determine: (i) whether a technical regulation concerning chrysotile is required; (ii) whether there are relevant international standards concerning chrysotile; if so, (iii) whether the international standards are effective and appropriate for the fulfilment of the objective pursued; and (iv) whether the Decree is based on these international standards.

3.370 Canada acknowledges that it is important for governments to take action to manage the risks posed by asbestos. However, in the case of chrysotile fibre, this action cannot legally take the form of a ban. A regulation concerning the "controlled" use of chrysotile fibre and products containing it is the required and appropriate form of action. Canada contends that there are relevant international standards concerning controlled use of chrysotile fibre. These are to be found in Convention 162 and Recommendation 172 of the ILO, the ILO Code of Practice on Safety in the Use of Asbestos, and Standard ISO-7337 – chrysotile-cement products – Guidelines for on-site work practices. Canada rejects the EC's claim that these are not standards within the meaning of Annex 1 to the TBT Agreement. The ILO and ISO documents fully meet the criteria of the definition in Annex 1 to the TBT Agreement. They are documents approved by recognized bodies that provide "process and production methods" for chrysotile-based products. Canada notes that the EC have not, however, disputed the relevance of these international standards. The ordinary meaning of the word "relevant" is: "bearing on or pertinent to the matter in hand". The standards cited deal with the same product: asbestos. Furthermore, they have an identical objective, namely, the safe use of asbestos. These international standards are relevant because they relate to the use of chrysotile asbestos in a safe and controlled manner.

3.371 Canada contends that international standards such as those contained in Convention 162, Recommendation 172, the ILO Code of Practice and Standard ISO-7337 prescribe a safe and controlled use of asbestos. According to Convention 162, the use of substitute products is encouraged only "Where necessary to protect the health of workers and technically practicable […] by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful …"[488] According to this standard, chrysotile fibre should not be replaced in high-density products because it is trapped in a matrix from which it cannot escape. Furthermore, Canada has also stressed that controlled use of high-density chrysotile-based products presents, at most, an undetectable risk to human health. As the measures prescribed by these standards are both effective and appropriate to protect human health against the risks posed by exposure to chrysotile, a total ban on chrysotile, and consequently on modern uses of chrysotile, is not necessary. According to Canada, the EC have not provided evidence that it is necessary, in this case, to set aside these international standards on the grounds that they are ineffective or inappropriate. In order to avoid rendering Article 2.4 ineffective, an interpretation consistent with the precepts of the international law of treaties requires that, in order to set aside a relevant international standard, a Member must provide evidence of a "fundamental" problem and not a simple allegation that the relevant standards are not appropriate.

3.372 Canada points out that Article 2.4 of the TBT Agreement requires that Members use relevant international standards or their relevant parts as a basis for their technical regulations. According to the ordinary meaning of the words, this means that a technical regulation must be based on international standards or relevant parts thereof. In other words, a technical regulation must take what is set out in the international standards as its basic principle or starting point. The technical regulation adopted by a Member does not have to be identical to the international standards, but when they are relevant, the technical regulation must use them as a foundation or logical starting point. Canada contends that the international standards concerning asbestos are relevant. The international standards do not call for a complete ban without distinction as to the type of fibre or its use. They propose rather an approach whereby the asbestos regulations must take into account the type of fibre, the products in which a type of fibre is incorporated, and the intended uses of each product. The

[488] ILO, *Convention concerning Safety in the Use of Asbestos* (Convention 162), adopted on 24 June 1986, International Labour Conference, Geneva.

international standards thus propose a less trade-restrictive approach while at the same time stressing the protection of human health in an effective and appropriate manner. France has chosen to ignore these international standards, preferring instead a total ban. What is more, the French technical regulation deviates so much from the international standards that their basic principles are no longer recognizable. Canada points out that the EC have offered no explanation of the reasons that might have justified France's total rejection of these standards as the logical starting point for its regulations on asbestos. Given the foregoing, the Decree banning asbestos is inconsistent with the provisions of Article 2.4 of the TBT Agreement.

3.373 The **European Communities** contend that the texts cited by Canada do not fall within the scope of the TBT Agreement and are therefore not relevant under Article 2.4 thereof because they do not correspond to the definition of "standard" in Annex 1 to the Agreement. In fact, the terms of the ILO, ISO and WHO texts, in their particular context, do not lay down guidelines or characteristics for products or related production processes and methods, nor is that their object and purpose. At best, they can be treated as assessments of the risks created by asbestos and asbestos-containing products rather than as establishing international technical standards or conformity assessment procedures. The EC point out, for example, that the Constitution of the ILO (preamble) specifically provides for "the protection of the worker against sickness, disease and injury arising out of his employment". As for the Philadelphia Declaration (Article III-g) concerning the aims and objectives of the ILO, it provides for "adequate protection for the life and health of workers in all occupations". The ISO texts are conceived in the same spirit. Similarly, Article 3 of ILO Convention 162 of 1986 states that "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." According to point 1(i) of the scope and definitions of ILO Recommendation 172 of 1986, "The provisions of the Asbestos Convention, 1986, and of this Recommendation should be applied to all activities involving a risk of exposure of workers to asbestos in the course of work." Thus, the EC consider that the ILO and ISO texts are not relevant standards within the meaning of Article 2.4 of the TBT Agreement.

3.374 The EC, after responding to the question of whether or not a standard was relevant, emphasizes that Article 2.4 raises the question of whether the standard is effective or appropriate. This Article prescribes in particular that "…Members shall use [these international standards] ... except when such international standards or relevant parts would be an ineffective or inappropriate means for the fulfilment of the legitimate objectives pursued, for instance because of fundamental climatic or geographical factors or fundamental technological problems". Before considering the case at issue, the EC would like to spell out the circumstances in which a standard might be considered ineffective or inappropriate within the meaning of this provision. The EC consider that the level of protection deemed appropriate by the Member could be a factor in making international standards ineffective or inappropriate. Within the context of the TBT Agreement, a Member is free to choose the level of protection it deems appropriate. An international standard is only effective or appropriate if it enables the Member to achieve the legitimate objective it has set itself. Advances in scientific knowledge can also lead to the application of obsolete standards being ruled out. A systematic comparison of the WTO Agreement (in this specific case the TBT Agreement) with the NAFTA Agreement - a GATT Article XXIV agreement negotiated at the same time as the WTO Agreements – reveals that, on the subject of technical barriers to trade, the NAFTA Agreement provides as follows:

> "1. Each Party shall use, as a basis for its standards-related measures, relevant international standards or international standards whose completion is imminent, except where such standards would be an ineffective or inappropriate means to fulfil its legitimate objectives, for example because of fundamental climatic, geographical, technological or infrastructural factors, scientific justification or the level of protection that the Party considers appropriate.
>
> 2. A Party's standards-related measure that conforms to an international standard shall be presumed to be consistent with Article 904(3) and (4).

> 3. Paragraph 1 shall not be construed to prevent a Party, in pursuing its legitimate objectives, from adopting, maintaining or applying any standards-related measure that results in a higher level of protection than would be achieved if such measure were based on an international standard."

3.375 The EC therefore consider that scientific reasons or the level of protection deemed appropriate by the Member are factors that could render an international standard ineffective or inappropriate within the meaning of Article 2.4 of the TBT Agreement. In the present case, the EC consider that the standards cited by Canada do not make it possible to achieve the level of protection deemed appropriate by France insofar as: (i) there can be no doubt that chrysotile asbestos is a proven carcinogen; (ii) there is no exposure limit (threshold) for chrysotile asbestos and asbestos-containing products; (iii) so-called "safe" use is not applicable in all circumstances nor to every type of person who may come in contact with asbestos or asbestos-containing products and, moreover, does not eliminate every risk; and (iv) there are substitute products that are safe, or safer, than chrysotile asbestos.

3.376 The EC consider that, in the circumstances, it is clear that an international standard which permitted the use of asbestos or asbestos-containing products or which established an exposure limit or recommended "safe" use would be ineffective or inappropriate for achieving the level of protection deemed appropriate by France. France has chosen, as the level of protection deemed appropriate, to halt the spread of the risk associated with the use of asbestos. These risks mainly concern "secondary" users. The ISO standard and the ILO texts do not make it possible to achieve the legitimate objective pursued by France, inasmuch as they apply only to a limited number of "workers", in the occupational sense of the term. According to the EC, in the present case, the only texts that might be of some interest are those of the WHO and the IARC. They may be defined as assessments of the risks posed by asbestos and asbestos-containing products. France is complying fully with the WHO rules and has chosen to make no further use of asbestos and to replace such products with substitutes. Moreover, the ban provides for waivers that make it possible to take into account certain specific situations in which the use of asbestos remains necessary because there is no substitute that would ensure equivalent performance while being less of a threat to health. Accordingly, in the light of the above, the EC consider that the Decree is compatible with Article 2.4 of the TBT Agreement.

3.377 **Canada** reaffirms its arguments concerning Article 2.4 of the TBT Agreement, namely: (i) effective and appropriate international standards on asbestos exist; and (ii) the Decree is not based on international standards. According to Canada, the EC's position, which asserts that the standards recommend the replacement of all types of asbestos by less harmful or harmless materials, is the result of a summary and simplistic examination. The texts cited by Canada as international standards come from the ILO and the ISO. Canada points out that it did not mention, for example, *Environmental Health Criteria for Chrysotile Asbestos (203)* of the WHO as a standard within the meaning of Article 2.4 of the TBT Agreement because it does not see how this text could be considered a standard when the WHO itself presents it as a risk assessment. Furthermore, contrary to what the EC suggests, the WHO recommendations are not to cease using chrysotile asbestos and to replace it with substitute products. Rather, the WHO suggests that consideration be given to replacing chrysotile by harmless substitute products where such materials are available. Canada refers the Panel to the arguments already put forward concerning Article 2.4 and adds some comments relating to the two issues: on the one hand, the effectiveness and appropriateness of the international standards and, on the other, the question of whether these standards were used as a basis for the Decree.

3.378 Canada contends that the international standards are effective and appropriate. Article 3.1 of Convention 162 of the ILO provides that "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". The purpose of the ILO Code of Practice is similar. The object of international standard ISO 7337 is to provide "guiding principles for the tools and methods to be used on site so as to keep dust emissions as low as possible […]". In Canada's view, the

international standards must be appropriate because their purpose and the objective of protecting human health put forward by France are one and the same. Canada notes that the EC give two reasons to justify the inappropriateness and ineffectiveness of the standards, namely: (i) scientific grounds; and (ii) the level of protection deemed appropriate by France. The EC obfuscate on this point. They reject the standards of the ILO and the International Labour Office on the pretext that they recommend controlled use, a means of protection that is unacceptable to France, which now only cites the WHO. Canada points out that, in their first written submission, the EC did not reject the ILO standards but claimed that they recommended a ban on asbestos and its replacement by less harmful substitute fibres. Canada can only explain this sudden change in position by implicit recognition that the standards mentioned by Canada do not recommend a ban and the replacement of all types of asbestos and all their uses. Regarding the reasons for ineffectiveness and inappropriateness, namely, the scientific grounds, it is unthinkable to claim that progress in scientific knowledge leads to disregard for international standards. These standards recommend taking effective and appropriate measures to protect human health against the risk of exposure to chrysotile. To disregard an international standard, it is necessary to provide evidence of a fundamental situation that makes the standard ineffective or inappropriate. According to Canada, the EC have not shown that recent scientific discoveries have made the international standards cited by Canada obsolete, standards which, moreover, reflect the WHO's recommendations in its recent assessment of the risks of chrysotile asbestos.

3.379 As far as the second reason for ineffectiveness and inappropriateness is concerned, namely, the non-fulfilment of the level of protection deemed appropriate by France, Canada does not contest a Member's freedom, within the framework of the TBT Agreement, to choose the level of protection it deems appropriate, but nevertheless considers that the international standards are effective and appropriate because they enable France to achieve its objective, namely, to protect human health. Canada notes that the EC hold the contrary position for the following four reasons: (i) chrysotile is a proven carcinogen; (ii) there is no exposure limit (threshold) for chrysotile; (iii) safe use is not feasible in all circumstances and for all persons and does not eliminate all the risks; and (iv) there are substitute products which are safe, or safer, than chrysotile. Under such circumstances, the EC point out that the only texts that are effective and appropriate are those which advocate ceasing to use asbestos, banning it and replacing it with substitute products. Canada, for its part, considers that the international standards make it possible to achieve the level of protection of human health deemed appropriate by France for four reasons: (i) chrysotile is less harmful than amphiboles; (ii) the understanding of certain mechanisms by which the fibres cause certain diseases makes plausible the existence of a threshold of exposure below which no cancer can develop; (iii) controlled use is possible; and (iv) the risks associated with substitute fibres are not known.

3.380 Canada maintains that there is a broad consensus among the scientific community that chrysotile asbestos is less harmful than amphibole asbestos. The WHO draws a distinction between chrysotile and amphiboles as far as the risks to human health are concerned. Three of the four experts consulted by the Panel recognize that chrysotile asbestos is less dangerous. The international standards, as well as the national regulations in a number of countries, take into account the difference in the harmfulness of different types of asbestos by laying down higher exposure limits for chrysotile than for amphiboles. Canada recalls that it has already explained that the difference in harmfulness can be explained by the different chemical compositions, physical properties and biopersistence of amphiboles and chrysotile.[489] The question of controlled use has already been examined. Canada asserts that controlled use is feasible and effective and gives workers and do-it-yourself enthusiasts adequate protection. The control measures have proved their effectiveness in the mining and processing sectors. According to Canada, studies show that it is possible to produce chrysotile fibre and manufacture asbestos-cement or friction materials in places where exposure levels are strictly

[489] See Canada's arguments in Section III.B, as well as the comments on the replies by the experts, especially those concerning question 3 from the Panel.

controlled and kept below safe levels, where workers are not exposed to any increased risk of disease due to exposure to chrysotile.

3.381 With regard to secondary users, in Canada's view this is a false problem. Threats to the health of secondary users are due to friable materials, in particular sprayed asbestos already *in situ*. As Canada has already pointed out, this debate does not concern friable materials, but high-density products (water pipes, roof tiles, cladding, guttering, friction linings), in other words, products in which the fibres are encapsulated and cannot be released into the ambient air. The recommended methods of installation eliminate the need to cut or drill these products on building sites because they are delivered in a number of pre-cut and pre-drilled sizes according to the buyer's specifications. If such operations are necessary, the risks can be reduced to undetectable levels by using proper hand tools or tools equipped with vacuum dust extractors. By using appropriate tools and practices (moistening, for example), the emission of fibres during intermittent work can be kept at levels below those deemed safe. In Canada's view, the effect of intermittent exposure on the health of workers naturally depends on protective measures, but also on the intensity and duration of the exposure. It is in fact cumulative exposure that determines the risk. For those working with chrysotile intermittently, cumulative exposure levels are usually low, precisely because the work is intermittent. This is even more true for do-it-yourself enthusiasts, who work even less with high-density products than construction workers. Canada points out that these considerations come from Dr. Henderson's reply to question 5(e) by the Panel: " … the risks from occasional or infrequent interventions on chrysotile-only products (e.g. by home 'handymen') – although not quantifiable because of absence of data – must be very small for lung cancer and mesothelioma, and non-existent for asbestosis".

3.382 Canada rejects the EC's claim that the substitutes most commonly used are "substances which have given no cause for concern after decades of massive use […]".[490] The most recent data available on the dimensions of substitute fibres[491], their biopersistence and the reactions of the human organism to exposure to them do not enable any definitive comparison with chrysotile fibre to be made. This is also the opinion of the European Commission's Scientific Committee on Toxicity, Ecotoxicity and Environment: " … the conclusion that specific substitute materials pose a substantially lower risk to human health, particularly public health, than the current use of chrysotile, is not well founded …"[492] In Canada's view, the Panel should be circumspect concerning the opinions of the experts on substitute fibres. Those who have adopted a position on this subject based themselves on a very small number of scientific data. According to INSERM's report on substitute fibres:

> "Taking into account the current uncertainties regarding the effects on humans of exposure to substitute fibres for asbestos, it is important to ensure that the levels of exposure among users of products containing substitute fibres for asbestos are as low as possible."[493] (WTO translation)

3.383 For the same reasons, Canada believes that the international standards enable France to give the population the protection it considers appropriate in the health sphere.

3.384 Canada also considers that the effective and appropriate international standards have not been used "as a basis" for the adoption of the French Decree. Canada refers the Panel to the arguments in Section III.B above and the replies to the questions by the Panel (see Annex II to this report) concerning the meaning of the obligation to use the international standards or their relevant parts "as a

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[490] See Section III.B.6 above.

[491] Glass fibre, cellulose fibre, para-aramid fibre, and PVA fibre.

[492] Opinion on a study commissioned by Directorate General III (Industry) of the European Commission on *Recent Assessments of the Hazards and Risks posed by Asbestos and Substitute Fibres, and Recent Regulation on Fibres World-Wide* (Environmental Resources Management, Oxford (opinion expressed on 9 February 1998).

[493] INSERM, *Effets sur la santé des fibres de substitution à l'amiante*, INSERM joint report, Paris, 1999, p.426.

basis" for a technical regulation. Neither the ILO nor the International Labour Office recommends replacing all types of asbestos for all applications. Convention 162 only advocates the use of substitute fibres "Where necessary to protect the health of workers and technically practicable […] by other materials or products, or the use of alternative technology […] scientifically assessed by the competent authority as harmless or less harmful …". Article 5 of the ILO Code of Practice on Safety in the Use of Asbestos is in the same vein. Canada asserts that France did not proceed in the manner called for in the standards. It did not assess the risks for each product, each use and each application. If it had done so, it would have realized that chrysotile fibre does not have to be replaced in asbestos-cement products, which alone account for almost all applications of chrysotile. Dr. de Klerk points out that: "Asbestos-cement products containing only chrysotile pose no measurable threat to health."[494]

3.385 Canada notes that in the *Environmental Health Criteria for Chrysotile Asbestos (203)*, considered by the EC to be a standard within the meaning of the TBT Agreement, the WHO recommends that chrysotile asbestos should only be replaced by safer substitute materials where this is possible. In France, however, the products replacing chrysotile are not safer. As the INSERM report on substitute fibres states:

> "On the basis of the epidemiological data currently available, no conclusions can be drawn concerning the carcinogenicity of the various types of substitute fibre."[495] (WTO translation)

3.386 Canada contends that, to date, no comparative scientific study has established beyond any doubt that substitute products are harmless or less harmful than chrysotile asbestos. Some recent studies even show that certain fibrous substitutes (for example, PVA fibres and cellulose fibres) have a higher degree of biopersistence than chrysotile.[496] Canada also maintains that many scientific studies, which it mentioned during the meeting with the experts on 17 January 2000, show that, at the low levels of exposure currently prevalent in the chrysotile products industry, it is not possible to measure an increased risk for human health. International standards on asbestos do not call for a total ban without drawing distinctions that take into account the type of fibre or the use. The standards propose an approach under which asbestos regulations must take account of the type of fibre, the products in which the fibre is incorporated, and the uses of the product. The international standards thus propose a less trade-restrictive approach while at the same time laying emphasis on the effective and appropriate protection of human health. France has ignored these international standards and has banned asbestos. Moreover, the technical regulation it has adopted is so far from the international standards that their bases can no longer be perceived. According to Canada, the EC has not provided any valid explanation to justify rejecting the standards as the starting point for French regulations on asbestos. For the foregoing reasons, Canada asks the Panel to find that the Decree is inconsistent with the provisions of Article 2.4 of the TBT Agreement.

3.387 The **European Communities** contend that the texts cited by Canada to suggest that there exist international standards that could have been used as a basis by France are not relevant under Article 2.4 of the TBT Agreement because these texts do not correspond to the definition of a "standard" in Annex 1 to the TBT Agreement. In fact, the terms of the ILO and ISO texts mentioned by Canada do not lay down any guidelines or characteristics for products or related process and production methods nor is that their object and purpose. At best, they can be seen as assessments of the risks caused by asbestos and asbestos-containing products rather than as establishing international technical standards or conformity assessment procedures. They also aim at providing a minimum level of protection for workers, not the substantial reduction or elimination of the risks, which is the level of protection chosen by France. Thus, the EC consider that the ILO and ISO texts are not

[494] *Effects on Health of Asbestos-cement Products: A Review of the Literature*, p.1.

[495] INSERM, *Effets sur la santé des fibres de substitution à l'amiante*, INSERM joint report, Paris, 1999, p.181.

[496] Canada's comments on the replies by the experts to question 6(b) from the Panel.

relevant standards within the meaning of Article 2.4 of the TBT Agreement and therefore are not applicable in this case. Accordingly, in the light of the foregoing, the EC consider that the Decree is compatible with Article 2.4 of the TBT Agreement.

(e) Article 2.8 of the TBT Agreement

3.388 **Canada** maintains that the Decree is based on provisions relating to products in terms of their design or their descriptive characteristics, whereas it would have been appropriate to base it on their performance. Based on this fact, the Decree is incompatible with Article 2.8 of the TBT Agreement, which provides that a Member shall regulate products "Wherever appropriate ... in terms of performance…". Regulating chrysotile fibre "in terms of performance" requires an analysis of the intended uses of this fibre. Canada maintains that the appropriateness criterion in Article 2.8 has been met to a large extent in this case inasmuch as the potential risks of chrysotile fibre make regulating it "in terms of performance" necessary, even essential. International standards address the uses of chrysotile in terms of the risks that they present. These international standards provide for technical regulation of chrysotile based on its performance. Until the adoption of the Decree, France regulated asbestos in terms of the risks that each of its uses entailed. For a long time, the technical regulation of chrysotile, in France, was therefore based on the performance of this product. According to Canada, France has not offered any justification to show that, henceforth, it would no longer be "appropriate" to follow this approach. Examination of the "wherever appropriate" criterion for regulating a product "in terms of performance" rather than "descriptive characteristics" must be done on a case-by-case basis. In this case, chrysotile fibres have no usefulness or commercial value as such. They are only used as inputs in a limited range of finished products. Chrysotile fibres only present an actual risk in certain conditions of past use, whereas hard modern products that contain these fibres do not present any detectable risk. It therefore appears quite appropriate to regulate chrysotile in terms of its performance rather than its descriptive characteristics.

3.389 Canada maintains that it is utterly inappropriate and contrary to the objectives of the TBT Agreement to consider that a product must be banned because it is potentially hazardous *per se* because many products would fall into this category, at least in part. In the particular case of products containing fibres, the potential risks depend on the type of fibre used, on the way in which it is incorporated in a product and the precautionary measures that are taken at the time of manufacturing, handling and using the product. If the purpose of Article 2.8 is to have technical regulations based on "performance", it is because the potential risk of a product is generally in fact closely linked to its use. Bagged chrysotile exported by Canada is an inert product as long as it is not handled or used for particular purposes. It is these uses that can be the source of some risk. Modern products where chrysotile fibre is imprisoned do not pose any detectable risk for health. Article 2.8 requires, wherever appropriate, that a Member comply with this fact when drawing up its technical regulations. Canada maintains that, with respect to chrysotile fibre, only a regulatory approach based on an analysis of the risks, use-by-use, product-by-product, is in keeping with Article 2.8 of the TBT Agreement or, more generally, with the objectives of this Agreement. Until the adoption of the Decree, France recommended this approach, and rightly so, as it regulated uses (e.g. spraying) or specific products containing asbestos (e.g.: toys), taking account of the hazards inherent in some of these applications. Based on the foregoing, Canada concludes that, inasmuch as the Decree was not based on performance even though it was utterly appropriate to do so, France has violated Article 2.8 of the TBT Agreement.

3.390 The **European Communities** contend that it is important to note that Article 2.8 applies to a sub-category of "technical regulations" i.e. "technical regulations based on product requirements". In this instance, it is clear that the Decree is not "based on" requirements relating to asbestos or asbestos-containing products. Article 2.8 is therefore inapplicable in this instance. According to the EC, the purpose of the provision is to ensure that technical rules that aim to ensure a given quality or minimum performance are, as far as possible, technically neutral and do not therefore prescribe a

particular process or technology but simply set objectives to be achieved. This is perfectly clear from the English text of Article 2.8 of the TBT Agreement.

3.391 The EC contend that the ban on asbestos, even if it were considered to be a technical rule, is not a technical rule that falls within the scope of this provision. In any event, Article 2.8 of the TBT Agreement means that, wherever appropriate, the technical regulation shall be based on the performance of the product in question (i.e. based on requirements connected with the performance of the product, for example, "the product must be safe, watertight and non-flammable"), and not based on the design or descriptive characteristics of the product (i.e. not specify in detail how these requirements of safety, watertightness and non-flammability are to be attained). However, asbestos and asbestos-containing products present a major risk to human health, and in particular to the health of persons who are exposed repeatedly, occasionally or unwittingly. With the exception of the waivers granted when there is no substitute product less harmful to health or safer, there is no possible "use" of the product. Only a prohibition is capable of halting the spread of the risk. The EC consider that, under such conditions, a technical regulation that aims to prohibit the "use" of a product cannot set out the circumstances or conditions in which asbestos or asbestos-containing products are to be used. Consequently, the Decree is compatible with Article 2.8 of the TBT Agreement.

3.392 **Canada** maintains that the Decree is inconsistent with Article 2.8 of the TBT Agreement because the Decree's requirements relating to chrysotile asbestos and products containing it were based on the design or descriptive characteristics of these products, whereas it would have been appropriate to base them on performance. Indeed, the Decree prohibits a product because it contains chrysotile asbestos. This ban is a product requirement. The scope of the ban (whether it affects a product or not) depends on its design or a descriptive characteristic (the product does or does not contain chrysotile asbestos). According to Canada, the EC interpret Article 2.8 incorrectly. This Article does not apply only to a sub-category of technical regulations that are "technical regulations based on product requirements". Nor does it have the limited goal of ensuring that technical regulations aimed at ensuring minimum product performance or quality are neutral. Contrary to what the EC maintain, Canada contends that there are possible uses of chrysotile asbestos that do not involve a detectable risk to human health and can be subject to controlled-use measures. The EC wrongly claim that only a ban is capable of halting the spread of the asbestos risk.

3.393 Canada contends that the EC, in their reply to a question from Brazil,[497] acknowledged the relevance of a regulatory approach based on product performance and, implicitly, their obligation, pursuant to Article 2.8 of the TBT Agreement, to regulate chrysotile asbestos and asbestos-containing products based on their performance. Canada notes that the EC write that the assessment of the risk must be specific to each product and that the national risk management decisions that result differ depending on each product in question. With respect to chrysotile fibre, only a regulatory approach based on an assessment of the risk on a use-by-use, product-by-product basis is compatible with Article 2.8 of the TBT Agreement and, more generally, with the objectives of the TBT Agreement. Moreover, prior to the adoption of the Decree, France advocated this approach because it regulated chrysotile asbestos based on uses (for example, spraying) or based on the hazards inherent in applications of specific products containing it (for example, toys). Canada claims that, inasmuch as it did not base the Decree on the performance of chrysotile asbestos and products containing it when it would have been possible to do so, France violated Article 2.8 of the TBT Agreement.

2. General Agreement on Tariffs and Trade (GATT)

(a) Applicability of Article III and/or Article XI of the GATT

3.394 **Canada** maintains that the Decree is incompatible with Articles XI:1 and III:4 of the GATT. The Decree should be examined in the light of these two Articles because it comprises two distinct

[497] See Annex II to this report, section B.6, para.344.

aspects: on the one hand, it prohibits imports and, on the other, it contains discriminatory internal regulations. The wording of the Decree clearly shows these two aspects. With regard to the first aspect, the Decree prohibits the import of all varieties of asbestos fibres and any product containing them. According to Canada, this aspect is subject to Article XI:1 of the GATT. With regard to the second aspect, the Decree affects domestic market use of all varieties of asbestos fibres and all products containing them. Canada considers that this point is subject to Article III:4 of the GATT. Just as two specific aspects of the same measure can be examined in the light of two different agreements, similarly, two specific aspects of the same measure can be examined in the light of two different articles of the same agreement; in this case, Article XI:1 and Article III:4 of the GATT.[498] Specifically, Canada maintains that the first aspect of the Decree, which aims to prohibit the import of all varieties of asbestos fibres and any product containing them, is incompatible with Article XI:1. The second aspect of the Decree, which aims to prohibit, in particular, the domestic marketing and transfer on any basis of all varieties of asbestos fibres and any product containing them, is, according to Canada, incompatible with Article III:4 of the GATT.

3.395 The **European Communities** claim that the Decree has to be seen as an "internal regulation" providing wholly identical treatment for "like" domestic and imported products within the meaning of Article III:4 of the GATT, and must therefore be considered fully compatible with that Article. The EC note that Canada maintains that the measure contested is contrary to both Articles III:4 and XI:1 of the GATT. However, either the measure is an "internal regulation", in which case it falls under Article III:4, or it concerns only the importation of products, in which case it must be judged in the light of Article XI:1. In the present case, the Decree only establishes a single measure that applies in a non-discriminatory manner to asbestos and covers both domestic and imported products.

3.396 The EC contend that Canada wrongly maintains that the Decree comprises two separate measures: one relating to the use of asbestos and asbestos-containing products on the domestic market (falling under Article III:4) and the other relating to imports of asbestos and asbestos-containing products (falling under Article XI:1). Such a distinction fails to take account of the relationship between Article III:4 and Article XI:1 and, according to well-established GATT practice, a single measure that applies both to domestic and to imported products is necessarily covered as a whole by Article III:4 of the GATT if it is imposed on an imported product at the time or place of importation.

3.397 The EC point out that the Decree prohibits the manufacture, processing, possession for sale, offer, importation and exportation, domestic marketing, or transfer under any title of all varieties of asbestos fibres or any product containing them. The Decree also provides for an exemption from the ban on asbestos and asbestos-containing products when there are no substitute products capable of performing a function equivalent to that of asbestos and of guaranteeing both the technical safety of use and a lower risk to workers' health. This is a measure prohibiting the use (in any form whatsoever) of asbestos and asbestos-containing products, "which applies" both to domestic asbestos and asbestos-containing products and to imported asbestos and asbestos-containing products at the time of importation. In other words, the import ban is merely the logical corollary of the general prohibition on the use of asbestos and asbestos-containing products. The fact that the Decree applies at the border (by banning imports) so as to enforce the French measure prohibiting the use of asbestos does not render Article III:4 inapplicable.

3.398 The EC note that, in a different case, a Panel held that: "The fact that Section 337 is used as a means for the enforcement of United States patent law at the border does not provide an escape from the applicability of Article III:4".[499] Similarly, the Panel Report on *Canada - Import, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies* raised the question of whether the

[498] *European Communities – Regime for the Importation, Sale, and Distribution of Bananas*, Report of the Appellate Body, adopted on 25 September 1997, WT/DS27/AB/R, para.221.

[499] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para.5.10.

measure contested (in that instance, minimum prices) fell under Article X:1 or Article III:4. It noted that, according to the Interpretative Note Ad Article III, a regulation is subject to the provisions of Article III if it "applies to an imported product and to the like domestic product" even if it is "enforced, in the case of the imported product, at the time or point of importation".[500] Even if the word "import" were deleted from the Decree, this would not alter the position as regards imported asbestos and asbestos-containing products in any way. Their use, in whatever form, would still be prohibited on French territory. The import ban is simply designed to make the prohibition of their use more effective in terms of inspection. For the same reason, in the case of domestic products, the Decree prohibits not only their sale, but also their manufacture. The aim, then, is to halt the spread of asbestos as far upstream as possible.

3.399 The EC contend that Article III:4 must be assessed in the light of the Interpretative Note relating to it. The Panel Report on *United States - Restrictions on Imports of Tuna* is especially instructive for the purposes of the present case. In this case, the United States Marine Mammals Protection Act involved two measures. The first was a regulation governing the fishing practices of national tuna fishermen. Secondly, it also imposed an import ban on tuna or tuna-based products where the commercial fishing techniques used had the incidental effect of killing or severely injuring a greater number of marine mammals than the norms set by the United States. The Panel Report stated in general terms that:

> "This suggests that Article III covers only measures affecting products as such. Furthermore, the text of the Note Ad Article III refers to a measure 'which applies to an imported *product* and the like domestic *product* and is collected or enforced, in the case of the imported *product*, at the time or point of importation'. This suggests that this Note covers only measures applied to imported products that are of the same nature as those applied to the domestic products, such as a prohibition on importation of a product which enforces at the border an internal sales prohibition applied to both imported and like domestic products." [501] [italics in the original]

3.400 The EC indicate that, in this case, the Panel was unable to make use of the Note Ad Article III because the internal measure governing the fishing practices of United States tuna fishermen did not cover a particular product, unlike the import measure. The situation regarding the Decree is radically different and consequently warrants examination solely in the light of Article III:4 of the GATT. The thesis that Articles III and XI cannot both apply to any one measure is apparently confirmed by the rulings of Panels which, when examining a measure, always pose the question whether it falls under Article III or Article XI.[502] The EC note that Canada appears to share this view too, as it argued in the *Hormones* case that: "... in the alternative, the EC import prohibition infringed GATT Article XI, but noted that this claim should only be considered by the Panel if it decided that Article III of GATT did not apply in this case".[503] Besides, it would be totally illogical if one and the same measure were permitted under Article III and prohibited under Article XI, in other words if a measure prohibiting the use of a product on national territory could not be enforced at the border.

3.401 **Canada** maintains that the Decree is inconsistent both with Articles XI:1 and III:4 of the GATT because it involves two separate aspects. As Canada has asserted, the terms of the text make it clear that, on the one hand, the Decree prohibits imports of asbestos or of asbestos-containing products and, on the other hand, regulates the domestic market. Canada notes that the EC do not

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[500] *Canada – Importation, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, BISD 39S/27, para.5.28.

[501] *United States – Restrictions on Imports of Tuna*, circulated on 3 September 1991, not adopted, BISD 39S/155, paras.5.8-5.16.

[502] See, for example *Canada – Importation, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, adopted on 18 February 1992, BISD 39S/27, para.5.6. See also *United States – Restrictions on Imports of Tuna*, pp.193 *et seq.*.

[503] *EC Measures Concerning Meat and Meat Products (Hormones)*, report of the Panel, adopted on 13 February 1998, WT/DS48/R/CAN, para.4.354.

recognize the dual aspect of the French measure, but claim that the import ban is intended simply to render more effective, in terms of control, the ban on use. According to Canada, the EC's reasoning is tendentious in that it is incomplete. Canada notes that, in an effort to demonstrate that the measure is solely an internal measure, the EC claim that removing the "importation" aspect from the text of the measure would not in any way affect the scope of the internal provisions. Canada fully agrees with this reasoning because it is precisely what Canada asserts. However, this is only half of the Canadian reasoning.

3.402 Canada asserts that the corollary of this reasoning highlights the dual aspect of the Decree. Using the same logic as that applied by the EC, Canada can in return claim that if the "internal measure" aspect is removed from the reading of the text of the Decree, this does not change in any way the scope and effectiveness of the ban on the import of asbestos into France. That is why the measure must be examined under both Article III:4 and Article XI:1 of the GATT. Canada notes the argument of the EC and of the United States relating to the Interpretative Note Ad Article III (measures imposed "at the time or point of importation"). However, the Interpretative Note is not applicable because the import ban is not an internal measure imposed, for administrative reasons, at the border. Also, the Interpretative Note Ad Article III only applies, as indeed the EC maintain, if the measure applies "to an imported product and to the like domestic product".[504] Yet, it is clear to Canada that the aspect of the measure in question, namely the explicit import ban, is not applicable to the domestic product because the domestic product is obviously not "imported". The import ban is therefore aimed specifically at something that is not covered by the internal measure. Canada contends that the Decree has a dual aspect involving Articles III:4 and XI:1 of the GATT.

3.403 The **European Communities** assert that the Decree must be examined as an internal measure falling exclusively under Article III:4 of the GATT. When a domestic measure applies to both domestic and imported products, Article III must apply. Therefore, the contested measure may be examined as a single measure with identical implications for both domestic products and imports. Article III then rules out the application of Article XI, inasmuch as these two Articles cannot be applied cumulatively to one and the same measure. This interpretation follows both from a textual analysis of the Interpretative Note Ad Article III and from previous practice under the GATT. It also follows from an analysis, by analogy, of other legal systems.

3.404 The EC recall that, as already indicated, the Interpretative Note Ad Article III has been interpreted by the Panel in *United States - Restrictions on Imports of Tuna* as follows:

> "This suggests that this Note [Ad Article III] covers only measures applied to imported products that are of the same nature as those applied to the domestic products, such as a prohibition on importation of a product which enforces at the border an internal sales prohibition applied to both imported and like domestic products."[505]

In so doing, the Panel recognized that, even if a measure is applied to imported products, the fact that that same measure is also applied to domestic products makes Article III applicable. This in itself rules out any possibility of cumulative application together with Article XI of the GATT.

3.405 The EC indicate that the Panel in *United States - Measures Affecting Alcoholic and Malt Beverages* noted that:

> "…the issue is not whether the practices in the various states affect the right of importation as such, in that they clearly apply to both domestic (out-of-state) and imported wines; rather, the issue is whether

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[504] *Canada – Importation, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, adopted on 18 February 1992, BISD 39S/27, para.5.28.

[505] *United States – Restrictions on Imports of Tuna*, circulated on 3 September 1991, not adopted, BISD 39S/155, para.5.11.

> the listing and delisting practices accord less favourable treatment - in terms of competitive opportunities – to imported wine than that accorded to the like domestic product. Consequently, the Panel decided to analyze the state listing and delisting practices as internal measures under Article III:4."[506]

This latter Panel shows that a domestic measure can affect the right to import as such without, for all that, falling under Article XI.

3.406 The EC claim that some legal systems, for example, that of the EC, take the same approach. Thus, with regard to the fiscal measures applicable between Member States, the Court of Justice of the EC makes a distinction between, on the one hand, measures that apply to a product only when imported, which fall under Article 12 of the EC Treaty (Elimination of customs duties or charges having equivalent effect), and, on the other, measures that apply to both imported and domestic products, which fall under Article 95 of the EC Treaty[507] (Internal taxation). The text of Article 95 of the EC Treaty could, as a Panel has already indicated[508], be compared to the text of Article III of the GATT. It follows from the above that a measure which applies to both domestic products and imported products must be examined in relation to Article III, insofar as such measure is identical in nature for both domestic products and imports. From a systematic interpretation it also follows that such a measure cannot be examined simultaneously from the standpoint of both Article III and Article XI of the GATT.[509] According to the EC, the students of legal theory have come to the same conclusion:

> "This line [between Articles XI and III] may sometimes be hard to draw. The notes to Article III provide that measures applied to domestic products, which are applied to imported products at the time of importation, are to be analyzed under Article III. Thus, if an import were barred because it failed to meet a national product standard, the permissibility of the action would be examined under Article III, not as an import ban under Article XI."[510]

3.407 The EC assert that, in the case of the French measure on asbestos, the domestic measure and the border measure cover the same products (asbestos and asbestos-containing products) and are of the same nature. The Decree prohibits the importation of asbestos and asbestos-containing products from third countries and, at the domestic level, prohibits the production, processing, possession for sale, offer, exportation and transfer of these products. The practical application of the Decree leads to the same measure - that is, the general ban on asbestos and asbestos-containing products - being applied to all products, irrespective of their origin. As one and the same measure is applied to domestic products and imported products - in the case of the latter at the border - the Communities conclude that only Article III:4 of the GATT is applicable in this case, which rules out the application of Article XI. With regard to the Canadian argument that France does not manufacture asbestos or manufactures it only in extremely limited quantities, the EC wish to point out that asbestos was

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[506] *United States – Measures Affecting Alcoholic and Malt Beverag*es, adopted on 19 June 1992, BISD 39S/206, in particular para.5.63.

[507] See, for example, the judgement of the Court of Justice of the European Communities, 11 June 1992, cases C-149/91 and C-150/91, Sanders Adour/*Directeur des Services Fiscaux des Pyrénées-Atlantiques*, Rep. 1992, p.I-3899, and in particular paras.15 and 19.

[508] *Korea – Taxes on Alcoholic Beverages*, adopted on 17 February 1999, WT/DS75/DS84/R, report of the Panel, in particular point 10.81.

[509] In this connection, the EC note that the non-cumulative application of Articles 12 and 95 of the EC Treaty (see above) has been forcefully recalled by the European Court of Justice, which has stated that:

> "It is settled law … that the provisions relating to charges having equivalent effect and those relating to discriminatory internal taxation cannot be applied together, so that under the system of the Treaty the same imposition cannot belong to both categories at the same time".

[510] Jackson, J.H., Davey, W.J., Sykes, A.O., *Legal Problems of International Economic Relations*, West Publishing Co., 1995, p.502.

produced in France in the past. The potential for production remains, insofar as asbestos in its natural form is present on French territory.

3.408 **Canada** asserts that the Decree should be considered as falling under both Article XI and Article III of the GATT. The Decree's provisions banning imports of asbestos are incompatible with Article XI:1 and the Decree's provisions banning the sale of asbestos and other transactions on the French market are incompatible with Article III:4. In this connection, Canada points out that the report in *United States – Restrictions on Imports of Tuna*, cited by the EC several times to underpin its thesis of systematic interpretation, was not adopted by the Contracting Parties. Canada indicates that, if the Panel considers that the Decree cannot be examined under the two Articles, it should be considered as a measure affecting imports and incompatible with Article XI:1. If the Panel considers that the Decree cannot be examined under the two Articles and cannot be considered as a measure affecting imports, it should be considered as a measure affecting sales and other transactions on the French market and thus incompatible with Article III:4.

3.409 The **European Communities** contend that the Decree constitutes a single measure that applies to both domestic and imported products alike. As one and the same measure is applied to both domestic products and imported products – in the case of imports at the border - the EC conclude that only the arguments of Canada relating to Article III:4 of the GATT are relevant in this case. According to the EC, this interpretation rules out the cumulative application of Articles III and XI of the GATT, as the Note Ad Article III provides and previous GATT Panel reports have clearly established (see, for example, the first Panel report in the *Tuna/Dolphin* case). Indeed, the Decree prohibits the importation of all types of asbestos and products containing asbestos from all third countries and, at the domestic level, prohibits the production, processing, possession for sale, offer, exportation and transfer of these products. The practical application of the Decree thus leads to the same result, namely, a general ban on asbestos and products containing asbestos applicable to all products irrespective of their origin. The EC claim that, in order to establish a violation of Article III:4 of the GATT, the complaining party has the burden of showing that there is *de jure* or *de facto* discrimination in the treatment of imported compared to like domestic products.

(b) Article III:4 of the GATT

(i) Application of Article III:4 of the GATT

3.410 **Canada** maintains that, in adopting the Decree banning asbestos, France violates the national treatment disciplines in Article III:4 of the GATT 1994. The effect of the French measure is to favour the French fibre industry and that of substitute products such as chrysotile fibre and chrysotile-cement products, which is prohibited under Article III:4 of the GATT 1994. According to case law under the GATT 1947 and the GATT 1994, examination of the applicability of Article III:4 to a measure taken by a Member and, if need be, of its compatibility with the disciplines of Article III:4, has two separate facets. The first is to determine whether the measure constitutes a law, a regulation or a requirement affecting the sale, offering for sale, purchase, transportation, distribution or use of an imported product on the domestic market. Canada asserts that the Decree banning asbestos is a regulation affecting these activities. The second facet is to determine whether the products from the territory of a Member imported into the territory of another Member are subject to treatment less favourable than that accorded to like products of national origin in respect of all laws, regulations or requirements affecting, *inter alia*, their supply, offering for sale, or sale. With respect to the second facet, Canada draws attention to the following three points: (i) products like Canadian chrysotile fibre and chrysotile-cement exist; (ii) these like products are of French origin; and (iii) they benefit from treatment more favourable than that accorded to imported Canadian chrysotile fibre and chrysotile-cement products. Canada notes that, in this case, France recognized in specific terms in the Decree banning asbestos that chrysotile fibre and the products containing it are like the substitute fibres and materials, products or devices containing the latter.

3.411 Canada maintains that the likeness of these products is confirmed by application of the criteria established in the case law, i.e. end-use of the product, consumers' tastes and habits, the physical properties, the nature and quality of the product, as well as tariff classification. According to these criteria, the substitute fibres are like chrysotile fibre and fibro-cement products are like chrysotile-cement products. Furthermore, a substitute fibre manufacturing industry and a sizeable industry for the manufacture of fibro-cement products exist in France. The prohibition of a number of operations – including domestic marketing, sale and transfer on any basis – relating to chrysotile fibre and products containing it unequivocally constitutes treatment less favourable than that accorded to like French substitute fibres and products that are not subject to any prohibition regulations of the same type.

3.412 Canada contends that the Decree constitutes a regulation affecting the sale, placing on the market or purchase of chrysotile fibre and chrysotile-cement products in France. According to Canada, Article III:4 applies to "all laws, regulations and requirements". Article III:4 applies to the Decree, which is a regulation of the French Government. Pursuant to the terms of Article III:4, a measure must affect "the internal sale, offering for sale, purchase, transportation, distribution or use …" on the domestic market. The Decree specifically aims to prohibit the manufacture, processing, sale, domestic marketing, possession for sale, offer or transfer on any basis of all varieties of asbestos fibres and products containing them. In Canada's view, the Decree undoubtedly constitutes a regulation directly affecting the sale, release for sale or purchase of chrysotile fibre and products containing it. The Decree applies to France's domestic market pursuant to the terms of Article III:4. In prohibiting the sale, release for sale or purchase, the Decree changes the conditions of competition, in the domestic market, between substitute fibres and products containing them of French origin and chrysotile fibre and products containing it originating in Canada. Canada concludes that the conditions regarding the applicability of Article III:4 of the GATT have been met.

3.413 The **European Communities** assert that the Decree has to be examined as an "internal regulation" that provides perfectly identical treatment for "like" domestic and imported products within the meaning of Article III:4 of the GATT and it must therefore be considered fully compatible with that Article.

(ii) The concept of "like products"

3.414 **Canada** claims that, in the case of the Decree, the question of determining whether the treatment accorded is less favourable for the imported product than for the like product of national origin presupposes the examination of the following three points: (i) the existence of products like Canadian chrysotile fibre and chrysotile products; (ii) the French origin of those like products; and (iii) less favourable treatment accorded to chrysotile-cement products and to imported chrysotile fibre than that accorded to like French products. According to the report by the Working Party on *Border Tax Adjustments*, likeness of products shall be assessed on a "case-by-case" basis considering, in particular, end-use of the product, consumers' tastes and habits and the properties, nature and quality of the product.[511] The Appellate Body describes the Working Party report on *Border Tax Adjustments* as setting out "the basic approach for interpreting 'like or similar products', generally, in the various provisions of the GATT 1947".[512] Tariff classification was added as a supplementary element to the

[511] Working Party Report *Border Tax Adjustments*, BISD 18S/97, para. 18: "... the interpretation of the term should be examined on a case-by-case basis. This would allow a fair assessment in each case of the different elements that constitute a 'similar' product. Some criteria were suggested for determining, on a case-by-case basis, whether a product is 'similar': the product's end-uses in a given market, consumers' tastes and habits, which change from country to country, the product's properties, nature and quality." This Report was adopted by the contracting parties in 1970 and has been taken up many times since, notably by the Appellate Body in *Japan – Taxes on Alcoholic Beverages*, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, pp.18 *et seq*.

[512] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R), p.22.

above-mentioned criteria.[513] Analysis of the likeness of products is therefore based on criteria such as (i) end-use of the product; (ii) consumers' tastes and habits; (iii) the properties, nature and quality of the product; and (iv) the tariff classification.[514] Precedents under the GATT 1947 and the GATT 1994 do not require that all the criteria apply for the purpose of analysing the likeness of products.[515] For example, in the report *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, it was determined that various types of alcohol were like products because they constituted a well-defined and single product at the end-use stage.[516]

3.415 Canada maintains that the term "like" does not mean identical. It is rather a matter of showing that fibres and products that are substitutes for chrysotile fibre and chrysotile- cement products are similar in many ways and, according to the Decree they are not covered by the national treatment rule under Article III:4.[517] More than 150 substitute fibres for chrysotile fibre exist. In the products in which they are incorporated, they attempt to replicate the properties of chrysotile fibre. The most common are the aramid fibres, PVA fibres, cellulose fibres, glass fibres, ceramic fibres, rock wool, and wollastonite. Virtually all the chrysotile fibre of Canadian origin imported into France before the Decree took effect was intended for the manufacture of chrysotile-cement products. Canada uses the example of chrysotile fibre and chrysotile-cement in order to show the similarity of chrysotile fibre and substitute fibres and of products containing chrysotile and those containing substitute fibres. Chrysotile fibre and PVA, cellulose and glass fibres are used interchangeably, the first in the manufacture of chrysotile-cement, the three others in manufacturing fibro-cement.[518] Chrysotile-cement and fibro-cement are used in the manufacture of products such as pipes, pipe fittings (casings, bends, sealing joints), corrugated sheets, insulation and soundproofing board, exterior siding and roofing shingles, floor tiles, slabs, gutters, chimney cowls and sinks.

3.416 Canada asserts that the guiding principle underlying the examination of the question of similarity is to proceed on a case-by-case basis, i.e. taking into account the particular circumstances of each situation. However, in this instance, France undertook to ban chrysotile asbestos for all possible

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[513] *EEC – Measures on Animal Feed Proteins*, adopted on 14 March 1978, BISD 25S/49, para. 4.2; *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, adopted on 10 November 1987, BISD 34S/83, para. 5.6; *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, paras.6.8 and 6.9.

[514] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, paras.6.8 and 6.9.

[515] Canada notes that, on the contrary, in the Report *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, it is recalled that products may be deemed like products according to the criterion of end-use only: "Past GATT practice has clearly established that 'like' products in terms of Article III:2 are not confined to identical products but cover also other products, for instance if they serve substantially identical end-uses ..." Report adopted on 10 November 1987, BISD 34S/83. See also *United States – Taxes on Petroleum and Certain Imported Substances*, adopted on 17 June 1987, BISD 34S/136, para.5.1.1.

[516] *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, adopted on 10 November 1987, BISD 34S/83, para.5.6: "The Panel agreed in this respect with the arguments submitted to it not only by the European Communities but also by other important producing countries of wines and distilled spirits that gin, vodka, whisky, grape brandy, other fruit brandy, certain 'classic' liqueurs, still wine and sparkling wine, respectively, were recognized not only by governments for purposes of tariff and statistical nomenclature, but also by consumers to constitute 'each in its end-use... a well defined and single product intended for drinking'." See also *Spain – Tariff Treatment of Unroasted Coffee*, adopted on 11 June 1981, BISD 28S/102, p.112, para.4.7.

[517] Canada notes that this interpretation is consistent with the precedent of the GATT 1947, in particular the aforementioned Panel Report on *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*. It was clearly established therein that "like" products under Article III:2 are not limited to identical products […]. (para. 5.5(d)). The Panel judged in this case, that gin, vodka, whisky, brandy, wine and sparkling wine constituted like products for the purposes of Article III.

[518] For the purposes of Canada's argument with regard to Article III:4 of the GATT and Article 2.1 of the TBT Agreement, the term "fibro-cement" means a mix of cement to which PVA, cellulose fibre or fibreglass is added. The term fibro-cement includes "glass cement".

uses and to replace it with like substitute fibres capable of performing an equivalent function. The Decree indicates that products like chrysotile fibre, chrysotile-cement products, as well as all other products using chrysotile fibre, exist. This observation ensues from the terms of the Decree, which require substitute products to perform an "equivalent function" and offer the same "technical guarantees" as chrysotile-based products. Under Article 2 of the Decree, the ban does not apply to certain products that contain chrysotile fibre when, to ensure an equivalent function, "no substitute for that fibre is available which, on the one hand, in the present state of scientific knowledge, poses a lesser occupational health risk than chrysotile fibre to workers handling those materials, products or devices; [and] on the other, provides all technical guarantees of safety corresponding to the ultimate purpose of the use thereof." In France, chrysotile fibre has been replaced in all products in which it was used, with the exception of four uses. According to Canada, the replacement of chrysotile fibre in all cases in which there exists a substitute fibre capable of performing an equivalent function presupposes that the chrysotile fibre and the substitute fibre are nearly perfectly alike.[519] For example, the replacement of chrysotile fibre in fibro-cement products implies an admission that the substitute fibres have like characteristics. Finally, to satisfy the requirement under the Decree that a substitute fibre must provide all technical guarantees of safety appropriate to the end-use, it is essential that the end-uses of the products manufactured using chrysotile fibre be the same. According to the precedents, products are like products if their end-uses are the same.

3.417 Canada claims that the application of the criteria from case law confirms that PVA, cellulose and glass fibres and chrysotile fibre, on the one hand, and fibro-cement products and chrysotile-cement products, on the other, are like products.

3.418 As far as end-use is concerned, given the nature of chrysotile fibre - a raw mineral resource - Canada maintains that, in accordance with the case-by-case approach, special importance must be attached to the end-use criterion for the product when examining whether chrysotile fibre is like the substitute fibres. Chrysotile fibre has no use in its raw form; it serves as an input in the production of chrysotile materials. The most widespread end-use of chrysotile fibre is chrysotile-cement. Around 90 per cent of Canadian chrysotile fibre previously imported into France was used for this purpose. Like chrysotile fibre, PVA fibre, cellulose fibre and glass fibre are used in the manufacture of fibro-cement. After they have been incorporated in the cement, chrysotile fibre, on the one hand, and PVA, cellulose and glass fibres, on the other, are used for the manufacture of chrysotile-cement products and fibro-cement products respectively. These products constitute, "at the end-use stage", "a well-defined and single product" intended for the same purposes: whether a chrysotile-cement or a fibro-cement product.[520] The Decree points to the existence of substitute fibres for chrysotile fibre that perform an "equivalent" end function and provide "all technical guarantees of safety to the ultimate purpose of the use thereof".[521] Canada maintains that the conclusion that chrysotile fibre and PVA, cellulose and glass fibres are "like products" under Article III:4 of the GATT is derived from applying the sole criterion of end-use of the product.

3.419 Canada claims that the fact that chrysotile-cement products and fibro-cement products have the same end-uses is proof that they are "like products". Chrysotile-cement and fibro-cement boards are used for insulation and soundproofing. Sheeting, shingles and tiles are used for cladding exteriors,

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[519] Canada notes that only four products made of chrysotile fibre have no equivalent and are therefore exempt from the ban until 2000 or 2002.

[520] See *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, adopted on 10 November 1987, BISD 34S/83, para.5.6: "The Panel agreed in this respect with the arguments submitted to it not only by the European Communities but also by other important producing countries of wines and distilled spirits that gin, vodka, whisky, grape brandy, other fruit brandy, certain 'classic' liqueurs, still wine and sparkling wine, respectively, were recognized not only by governments for purposes of tariff and statistical nomenclature, but also by consumers to constitute 'each in its end-use... a well defined and single product intended for drinking'."

[521] Article 2 of the Decree and the Decrees of 16 December 1996, 17 March 1998 and 24 December 1996 on exemptions from the ban.

roofs and floors. Pipes and pipe fixtures are used for pipeline systems or, for industrial purposes, in the transportation of liquids. Chrysotile-cement and fibro-cement products are like products because they are manufactured using either chrysotile-cement or fibro-cement without distinction, because they are finished products the end-use of which is identical and because the Decree recognizes that the technical guarantees with regard to "end-use" are identical. In Canada's view, the Decree concludes that there are substitute products for chrysotile-cement products that perform an "equivalent" function and provide "all technical guarantees of safety appropriate to the use" of chrysotile-cement products.

3.420 With regard to the properties, quality and nature of the product, Canada contends that the nature of chrysotile fibre (natural mineral fibre), PVA fibre (synthetic organic fibre), cellulose fibre (natural organic fibre) and glass fibre (man-made mineral fibre) is the same inasmuch as fibres are involved, be they organic or mineral, man-made or natural. Substitute fibres for chrysotile fibre are used to replicate the qualities of chrysotile fibre in view of the end-use. Chrysotile-cement or fibro-cement manufacturers use them for identical purposes, which points to the likeness of the properties, nature and quality of chrysotile, PVA, cellulose and glass fibres. In addition, PVA, cellulose and glass fibres, just like chrysotile fibres, give composites both strength and resistance. Their chemical resistance and their quality as a binder and reinforcing agent are useful in the manufacture of chrysotile-cement and fibro-cement.[522] In Canada's view, the likeness of the manufacturing processes for chrysotile-cement and fibro-cement shows the likeness between the properties and the nature of the fibres in question.

3.421 Canada states that chrysotile-cement products, like fibro-cement products, are known for their greater durability than cement products not containing fibre. They are also known for their chemical resistance, their insulating properties, both for heat and soundproofing, and their lightness. Chrysotile-cement and fibro-cement, whether they contain a percentage of chrysotile fibre or other like fibres, are manufactured using the same technical process. Indeed, the Hatschek process and the Mazza process – its derivative for pipe production – are used in the manufacture of chrysotile-cement and fibro-cements.[523] The likeness of the manufacturing processes indicates a convergence as regards the properties, quality and nature of the products. According to Canada, the Decree recognizes that, except in four cases, like asbestos-based products exist which offer "the same technical guarantees".[524] Fibro-cement products have replaced chrysotile-cement products. By offering the same technical guarantees as chrysotile-cement products, fibro-cement products undoubtedly have the same properties, are of the same quality and the same nature. Given that chrysotile-cement products and fibro-cement products have the same intrinsic qualities, that they are manufactured using the same technical process and that the Decree recognizes that they offer the same technical guarantees, for Canada, the obvious conclusion is that chrysotile-cement products and fibro-cement products are "like products".

3.422 Canada asserts that, according to the consumers' tastes and habits criterion, chrysotile fibre and PVA, cellulose and glass fibres, which are inputs in chrysotile-cement products and fibro-cement products, are "like products". Chrysotile fibre, PVA fibre, cellulose fibre and glass fibre are not products of mass consumption. These products are used by a limited number of economic agents, in particular the manufacturers of chrysotile-cement and fibro-cement products, who incorporate these fibres into their products. In so doing, these manufacturers are the consumers of chrysotile fibre for the purposes of the consumers' tastes and habits criterion. According to Canada, the drop in chrysotile asbestos imports intended for chrysotile-cement products in 1996 and 1997 is a result of the Decree and not of a sudden change in consumers' tastes and habits. To change the preferences of French consumers, the Decree on the banning of asbestos was necessary. The impact of the Decree does not reflect consumers' tastes and habits. Businesses manufacturing chrysotile-cement products have converted to substitute fibres or have closed down. The Decree forced these conversions or

[522] Cossette, M., *Substitutes for Asbestos*, December 1998, pp.1-3.
[523] *Id.*, p.23.
[524] Article 2 of the Decree.

closures. Canada maintains that, in determining the likeness of products, it is inappropriate to consider the criterion of the habits of manufacturers who were forced to convert to fibro-cements.[525]

3.423 Canada contends that chrysotile-cement products and fibro-cement products are both industrial products and it is almost impossible to distinguish between them based on their external appearance. Thus, in the eyes of the consumer, chrysotile-cement products and fibro-cement products are like products in all aspects, unless a data sheet is available showing which fibre makes up their composition. From the point of view of the tastes and habits of French consumers, chrysotile-cement products and fibro-cement products are interchangeable. The ban on the import of chrysotile-cement products did not cause a fall in the imports of fibro-cement products. Since the Decree took effect, the import of chrysotile-cement products has simply been replaced by the import of fibro-cement products. If products like asbestos-cement products had not been available, imports into France of fibro-cement products, which include asbestos-cement products, would have dropped immediately after the import of chrysotile-cement products was prohibited. According to Canada, the fact that it is impossible to distinguish between chrysotile-cement products and fibro-cement products based on their external appearance and their interchangeability are elements which indicate that consumers perceive these products as "like products".

3.424 Concerning tariff classification, according to the World Customs Organization, chrysotile-cement products and fibro-cement products are so similar that the 107 six- or eight-digit codes given to chrysotile-cement products in the Harmonized System are identical to the 107 codes given to fibro-cement products. Chrysotile-cement and fibro-cement products are in Heading 68.11 of the Harmonized System, i.e. the category relating to "Articles of asbestos-cement, of cellulose fibro-cement or the like". The World Customs Organization defines Heading 68.11 as follows:

> Chapter 68 – Articles of stone, plaster, cement, asbestos, mica or similar materials
> Heading 68.11 – Articles of asbestos-cement, cellulose fibro-cement or the like[526]
>
> | | | |
> |---|---|---|
> | 6811.10 | - | Corrugated sheets |
> | 6811.20 | - | Other sheets, panels, tiles and similar articles |
> | 6811.30 | - | Tubes, pipe and tube or pipe fittings |
> | 6811.90 | - | Other articles |

3.425 Canada indicates that this category includes fibro-cements made of cellulose, synthetic polymer (i.e. PVA) or glass fibres. As proof that chrysotile-cement and fibro-cement are like products, tiles, for example, made of chrysotile -cement, cellulose-cement or the like are given the same code, i.e. 6811.2011. Chrysotile fibre and PVA, cellulose and glass fibres, on the one hand, and chrysotile-cement products and fibro-cement products, on the other, are "like products" for the

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[525] *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, adopted on 10 November 1987, BISD 34S/83, para.5.7. Canada notes that, in this report, the Panel underlined that the effect of a tax measure, in this case, should not serve to "determine" consumers' tastes and habits and thus differentiate otherwise like products.

[526] *World Customs Organization*, Category 68.11, which states that**:** "This heading covers hardened articles consisting essentially of an intimate mixture of fibres (for example, asbestos, cellulose and other vegetable fibres, synthetic polymer, glass or metallic fibres) and cement or other hydraulic binders, the fibres acting as strengthening agents. These articles may also contain asphalt, tar, etc. These products are generally manufactured by pressing together thin layers of a mixture of fibres, cement and water or by moulding (possibly under pressure), by pressing or by extruding. The heading includes all sizes and thicknesses, obtained as described above, and also articles made by cutting these sheets or by pressing, moulding or bending them before they have set, e.g. roofing, facing or partition sheets and tiles; sheets for making furniture; window sills; sign-plates; letters and numbers; barrier bars, corrugated sheets; reservoirs, troughs, basins, sinks; tubing joints; packing washers and joints; panels imitating carving; ridge tiles, gutters, window frames; flower-pots; ventilation or other tubing, cable conduits; chimney cowls, etc. All these articles may be coloured in the mass, varnished, printed, enamelled, decorated, drilled, filed, planed, smoothed, polished or otherwise worked; they may also be reinforced with metal, etc."

purpose of Article III:4 of the GATT. This conclusion derives from the application of criteria such as the end-use of the products, consumers' tastes and habits, the properties, quality and nature of the products and their tariff classification. Each of the four criteria taken separately leads to the same conclusion.

3.426 The **European Communities** consider that asbestos and asbestos-containing products, on the one hand, and substitute products, on the other, are not "like" products within the meaning of Article III:4 of the GATT. According to established GATT practice[527], four specific criteria can be used to assess whether products are "like products": (i) their properties, nature and quality; (ii) their tariff classification; (iii) their end-use; and (iv) consumers' tastes and habits. The Panel Report on *United States - Gasoline*[528] held that "those criteria were also applicable to the examination of like products under Article III:4". On the issue as to what criteria should be applied in considering what are "like products", the Appellate Body report on *Japan - Taxes on Alcoholic Beverages* stated that:

> "No one approach to exercising judgement will be appropriate for all cases. The criteria in *Border Tax Adjustments* should be examined, but there can be no one precise and absolute definition of what is 'like'. The concept of 'likeness' is a relative one that evokes the image of an accordion. The accordion of 'likeness' stretches and squeezes in different places as different provisions of the *WTO Agreement* are applied. The width of the accordion in any one of those places must be determined by the particular provision in which the term 'like' is encountered as well as by the context and the circumstances that prevail in any given case to which that provision may apply."[529] [italics in the original]

3.427 The EC consider that Canada is confusing the concept of "like products" contained in Article III:4 of the GATT with that of "directly competitive and substitutable products" contained in Article III:2 of the GATT, read in conjunction with the relevant Interpretative Note. However, the two concepts are radically different. This can be seen by examining the texts in question. Article III:2 contains a concept that is not explicitly contained in Article III:4. The Panel report on *EEC - Measures on Animal Feed Proteins* noted that "the General Agreement made a distinction between 'like products' and 'directly competitive and substitutable products'."[530] Moreover, the Appellate Body has held that:

> "If imported and domestic products are not 'like products' for the narrow purposes of Article III:2, first sentence, then they are not subject to the strictures of that sentence and there is no inconsistency with the requirements of that sentence. However, depending on their nature, and depending on the competitive conditions in the relevant market, those same products may well be among the broader category of 'directly competitive or substitutable products' that fall within the domain of Article III:2, second sentence."[531]

3.428 The EC point out that, in the case at issue, although certain fibrous products (p-aramids, PVA, cellulose) and non-fibrous products (plastic, ductile iron) are indeed "substitutable" for chrysotile asbestos and products containing it, they are nevertheless not like products. Asbestos has unique physical characteristics and properties that make it difficult to replace for certain industrial purposes, especially in the chemical, petrochemical, aeronautical and nuclear industries. Amphibole asbestos is in fact the only product that is truly a like product to chrysotile asbestos. And it is precisely because

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[527] Report of the Working Party on *Border Tax Adjustments*, BISD 18S/97, para.18. Cited in particular by the Appellate Body in the Report on *Japan – Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages*, adopted on 10 November 1987, BISD 34S/83, pp.22-26.

[528] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, paras.6.8 *et seq*.

[529] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, p.24.

[530] *EEC - Measures on Animal Feed Proteins*, adopted on 14 March 1978, BISD 25S/49, para.4.3.

[531] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, p.28.

asbestos is uniquely suited for certain industrial uses that the Decree envisages some exceptions to the general prohibition.

3.429 The EC consider that, in this case, three criteria are pertinent when assessing the similarity of products pursuant to Article III:4. These criteria are the products' properties, nature and quality, tariff classification and end-use. As far as the tastes and habits of consumers are concerned, the EC consider that, while this criterion may be relevant in certain cases (everyday consumer goods), it is not relevant in the case of asbestos and asbestos-containing products. The Panel Report on *United States - Gasoline* also made use of the first three criteria, but ignored the tastes and habits of consumers.

3.430 The EC claim that the properties, nature and qualities of the products are different, both for asbestos fibres and substitute products and products containing asbestos and substitute products. As the EC have explained in their factual arguments, asbestos fibres have a very particular fibrous texture. They consist of bundles of small fibrils, stuck to each other. The fibrils separate very easily lengthways under the effect of machining, shock, vibration, friction (or simply draughts if it is a friable material) to form a cloud of very fine dust, often invisible to the naked eye, which can settle anywhere and penetrate very deep into the lungs. Asbestos fibres are minute in diameter (less than 1 micron) so there may be high concentrations in the air. According to the EC, the properties of asbestos fibres serve to underline their uniqueness. Although they pose a danger to health, their unique characteristics incontestably make them a mineral with exceptional physical and chemical properties. They do not burn, are remarkably resistant to various kinds of chemical attack and show high mechanical resistance to traction. No other product, natural or synthetic, exhibits all of the properties that asbestos fibres possess, for the simple reason that no substitute product has the same characteristics as these fibres. The explanatory notes to the Harmonized System ("HS") acknowledge the special nature of asbestos fibres, stating that:

> "Asbestos is a natural mineral substance produced by the decomposition of certain rocks. It has a very characteristic fibrous texture; it is sometimes silky in appearance and the colour varies greatly, being usually white, but sometimes grey, greenish, blue or dark brown …"[532]

3.431 The EC indicate that the characteristics of asbestos fibres make them particularly dangerous to health as they increase the risk of cancer. It is the diameter of a fibre that determines how long it will remain in suspension in the air. Consequently, the smaller the diameter, the higher the risk of cancer. In addition, the greater the fibrillation, the higher the risk of inhalation, again increasing the risk of cancer. Since 1977, the WHO has recognized the existence of a link between the characteristics of asbestos fibres and their danger to health by classing them (including chrysotile fibres) in "category I" of proven carcinogens. By contrast, none of the substitute products for chrysotile asbestos is classified as carcinogenic for man. Substitute fibres possess different characteristics from chrysotile: they are much bigger in diameter than asbestos fibres, up to 40 microns thick. Substitute fibres also show a more limited fibrillation capacity. Moreover, many substitute products are not fibrous in texture (for example, plastic, ductile iron or plaster). The EC point out in this connection that Canada mentions only fibrous substitute products (cellulose, p-aramid, PVA), making no reference at all to non-fibrous products. Yet non-fibrous products are very easily and commonly used instead of asbestos-cement, which used to account for 90 per cent of the chrysotile used in France. The EC conclude that the very nature, composition, physical properties and proven effects on human health of chrysotile make it radically different to substitute products, whether fibrous or non-fibrous. For this reason, in 1986 the ILO[533] – followed by the WHO in 1996[534]

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[532] Explanatory notes of the World Customs Organization, Harmonized System, note under heading HS 25.24 "Asbestos".

[533] *ILO, Convention concerning Safety in the Use of Asbestos (Convention 162)*, adopted on 24 June 1986, International Labour Conference, Geneva.

[534] Press release dated 26 July 1996.

and 1998[535] – recommended replacing asbestos by less harmful materials or technologies wherever possible.

3.432 Regarding asbestos-containing products and substitute products, the EC point out that asbestos fibres possess such special characteristics that they necessarily have an impact on the properties of the product in which they are incorporated, making that product extremely dangerous to health too. If one compares a PVC pipe with a chrysotile-cement pipe, for instance, it is impossible to say that the products are of the same nature. One is made of cement (with asbestos added), whereas the other is made of plastic. The EC note that if one compares a slab of chrysotile-cement used as a roof covering with a tile or slate, it is evident once again that the products are completely different in kind. They do not have the same properties or qualities either. Here again, in the EC's view, it is impossible to speak of "similarity" between asbestos-containing products and substitute products. The EC note that Canada is not wrong when it refers to "convergence" and "resemblance" in terms of the properties, quality and nature of the products concerned. But the fact remains that "convergence" and "resemblance" certainly do not mean "likeness" within the meaning of Article III:4 of the GATT. The EC claims that this lack of "similarity" between asbestos-containing products and substitute products is also confirmed by the fact that, as the materials obtained after replacing asbestos have different physical and mechanical properties from the material which contained asbestos, each substitution operation requires, on the part of manufacturers, careful checks on the properties of the new material and sometimes a complete redefinition of the field of application of the product. This is especially true in the case of gaskets and plaited sealing twine.

3.433 The EC assert that the tariff classifications are different, both for asbestos fibres and substitute products and for asbestos-containing products and substitute products. Canada does not deal with the question of tariff classification for asbestos fibres. It should be recalled that the explanatory notes to the Harmonized System ("HS") recognize the special nature of asbestos fibres by stating that "Asbestos … has a very characteristic fibrous texture …"[536] Given the differences due to the properties, nature and quality of asbestos fibres, the Harmonized System takes the logical step of classifying them under a single tariff heading: HS 25.24. This heading includes chrysotile asbestos fibre. The only other products covered by the same heading are the other varieties of asbestos fibres such as amphibole asbestos fibres. Substitute fibres, on the other hand, all fall under different tariff headings. The EC consider that, in the light of the tariff classification criterion, therefore, there can be no likeness between asbestos fibres and substitute fibres. In the second case – asbestos-containing products and substitute products – the EC point out that many substitute products come under a different tariff heading from asbestos-containing products. For example, rock wool and glass wool fall under heading HS 68.06, which does not cover asbestos-containing products. Some asbestos-containing products, on the other hand, fall under a specific tariff heading such as HS 68.12, which covers in particular clothing, cords, yarn and thread, and gaskets containing asbestos. This heading does not cover any products that do not contain asbestos. As for articles of chrysotile-cement (HS 68.11), the EC must point out that they can be replaced by many other products that fall under different tariff headings. For example: (i) articles of plaster come under tariff heading HS 68.09; (ii) articles of cement are under tariff heading HS 68.10; and (iii) plastic pipes come under tariff heading HS 39.17. By the criterion of tariff classification, the EC conclude that there can be no similarity between asbestos-containing products and products not containing asbestos.

3.434 The EC claim that the end-uses are different. Canada takes the line that the concepts of "like products" and "competitive or substitutable products" are equivalent and that the criterion of end-use is the key to determining what are "like products" within the meaning of Article III:4 of the GATT. However, the two concepts are radically different. Although end-use is the key criterion for

[535] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, 1998, Geneva.

[536] Explanatory notes of the World Customs Organization, Harmonized System, note under heading HS 25.24 "Asbestos".

determining whether two products are directly competitive or substitutable[537], this is not true for "likeness" within the meaning of Article III:4, which is essentially "technical" in nature. The EC note that this was pointed out in the clearest terms in the Panel Report on *Japan - Taxes on Alcoholic Beverages*.

> "In the view of the Panel, the wording of the term 'directly competitive or substitutable' does not suggest at all that physical resemblance is required in order to establish whether two products fall under this category. This impression, in the Panel's view, was further supported by the words 'where competition exists' of the Interpretative Note; competition can and does exist among products that do not necessarily share the same physical characteristics. In the Panel's view, the decisive criterion in order to determine whether two products are directly competitive or substitutable is whether they have common end-uses, *inter alia*, as shown by elasticity of substitution. The wording of the term 'like products' however, suggests that commonality of end-uses is a necessary but not a sufficient criterion to define likeness. In the view of the Panel, the term 'like products' suggests that for two products to fall under this category they must share, apart from commonality of end-uses, essentially the same physical characteristics."[538]

In other words, the end-use is not in itself conclusive in deciding whether products are "like" within the meaning of Article III:4 of the GATT.

3.435 The EC argue further that, even where products may have some end-uses in common, that is not sufficient grounds to class them as "like products", if each of them also has many other end-uses. As the EC has already asserted above that asbestos and asbestos-containing products are different in terms of their properties, nature, quality and tariff classifications, the criterion of end-use cannot, by itself, invalidate the conclusion that such products are not "like" products within the meaning of Article III:4 of the GATT. In any event, substitute products can be used for many other purposes than the uses to which asbestos fibres or asbestos-containing products can be put, and vice-versa. For the EC, every asbestos-free substitute product necessarily has many uses that asbestos-containing products do not have. In conclusion, the Decree is compatible with Article III:4 of the GATT 1994 inasmuch as: (i) there is no protection of domestic industry; (ii) there is no discriminatory treatment of imported products compared with domestic products *de jure* or *de facto*; and (iii) there is no likeness within the meaning of Article III:4 of the GATT between asbestos and asbestos-containing products, on the one hand, and their substitute products on the other.

3.436 **Canada** contends that case law in the GATT and the WTO indicate that the concept of "like product" in Article III:2 must be interpreted narrowly. This narrow interpretation does not, however, apply to Article III:4, where the concept of likeness must be interpreted more broadly, given the purpose and context of Article III:4. Consequently, Article III:4 encompasses a broader range of like products than Article III:2, first sentence. Canada also refers to its response to question 34 of the Panel (see Annex III).

3.437 Canada indicates that, for the purposes of Article III:4 of the GATT, it does not invoke the argument of likeness with respect to non-fibrous substitutes (e.g. PVC, ductile iron). Nor does Canada extend the argument of likeness to non-fibrous products used as substitutes for chrysotile-cement products. The argument of likeness put forward by Canada is limited to glass fibre, cellulose fibre, and PVA fibre, even though the range of substitute fibres is broader, as well as to fibro-cement products incorporating these types of fibre. Canada does not consider that, in order to demonstrate the violation of Article III:4 of the GATT and Article 2.1 of the TBT Agreement, it is incumbent upon it to cite all the products like to chrysotile or to chrysotile-cement products. For there to be a violation,

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[537] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, p.29.

[538] *Japan – Taxes on Alcoholic Beverages*, Report of the Panel, adopted on 1 November 1996, WT/DS8/R; WT/DS10/R; WT/DS11/R, p.113. The EC note that the Appellate Body did not contradict the Panel on this point, see the aforementioned Report of the Appellate Body, p.26.

it simply suffices to demonstrate that, for an imported product or a series of given products, there are like products that enjoy more favourable treatment. According to Article III:4, these like products must be of national origin. Canada notes that the EC go to a great deal of trouble to assert that PVC and ductile iron are not like products to chrysotile fibre and chrysotile-cement products. However, this analysis, although interesting, is completely irrelevant for determining whether glass fibre, cellulose fibre, PVA fibre, as well as fibro-cement products incorporating these types of fibre, are products like to chrysotile fibre and chrysotile-cement products.

3.438 Canada points out that, of the four criteria that can be used to determine the likeness of products, it takes into account end-use and tariff classification, as well as the product's properties, nature and quality. These criteria show that the products in question are like products. Canada also agrees with the EC that consumer tastes and habits are not relevant in this case.

3.439 Concerning the end-use criterion, Canada emphasizes that chrysotile fibre and chrysotile-cement products are like products to PVA, cellulose and glass fibres, and to fibro-cement products incorporating them. Canada reiterates the importance of an analysis of likeness on a "case-by-case" basis, i.e. based on the circumstances. In this case, because these products are inputs that cannot be used in their raw state, particular importance must be accorded to the end-use criterion in these circumstances. Canada notes that the EC appear to claim that the end-use criterion can be decisive only for determining whether two goods are directly competitive or substitutable according to Article III:2, first sentence. This question might be relevant if Article III:2 was being addressed, but this is not the case. Canada recognizes that end-use is a "decisive criterion" for determining the "substitutability"[539] or directly competitive nature of two products. In Canada's view, however, end-use is not the only relevant factor with respect to "substitutability", as the EC suggest. End-use can be equally important with respect to likeness, as the Panel dealing with Article III:2 in *Japan - Taxes on Alcoholic Beverage*s, asserts: "In the Panel's view, the wording makes it clear that the appropriate test to define whether two products are 'like' or 'directly competitive or substitutable' is the marketplace."[540] The market determines the end-use of a product. Canada notes that the EC maintain that substitutability and likeness are two radically different concepts. Canada takes the opposite view, like the Appellate Body in *Korea - Taxes on Alcoholic Beverages*, namely, that likeness is only a sub-set of substitutability and that like products are by definition substitutable.[541] In any event, the jurisprudential distinction between substitutability and likeness in Article III:2 is not necessary because in this case it is a question of Article III:4. The concept of substitutability is inevitably implicit in Article III:4 whenever products are deemed to be like products according to the broader criterion of likeness in Article III:4.

3.440 Canada indicates that the tariff classification of chrysotile-cement products is exactly the same for 107 separate products in the Harmonized System (HS). Heading 68.11 of the HS contains "Articles of Asbestos-Cement, of Cellulose Fibro-cement or the Like". The HS describes the products contained in heading 68.11 as follows: "This heading covers hardened articles consisting essentially of an intimate mixture of fibres (for example, asbestos, cellulose or other vegetable fibres, synthetic polymers [PVA] or glass fibres)."[542] All of the like products cited are found together, under 107 customs codes with six or eight common digits. For example, shingles made of chrysotile-cement, cellulose-cement, PVA-cement and glass-cement fall under code 6811.2011. Canada indicates that, despite these facts, the EC continue to argue, less than convincingly, that "By the criterion of tariff classification, therefore, there is no similarity between asbestos-containing products and products not containing asbestos." Canada is surprised that the EC simply reject the argument of

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[539] *Japan – Taxes on Alcoholic Beverages*, Report of the Panel, adopted on 1 November 1996, WT/DS8/R; WT/DS10/R; WT/DS11/R, para.6.22.

[540] *Id.*

[541] *Korea - Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 17 February 1999, WT/DS75/AB/R, WT/DS84/AB/R, para.118.

[542] Source: World Customs Organization.

likeness for the products cited by Canada merely by demonstrating that products which are not cited by Canada (PVC, ductile iron, rock wool, etc.) are not like products for the purposes of Article III:4. Such an approach is unfounded. Canada considers that the fact that glass wool or rock wool products do not fall under the same heading as chrysotile-cement products in no way changes the fact that chrysotile-cement products are found in exactly the same heading as articles containing PVA fibre, glass fibre and cellulose fibre.

3.441 Canada reaffirms its arguments regarding the properties, nature and qualities of the products in question and calls on the Panel not to lend too much weight to the distinctive physical properties of asbestos, put forward by the EC, i.e. that asbestos fibre is silky, and white, grey, green, blue or brown in colour. Canada notes that the EC are also endeavouring to reject the argument of likeness advanced by Canada by stating that the "lower" pathogenicity of substitute fibres makes it impossible to conclude that they are like products. As Canada has already asserted, the inadequate state of scientific knowledge about substitute fibres makes it impossible to conclude that they are less carcinogenic than chrysotile fibres. In any event, the fact that a product has a greater or lesser impact on health is not a criterion that makes it impossible to conclude that they are like products. In this respect, wine and vodka are like products, even if their effects on health are different.[543]

3.442 The **European Communities** emphasized that it follows clearly from a textual analysis of Article III:4 that the "like products" provision therein does not cover "directly competitive or substitutable" products. In fact, whereas Article III:2, second sentence, read in the light of the corresponding Interpretative Note, provides for an examination of directly competitive or substitutable products, Article III:4 mentions only the consideration of "like domestic products". This difference in the texts is not a matter of chance. If the authors of Article III:4 had intended to include an analysis of directly competitive or substitutable products, it would have had to appear in the text of Article III:4 or in an Interpretative Note, as was done in Article III:2, second sentence. Any other interpretation would result in giving a provision of the GATT a meaning that the signatories to the Agreement did not intend. The EC recall in this connection that the Appellate Body considered that "directly competitive or substitutable products" were a "broader" category than "like products".[544]

3.443 The EC, having already developed this point, only wish to point out that, at the first meeting of the Panel with the parties, Canada stated that "the Panel in *Japan - Alcoholic Beverages* stated that all similar products are, by definition, directly substitutable".[545] In the EC's view, however, the passage from the Panel Report mentioned by Canada needs to be cited in full. In fact, the Panel in *Japan - Taxes on Alcoholic Beverages* stated that:

> "In the view of the Panel, like products should be viewed as a subset of directly competitive or substitutable products. The wording ('like products' as opposed to 'directly competitive or substitutable products') confirmed this point, in the sense that all like products are, by definition, directly competitive or substitutable products, whereas all directly competitive or substitutable products are not necessarily like products."[546]

3.444 The EC also note that a Panel has already concluded that the concept of "like products" in the context of Article III:4 does not cover directly competitive or substitutable products. Thus, in the case of *EEC – Measures on Animal Feed Proteins*, the Panel observed that:

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[543] *Japan - Customs Duties, Taxes and Labelling Practices on Imported Wines and Alcoholic Beverages Imported*, BISD 34S/83, adopted on 10 November 1987.

[544] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, p.28.

[545] Canada's oral submission, 1 June 1999, para.290, See also para. 3.439 above.

[546] *Japan – Taxes on Alcoholic Beverages*, Report of the Panel, adopted on 1 November 1996, WT/DS8/R; WT/DS10/R; WT/DS11/R, para.6.22.

> "Having regard to its own conclusion with respect to 'like products', the Panel was satisfied that animal, fish and synthetic proteins could not be considered as 'like products' for the purpose of Article III:4. Since the obligations under Article III:4 relate to 'like products', the Panel concluded that the non-application of the EEC measures to these products was not inconsistent with the EEC obligations under the Article."[547]

The EC point out that, for a better understanding of this conclusion, it should be noted that the same Panel also pointed out that: " … vegetable proteins and skimmed milk powder were technically substitutable in terms of their final use and that the effects of the EEC measures were to make skimmed milk powder competitive with these vegetable proteins".[548] The EC maintain that, despite Canada's unfounded assertions to the contrary, it follows from these two paragraphs that Article III:4 does not cover directly competitive or substitutable products.

3.445 The EC thus confirm the arguments they have already put forward, namely that, even if they can be considered to be competitive or substitutable products, substitutes for asbestos fibres and asbestos-containing products are not "like products" within the meaning of Article III:4 of the GATT 1994. Substitute products, by definition, are only substitutable for other products. In the present case, the substitute products are only substitutable for asbestos fibres and products containing them to a very limited extent. In fact, in view of the multiple uses of asbestos, there is no single natural or synthetic product that alone could replace asbestos generally in all the products or materials that contain it. Thus, there is no substitute for asbestos, only alternative solutions that rely on substitutes which vary depending on the intended application and are sometimes used in combination in order to obtain a material or product that performs an equivalent function.

3.446 The EC claim that the nature/quality/properties criterion is clearly important for assessing likeness within the meaning of Article III:4 of the GATT. This follows from the practice of previous panels, which have always used the physical characteristics for the purpose of determining "likeness" within the meaning of Article III:4, but this is not the case for the other criteria. Thus: (i) the Panel on *Measures Affecting Alcoholic and Malt Beverages*[549] used neither tariff classification, nor end-use, nor consumers' tastes and habits for determining the "likeness" of the products within the meaning of Article III:4; (ii) the Panel on *EEC - Measures on Animal Feed Proteins*[550] used neither end-use nor consumers' tastes and habits for determining the "likeness" of the products within the meaning of Article III:4; (iii) the Panel on *United States - Gasoline*[551] did not use consumers' tastes and habits for the purpose of determining the "likeness" of the products within the meaning of Article III:4. The EC note, on the other hand, that all these Panels used the nature/quality/property criterion for examining likeness within the meaning of Article III:4 of the GATT, which underlines the importance of this criterion within the context of this provision. The EC add that, among these differences in the nature, properties and quality of the products, the health risk posed by the product must necessarily be taken into account. A dangerous product should be regarded as being different in nature and quality from a harmless or less dangerous product. The EC also emphasize that, even if the criterion of consumers' tastes and habits might seem to have little relevance to the present case insofar as the products concerned are not consumer goods, it might nevertheless be useful to analyse the consumer's perception of these products. There can be little doubt that informed users would not choose asbestos or asbestos-containing products after the competent international organizations had decided that asbestos was a proven carcinogen.

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[547] *EEC - Measures on Animal Feed Proteins*, adopted on 14 March 1978, BISD 25S/49, para.4.11.

[548] *Id.*, para.4.3.

[549] *Measures Affecting Alcoholic and Malt Beverages*, adopted on 19 June 1992, BISD 39S/206, paras 5.73-5.75.

[550] *EEC - Measures on Animal Feed Proteins*, adopted on 14 March 1978, BISD 25S/49, para.4.2.

[551] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, para.6.9.

3.447 The EC assert that the criteria of likeness, in particular the nature/quality/properties criterion, mean that the substitute products are not "like" products with respect to asbestos and asbestos-containing products. Asbestos fibres are by definition "fibrous" products. It follows logically that, given this marked difference in physical characteristics, no non-fibrous substitute product could be considered a product "like" to asbestos fibres. As for "fibrous" substitutes, they cannot be considered "like" either within the meaning of Article III:4 because the morphology of asbestos fibres is different to that of "fibrous" substitutes. The fibres that must be taken into account in making a metrological assessment of a working environment have been defined by the WHO in accordance with the following dimensional parameters: (i) more than 5 microns in length; (ii) less than 3 microns in diameter; (iii) ratio of length to diameter greater than 3 microns [3:1]. Chrysotile fibres are 0.1 to 1 micron in diameter and separate lengthways into even finer crystalline fibrils (0.020 micron). The EC indicate that substitute fibres, on the other hand, have a different morphology. Thus, the polyvinyl alcohol and para-aramid fibres used to replace asbestos are 2 to 8 mm in length (i.e. 2,000 to 8,000 microns) and from 10 to 16 microns in diameter. Cellulose fibres, which are from 12 to 40 microns in diameter, can give rise to finer particles (fluff), which are said to irritate the respiratory pathways. These fibres are more than 10 microns in diameter, which physically prevents them from penetrating into the pulmonary alveoli. In addition, the EC stresses the analogy with the case *United States - Measures Affecting Alcoholic and Malt Beverages*.[552] If a beer containing the same substance (alcohol) is not "like" to another beer simply because it contains a different quantity of alcohol, then *a fortiori* a product containing a different type of fibre cannot be considered to be "like" a product containing asbestos. The EC also mention the case of *EEC - Measures on Animal Feed Proteins*, in which the Panel noted that "the varying protein contents and the different vegetable, animal and synthetic origins of the protein products before the Panel" were sufficient to conclude that "these various protein products could not be considered as 'like products' within the meaning of Articles I and III".[553] Similarly, the different origin of the fibres present in the substitute products containing them prevents these products from being considered "like" to products containing asbestos.

3.448 The EC note that Canada itself points out, in relation to the quality of fibrous substitutes, that they are often "of lower quality in terms of their physical, chemical and mechanical resistance". The EC also emphasize that asbestos fibres have certain characteristics that differentiate them from other fibres. Thus, asbestos fibres do not have the same physical characteristics as the substitute fibres, despite Canada's assertions to the contrary. Furthermore, within the context of this nature/quality/properties criterion, the EC maintain that, being hazardous, asbestos and asbestos-containing products cannot be considered as "like" to other products. In fact, asbestos is a hazardous product classified as such by the competent international bodies (a category I carcinogen) whose use can put the lives of thousands at risk. Its hazardous nature has a marked impact on the consumer's perception of the product. Thus, in 1989, the Supreme Court of Canada recognized that the risks associated with the use of asbestos were already a matter of common knowledge in 1973. In particular, it observed that:

> "It seems clear from the journals, newspapers, magazines and manuals which are discussed in detail in the courts below that asbestos-related health risks had spread well beyond the boundaries of industry knowledge and were in wide public circulation. […] Quite apart from the many studies and reports on asbestos-related health hazards published in various medical and scientific journals prior to the issuance of the policy, there were numerous articles published in newspapers across Canada and in the United States dealing with asbestos-related health hazards […] some of the articles in question were not published in obscure publications. These were prominent articles in the New York Times, the Wall Street Journal, the New Yorker magazine, the Washington Post and others. […] Did all of this lend a

[552] *United States - Measures Affecting Alcoholic and Malt Beverages*, adopted on 19 June 1992, BISD 39S/206.

[553] *EEC - Measures on Animal Feed Proteins*, adopted on 14 March 1978, BISD 25S/49, para.4.2.

> 'public character' and 'notoriety', within the meaning of Article 2486 C.C., to the asbestos-related health risks that existed in 1970 and 1973? In my respectful opinion, it did."[554]

3.449 The EC contend that not only North American consumers, but also European consumers, are perfectly well aware of the carcinogenicity of asbestos. Consumers may therefore take a different view of asbestos and asbestos-containing products, on the one hand, and the substitute products, on the other. This difference in perception reinforces the lack of similarity between these products. In these circumstances, it must be concluded that asbestos and asbestos-containing products are not "like" the substitute products within the meaning of Article III:4, in particular because the nature/quality/properties of these products are different from those of asbestos and asbestos-containing products, as is the consumer's perception of them, due to the health risks associated with the characteristics of asbestos. To conclude, the EC wish to draw attention to the paradox inherent in the observations made by Canada. Thus, Canada developed, at considerable length, arguments according to which amphibole fibres are very different to chrysotile fibres. The Canadian arguments related in particular to their physical characteristics. The EC consider that, resituated within the present context, Canada's arguments concerning a hypothetical similarity between asbestos and asbestos-containing products, on the one hand, and the substitute products, on the other, are even more surprising.

3.450 **Canada** emphasizes that, in their second written submission, the EC stated that the tastes and habits of consumers are relevant in order to determine whether products are like products.[555] However, in their first written submission, the EC do not identify the tastes and habits of consumers as a relevant criterion for the purposes of examining the similarity of asbestos products because they are not products in everyday use.[556] In their second written submission, the EC consider that the hazardous nature of asbestos has an effect on the way in which consumers perceive the product. According to the EC, the fact that consumers, rightly or wrongly, perceive chrysotile pipes as different to PVA, cellulose or glass fibre pipes from the risk standpoint supports the hypothesis that chrysotile-cement and fibro-cement are not like products. Canada states that such a hypothesis does not stand up to examination. Consumers' perception of the health risks of chrysotile and of substitute fibres is not an element that should be taken into account when determining the likeness of chrysotile fibres and substitute fibres. Moreover, it is not appropriate to consider the criterion of the tastes and habits of manufacturers of fibro-cement – the consumers whose tastes and habits count in this case – when determining the likeness of chrysotile fibres and PVA, cellulose or glass fibres. Canada agrees with the practice of the Panel in the three cases cited by the EC in paragraph 3.446 and asks the Panel not to take account of consumers' tastes and habits in order to determine the likeness of the products in this case.

3.451 Canada claims that, contrary to the EC's argument, the different origins of substitute fibres (artificial minerals, natural, organic, synthetic organic or natural organic minerals) do not prevent them being considered like products. The higher cost of substitute fibres in comparison with chrysotile fibres, and the fact they have a number of uses in addition to replacing chrysotile fibre, do not run contrary to the likeness of substitute fibres and chrysotile fibres within the meaning of Article III:4 of the GATT. The criterion of the nature, quality and properties of the product imply that chrysotile fibre and chrysotile-cement, on the one hand, and substitute fibres and fibro-cement, on the other, have qualities in common. Canada notes that, in their reply to question 9 of Canada (see Annex II), the EC recognize the relevance of the chemical composition of the fibres for determining likeness and relate it to the criterion of the nature, quality and properties of the products. Asbestos fibres have the same characteristics as substitute fibres. Even if the length, diameter and

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[554] Canadian Indemnity Company vs. Canadian Johns-Manville Company, Limited, 7 December 1989; 13 September 1990, spec. Part V, available on the Website of the Supreme Court of Canada: www.droit.umontreal.ca/doc/csc.scc/fr/index.html.

[555] See paras. 3.442-3.449 above.

[556] See para. 3.429 above.

width/diameter ratio have an effect on pathogenicity (one of the three "Ds"), in Canada's view this does not mean that fibres with different dimensions are necessarily not like fibres. Canada notes that, in paragraph 3.447, the EC state that fibrous substitute products cannot be considered as like products within the meaning of Article III:4 because the morphology of asbestos fibres is not the same as that of "fibrous" substitute products. The EC therefore maintain that substitute fibres for asbestos used in fibro-cement are too large to penetrate the lungs and cannot be taken into account when making a metrological assessment of a work environment according to the dimensional parameters set by the WHO. In Canada's view, the EC's conclusion is contradicted by the *Notice concerning chrysotile asbestos and possible substitute products*. This Notice clearly states that the characteristics of the fibres suggest that substitute fibres (PVA, p-aramids and cellulose) of the critical size and shape reach human pulmonary alveoli.[557] The dimensional parameters set by the WHO do not constitute the criterion of the nature, quality and properties according to which the likeness of fibrous products is determined. They help to identify fibres likely to reach far into the lungs. That is all. A fibre is a fibre, irrespective of its dimensions. Canada points out that the potential risks or harmlessness of chrysotile fibres is not an element to be taken into account in order to determine whether chrysotile fibres can be considered as "like" products to other fibres. Even if the toxicity of chrysotile is not the same as that of amphiboles, the chrysotile fibre is a "like" product to amphibole fibres. Likewise, some substitute fibres are like to chrysotile fibre because of their nature, quality and properties, irrespective of any differences in their toxicity potential. There is no contradiction between distinguishing two types of fibres at the scientific level and in relation to their pathogenicity, on the one hand, and applying the criteria utilized in the WTO and the GATT to determine whether products are like products. An examination of likeness in connection with the GATT and the WTO is different to an analysis of pathogenicity. The toxicity of a product is not recognized as a criterion when examining likeness.

3.452 The **European Communities** contend that Article III:4 does not cover "directly competitive or substitutable products". In fact, whereas Article III:2, second sentence, read in the light of the corresponding Note, provides for an examination of directly competitive or substitutable products, Article III:4 mentions only the consideration of "like domestic products". This difference in the texts is not a matter of chance. If the authors of Article III:4 had intended to include an analysis of directly competitive or substitutable products, it would have had to appear in the text of Article III:4 or in an Interpretative Note, as was done in Article III:2, second sentence. In the EC's view, any other interpretation would result in giving a meaning to a provision of the GATT which the signatories to the Agreement had not intended and would, therefore, not be supported by the generally accepted principles of treaty interpretation. The GATT case law relies essentially on the physical characteristics of products, i.e. the nature, quality and properties criterion, when assessing "likeness" within the meaning of Article III:4 of the GATT. In this case, the substitute products for asbestos can be non-fibrous or fibrous, although the vast majority is non-fibrous. The EC note that Canada accepts that non-fibrous substitute products are not "like" products in this case. In view of the multiple uses of asbestos, there is no single natural or synthetic product that alone could replace asbestos generally in all of its applications and for all the products or materials that contain it. Thus, there is no single substitute for asbestos, only alternative solutions which rely on substitutes that vary depending on the intended application and are sometimes used in combination in order to obtain a material or product that performs an equivalent function. For example, cellulose has been used for many years in a large number of applications, including as a partial substitute for chrysotile. The EC conclude that this very large category of substitute products with numerous potential uses, including as a substitute for asbestos, cannot be considered "like" within the meaning of the case law developed under the GATT.

3.453 The EC point out that, among these differences in the nature, properties and quality of the products, the health risk posed by the product in question must necessarily be taken into account. In fact, a dangerous product should be regarded as being different in nature and quality from a harmless

[557] See Section V of this report, the comments by Canada on the replies by the experts to question 6 of the Panel.

or less dangerous product. The EC point out that, at the meeting held on 17 January 2000, the four scientific experts clearly stated that all the substitute products used to replace chrysotile asbestos are safer than chrysotile-containing products. Therefore, the fact that chrysotile is carcinogenic has a special impact on the consumer's perception of the products containing it, compared to safer substitute products. The EC indicate that, contrary to Canada's claim, they have not changed their position, but have responded to the developments in the written and oral debates before the Panel. Therefore, even if the criterion of consumers' tastes and habits might seem to have little relevance to the present case, inasmuch as the products concerned are not to be consumed directly, it is nevertheless very useful to analyse the users' perception of these products when determining likeness. In these circumstances, in the EC's opinion, it must be concluded that asbestos and asbestos-containing products are not "like" the substitute products within the meaning of Article III:4 for three reasons: firstly, because the nature, quality and properties of these products are different to those of asbestos and asbestos-containing products; secondly, the consumer's perception of them is also different because of the health risks associated with the characteristics of asbestos; thirdly, the tariff classification of these products is also different to that of asbestos.

(iii) Imported products … shall not be subject to less favourable treatment

3.454 **Canada** claims that, by prohibiting sale, offering for sale or purchase, the Decree alters the conditions of competition on the domestic market for substitute fibres and products containing substitute fibres of French origin, on the one hand, and chrysotile fibres and products containing chrysotile fibre from Canada, on the other.

3.455 Canada asserts that France has an important fibro-cement industry. The two major producers of fibro-cement products are Eternit and Saint Gobain. Eternit manufactures PVA fibro-cement products and Saint Gobain glass-cement products. Eternit's products are manufactured at the former sites of four converted factories: Saint-Grégoire (Ille-et-Vilaine), Terssac (Tarn), Vitry-en-Charolais (Saône-et-Loire) and Thiant (Nord). Two production sites in France are used for the manufacture of glass-cement products: Descartes (Indre-et-Loire), where the factory has been converted, and Dunkerque (Pas-de-Calais), where two production lines have been introduced. PVA fibres, which are industrially synthesized, are of French origin. Glass fibres are also of French origin. Cellulose fibres are produced in France. The products marketed by Eternit are presented as a new generation of cement fibres without asbestos and are intended mainly for exterior siding and coverings. The glass-cement composites of the Saint Gobain group are used for cladding.

3.456 Canada claims that chrysotile fibre and chrysotile-cement products are subject to less favourable treatment than PVA, cellulose and glass fibres and fibro-cement products. The Decree banning asbestos is incompatible with the disciplines of Article III:4 of the GATT because its provisions subject chrysotile fibre and chrysotile-cement products to "treatment less favourable" than that accorded to like substitute fibres and fibro-cement products. According to the Panel's report in the case *United States – Section 337 of the Tariff Act of 1930*:

> "The words 'treatment no less favourable' in paragraph 4 call for effective equality of opportunities for imported products in respect of the application of laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products."[558]

The French public authorities, in prohibiting the manufacture, processing, sale, export, release on the domestic market, possession for sale, offer and transfer on any basis of all varieties of asbestos fibres or of any product containing them, have eliminated the opportunities for competition by chrysotile

[558] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1998, BISD 36S/345, para.5.11. See also *United States – Gasoline* cited above, para.6.10, and *Canada – Import, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, adopted on 18 February, BISD 35S/37, para.5.6.

fibre and chrysotile-cement products on the French market. Canada maintains that the incompatibility of the Decree banning asbestos with Article III:4 of the GATT is due to the French Government's refusal to allow chrysotile fibre and products containing it imported from Canada the opportunity to compete, a benefit accorded fibres and like products of national origin.

3.457 The **European Communities** maintain that the contested measure accords with the fundamental purpose of Article III, which is to prevent protectionism. Before looking in detail at the specific provisions of Article III, and especially Article III:4, the interpretation of that article given by the Appellate Body in its Report on *Japan - Taxes on Alcoholic Beverages* must be borne in mind:

> "The broad and fundamental purpose of Article III is to avoid protectionism in the application of internal tax and regulatory measures. More specifically, the purpose of Article III 'is to ensure that internal measures "not be applied to imported or domestic products so as to afford protection to domestic production".'. Toward this end, Article III obliges Members of the WTO to provide equality of competitive conditions for imported products in relation to domestic products. (…) The broad purpose of Article III of avoiding protectionism must be remembered when considering the relationship between Article III and other provisions of the *WTO Agreement*."[559] [italics in the original]

3.458 The EC note that another Panel report *(United States - Measures Affecting Alcoholic and Malt Beverages*) indicated that:

> "The purpose of Article III is thus not to prevent contracting parties from using their fiscal and regulatory powers for purposes other than to afford protection to domestic production. Specifically, the purpose of Article III is not to prevent contracting parties from differentiating between different product categories for policy purposes unrelated to the protection of domestic production."[560]

In the EC's view, the measure complained of is not discriminatory, neither *de jure* nor *de facto*, inasmuch as it guarantees effective equality of opportunity for domestic and imported products, in accordance with the letter of the requirement spelled out in the Reports cited above and in the Report on *United States - Section 337 of the Tariff Act of 1930*.[561]

3.459 The EC maintain that the Decree does not introduce any *de jure* discrimination. Firstly, the context and circumstances in which the Decree was adopted show that it is in no way intended to discriminate against imported products or to protect domestic products. Its sole purpose is to curb the spread of any risk of death or serious illness linked to exposure to asbestos, in particular among those subject to repeated or occasional – and often unwitting – exposure. Secondly, none of the Decree's provisions makes a distinction in terms of treatment between French products and "like" imported products. For example: (i) both domestic asbestos fibres and imported asbestos fibres are prohibited; (ii) both domestic products containing asbestos fibres and imported products containing asbestos fibres are prohibited; (iii) both domestic asbestos fibres and imported asbestos fibres may be granted a temporary exemption on the same terms; (iv) both domestic products containing asbestos fibres and imported products containing asbestos fibres may be granted a temporary exemption on the same terms; and (v) both substitute domestic products and substitute imported products are permitted. It is thus clear to the EC that the Decree makes no distinction between imported products and domestic products, and neither its object nor its effect is to protect domestic production, so it is fully compatible with Article III.

3.460 The EC maintain that the Decree does not create any *de facto* discrimination. In its report on *Japan - Taxes on Alcoholic Beverages*, the Appellate Body recalled that "… Article III obliges

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[559] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, pp.15 *et seq*.

[560] *United States – Measures Affecting Alcoholic and Malt Beverages*, adopted on 19 June 1992, BISD 39S/206, para.5.25.

[561] *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1998, BISD 36S/345.

Members of the WTO to provide equality of competitive conditions for imported products in relation to domestic products".[562] In this case, the effective equality of opportunity for domestic and imported products alike is not only reflected in law, but is also clearly evident from the facts. As the EC claimed in their factual arguments, most of the substitute products used in France are imported from various third countries. France has a negative trade balance in these substitute products. The EC note that, in Canada's view, the Decree favours the French fibre and substitute products industry. The fact is, however, that France chose to prohibit the use of asbestos on public health grounds. The changeover was a painful process, especially in human and financial terms, because the French measure prohibits exports of asbestos and asbestos-containing products, thus closing off external outlets for its domestic industries. Moreover, far from recommending the use of particular substitute products, the Decree leaves it to businesses to decide whether to replace asbestos by substitute fibre products or traditional products (plaster, ductile iron, etc.) of their choice. The Decree thus satisfies the "neutrality" requirement in terms of the choices made by enterprises, as set down in the Panel Report on *United States - Measures Affecting Alcoholic and Malt Beverages*:

> "The Article III:4 requirement is one addressed to relative competitive opportunities created by the government in the market, not to the actual choices made by enterprises in that market. Producers located in the states in question have the opportunity to choose their preferred method of marketing."[563]

The EC conclude that the Decree does not produce *de facto* discrimination between domestic products and imported products.

3.461 **Canada** maintains that the origin of the fibres claimed by Canada has not been disputed for all the like products, with the exception of PVA fibre. Canada notes that the EC claim that PVA fibres are produced only in China and Japan. Canada therefore wonders how it is possible for France to export PVA fibres if it has no industry manufacturing or processing them. In 1998 alone, France exported F 41 million worth of PVA fibres. These fibres exported by France are undoubtedly of domestic French origin.

3.462 Canada contends that the Decree discriminates by subjecting chrysotile fibre and products containing it to less favourable treatment than that accorded to similar substitute fibres and fibro-cement products containing them. Canada rejects the EC's arguments that the Decree does not constitute any form of *de jure* or *de facto* discrimination.

3.463 Canada maintains that the Decree, by prohibiting the manufacture, processing, sale, export, domestic marketing, possession for sale, offer or transfer on any basis of all varieties of asbestos fibres or of any product containing them, constitutes *de jure* discrimination in that it does not treat like products of national origin (substitute fibres or products containing them) in the same way. Not only does the ban apply only to asbestos fibre and products containing it, but, what is more, it is applicable only if there are like products to chrysotile fibre or to the products containing it. No exception to the ban will be permitted if there is a like product offering all the technical guarantees. The Decree therefore imposes a less favourable treatment in all cases where like products exist. What is more, the cases where an exception should be permitted, in the absence of a like product, are very rare. It is only on an "exceptional and temporary" basis that asbestos and asbestos-containing products may be granted effective equality of opportunity with like products of national origin. Canada notes that the EC claim that there is no *de jure* discrimination because asbestos fibres imported and of national origin are subject to the same treatment and because substitute products imported and of national origin are subject to the same treatment. In Canada's view, the EC are simply not comparing the right products. Article III:4 invoked by Canada provides that imported products "shall be accorded

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[562] *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body, adopted on 1 November 1996, WT/DS8/AB/R; WT/DS10/AB/R; WT/DS11/AB/R, p.16.

[563] *United States – Measures Affecting Alcoholic and Malt Beverages*, adopted on 19 June 1992, BISD 39S/206, para.5.31.

treatment no less favourable than that accorded to like products of national origin". Canada indicates that the EC fail to compare the treatment given to imported products (chrysotile fibre and fibro-cement containing it) with that reserved for like products (PVA, cellulose or glass fibre and fibro-cement containing them). Canada calls on the Panel to conclude that the text of the Decree treats chrysotile and chrysotile-cement products less favourably than like products, and that the Decree therefore constitutes *de jure* discrimination.

3.464 Canada also claims that the effective inequality of opportunity available to imported products and to like products of national origin is apparent not only in law in the text of the Decree, but is also reflected in the facts. A total ban on chrysotile fibres and fibro-cement products can only benefit the French substitute fibres manufacturing and fibro-cement products industries. Canada points out that the EC, in their claim that the Decree does not favour the substitute products industry, cite a trade deficit in the case of PVA (the question of aramid fibres is not relevant to the analysis under Article III:4). In Canada's view, a trade deficit does not necessarily indicate that an industry is doing better or worse. In reality, the French PVA fibres industry is in better shape than ever; its exports more than doubled between 1994 and 1998. Canada notes that the EC also claim that the national cellulose fibre industry does not benefit from the ban, pointing out that imports from Canada have increased. This claim does not stand up to analysis: it is not because France has imported a marginal additional quantity of Canadian cellulose fibres since the Decree that the French domestic industry has not benefited from the ban to the detriment of imported products. According to Canada, the EC misleadingly use a passage from *United States – Measures Affecting Alcoholic and Malt Beverages* to claim that the Decree is neutral in its application and does not impose a choice on consumers. On the contrary, the Decree does indeed impose a choice on the French consumer, who is now prevented from using chrysotile fibre or products containing it. Finally, the fact that the asbestos industry in France has or has not suffered is of no consequence in this case. It is a matter of comparing the effects of the Decree on Canadian asbestos interests with its effects on French interests in the substitute products industries.

3.465 The **European Communities** refer the Panel to the arguments they have already put forward concerning the absence of *de jure* and *de facto* discrimination in the Decree's application (see paragraph 3.457-3.460 above).

3.466 The EC also point out that the Decree does not make any distinction between "like" national and imported products. It prohibits the use of all kinds of asbestos and asbestos-containing products in general, irrespective of origin. The substitute products used to replace asbestos are also treated in exactly the same way, irrespective of their origin. Therefore, the Decree in question does not discriminate in any way whatsoever, neither *de jure* nor *de facto*, between all types of asbestos of whatever origin and between all types of asbestos and substitute products for asbestos of whatever origin. Indeed, France imports very large quantities of a wide range of substitute products and treats them in exactly the same way it treats like substitute products of domestic origin, for the purpose of replacing asbestos. The EC also contend that the object and purpose of the Decree in question and the way it was elaborated confirm the view that the intention of the French authorities was not to protect domestic substitute products, but to protect human health from the risks of asbestos-related diseases. It follows that none of the conditions for the application of Article III:4 of the GATT is fulfilled in the present case. The EC maintain that, as Canada has failed to establish a violation of Article III:4 of the GATT, there is clearly no need to examine the applicability of Article XX(b) of the GATT in this case (see, for example, the Panel report on *Section 337* in 1989).

(c) Article XI of the GATT

3.467 **Canada** points out that, in the *Japan - Trade in Semi-Conductors* case, the Panel noted that " … this wording was comprehensive: it applied to all measures instituted or maintained by a contracting party prohibiting or restricting the importation, exportation or sale for export of products

other than measures that take the form of duties, taxes or other charges".[564] Canada maintains that the Decree is incompatible with Article XI:1 of the GATT, which applies to all measures instituted or maintained by a Member that prohibit or restrict the importation, exportation or sale for export of products, unless the measures are in the form of duties, taxes or other charges. Through the Decree, France is maintaining a ban or restriction on the importation of chrysotile and products containing it, other than by duties, taxes or other charges, contrary to its obligation under Article XI:1 of the GATT. Pursuant to Article 1, paragraphs 1 and 2, of the Decree, in order to protect workers and consumers " the importation … of all varieties of asbestos fibres, whether or not incorporated into materials, products or devices" is prohibited. Article XI:1 of the GATT applies because one aspect of the Decree deals specifically with prohibiting importation.[565] As a result of the total ban, producers of chrysotile or chrysotile-containing products, from Canada and elsewhere, cannot export their products to the French market. Similarly, French companies cannot import chrysotile fibre or products containing it because, with some limited and temporary exceptions, imports are prohibited and liable to a fine.

3.468 Canada points out that the penal provisions in the Decree prevent French industry from seeking to import chrysotile and, as a result, this product will never reach France's borders; similarly, a producer of raw chrysotile fibres will refrain from sending his product to France if he knows that its importation is prohibited. Since the Decree took effect on 1 January 1997, the chrysotile-cement industry has ceased operations. As of that date, the former chrysotile-cement industry was forced to convert to the use of chrysotile substitute products. Therefore, rather than speaking of the chrysotile-cement industry, the expression "fibro-cement industry" is now more appropriate. Canada claims that, in adopting the Decree, France instituted, and has since maintained, a prohibition or a restriction on the importation of chrysotile and chrysotile-containing products, originating in Canada and elsewhere, other than duties, taxes or charges, in violation of the provisions of Article XI of the GATT.

3.469 The **European Communities** claim that, as they indicated above[566], Article III:4 of the GATT is applicable and rules out application of Article XI.

3.470 **Canada** states that, in the event that the Panel recognizes the dual aspect of the measure, Canada refers it to the arguments put forward by Canada above.[567] If, however, the Panel decides that the Decree is indivisible and cannot involve two specific aspects that can be examined separately with respect to Article III:4 and Article XI:1 of the GATT, Canada is of the opinion that it must be deemed a measure affecting imports and, consequently, be examined in the light of Article XI:1. Taken as a whole, because of its substance and its true character, the Decree affects imports. It establishes a quantitative restriction on imports of chrysotile asbestos fibres. Among all the types of measure that come within the scope of Article XI:1 of the GATT, the quantitative restriction instituted by the Decree – the ban - is the most severe and the most extreme of all.

3.471 Canada claims that the Decree is a measure restricting or prohibiting imports within the meaning of Article XI of the GATT for a number of reasons. Firstly, the text of the Decree expressly stipulates that the "importation" of asbestos fibres and of asbestos-containing products is banned. According to the terms of Article 1, paragraphs 1 and 2, of the Decree, on the grounds of protecting workers and consumers "the importation ... of all varieties of asbestos fibres, whether or not these

[564] *Japan – Trade in Semi-Conductors*, L/6309, adopted on 4 May 1988, BISD 35S/116, para.104.

[565] Canada notes that the principle of the application of Article XI:1 in such circumstances has been established by several Panels under the GATT 1947, notably in *United States – Manufacturing Clause*, BISD 31S/74, adopted on 15/16 May 1984, para.34; and in *Japan – Trade in Semi-Conductors*, BISD 35S/116, adopted on 4 May 1988, paras.102 *et seq.*; and under the GATT 1994, in *United States – Shrimps*, Report of the Panel, WT/DS58/R, adopted on 6 November 1998, paras.7.11-7.17.

[566] See the EC's arguments in paras.3.395-3.400 and 3.403-3.407.

[567] See paras.3.467 and 3.468 above

substances are incorporated into materials, products or devices" is subject to a ban.[568] Secondly, as France does not produce or extract asbestos fibres on its territory, the ban on manufacturing, processing, selling and domestic marketing is equivalent, in practice, to an import ban on chrysotile asbestos fibres. With respect to chrysotile asbestos fibre, the ban on manufacturing, processing, sale and offering for sale are complementary to the import ban. These bans are a means by which France is pursuing a more basic objective, namely a ban on introducing chrysotile asbestos fibres into its territory. According to Canada, the EC acknowledge that the bans on manufacturing, processing, selling and marketing are complementary to the import ban. Indeed, they point out that deleting the word "importation" from the Decree would not change anything in the asbestos situation in France, which is equivalent to saying that the basic goals would in any case be attained: chrysotile asbestos fibres would not be introduced into France.[569] Thirdly, the Decree is a measure prohibiting or restricting imports within the meaning of Article XI by virtue of its goal. Canada notes that the EC claim that the goal indeed is to halt the spread of asbestos as far "upstream" in the production and distribution process as possible.[570] However, on French territory, the importation of chrysotile fibre represents the most "upstream" link in the commercial or industrial chain. The French Government has never concealed the fact that the goal of the ban was to prohibit asbestos on its territory in the future. With respect to asbestos fibres, this stated goal relates more to importation than to use because France does not produce asbestos fibres.

3.472 Canada points out that, even if the Decree were considered an internal regulatory measure, this would not necessarily mean that Article XI:1 would not apply. Article XI:1 can apply to an internal regulation that has the effect of restricting or prohibiting imports. Excluding any internal regulation from the scope of Article XI:1, simply because it is an internal regulation, would deprive the words "other measures" in the conclusion of Article XI:1 of any useful effect. Such an interpretation would also be contrary to the position adopted by the Panel in *Canada - Import, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*.[571] In that case, the Panel accepted the argument of the EC that the requirements of provincial liquor boards with respect to listing and delisting and points of sale, which discriminated against imported alcoholic beverages, were inconsistent with Article XI:1 of the GATT. However, the requirements in question were part of an internal regulatory framework as they concerned the distribution and marketing of alcoholic beverages. This did not prevent the Panel from concluding that these requirements were contrary to the provisions of Article XI:1 of the GATT. The Panel considered "that systematic discriminatory practices of the kind referred to should be considered as restrictions made effective through 'other measures' contrary to the provisions of Article XI:1".[572] The Panel also considered "that it was not necessary to decide in this particular case whether the practices complained of were contrary to Article III:4 because it had already found that they were inconsistent with Article XI".[573] Canada claims that, with respect to chrysotile asbestos fibres, the heart of the Decree is an import ban. For the purposes of this debate, which deals with Canadian imports of chrysotile asbestos fibres and their applications, the Decree, even when considered as a whole, must be deemed an import restriction or import ban within the meaning of Article XI:1 of the GATT, and examined in light of this provision.

[568] See footnote 565 above.
[569] See para.3.398 above.
[570] *Id.*
[571] *Canada - Import, Distribution and Sale of Certain Alcoholic Drinks by Provincial Marketing Agencies*, adopted on 18 February 1992, BISD 35S/37.
[572] *Id.*, para.4.24.
[573] *Id.*, para.4.26.

3.473 The **European Communities** maintain that the Decree must be examined as an internal measure to which Article III:4 of the GATT alone is applicable, thus ruling out the cumulative application of Article XI in this case.[574]

(d) Article XX(b) of the GATT

(i) Nature of Article XX and the burden of proof

3.474 The **European Communities** contend that, even if the Panel were to hold that the Decree is incompatible with Article III:4 of the GATT, it would nevertheless have to find that the measure falls under the exception provided in Article XX(b) of the GATT. Article XX allows Members an exemption from their obligations under the General Agreement subject to certain conditions. According to the precedent set by the Appellate Body in its Report on *United States - Shrimps*[575], the analysis of the measure in the light of Article XX must begin with the paragraph of Article XX invoked by the defending party, in this case (b), and continue with consideration of the introductory phrase ("chapeau") of that Article.[576] Following this line of approach, the EC will claim that: (i) the Decree is necessary to attain the underlying policy goal, in other words to protect human health and life (test of "necessary" in paragraph XX(b); (ii) the Decree is not applied in such a manner as to constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade ("chapeau" of Article XX).

3.475 **Canada** claims that it is clear from the practice of Panels that, in relation to Article XX(b), it is necessary to show that: (i) the policy which prompted the measure for which the provision is invoked falls within the category of policies intended notably to protect human life or health; (ii) the inconsistent measure for which the exemption is invoked is necessary to fulfil the objective of the aforesaid policy; and (iii) the measure is applied in compliance with the requirements of the introductory paragraph or "chapeau" of Article XX. The Appellate Body also noted that "... the ultimate availability of the exception is subject to the compliance by the invoking Member with the requirements of the chapeau".[577] Article XX permits a "*limited and conditional* exception from the obligations of the substantive provisions of the GATT"[578] [italics in the original] which must, according to the precedents, be interpreted narrowly.[579] Again according to the Appellate Body, " … the measures falling within the particular exceptions must be applied reasonably, with due regard both to the legal duties of the party claiming the exception and the legal rights of the other parties concerned".[580] Canada notes that the EC assert that they have the right to establish the level of protection they desire. In any event, this must be done in compliance with their obligations. The Appellate Body has condemned the abuse of rights under Article XX of the GATT.[581] Sir Leon Brittan, for his part, states that the WTO Agreements do not allow a country to invoke zero risk:

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[574] See the EC's arguments in paras.3.395-3.400 and 3.403-3.407 above.

[575] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, paras.83 *et seq.*

[576] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, para.6.20.

[577] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, para.157.

[578] *Id.*

[579] See also *Canada – Administration of the Foreign Investment Review Act*, adopted on 7 February 1984, BISD 30S/140, para.5.20 and *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para.5.27.

[580] *United States – Gasoline*, Report of the Appellate Body, adopted on 20 May 1996, WT/DS2/AB/R, p.22.

[581] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, para.122.

> "Using the precautionary principle to justify action aimed at reducing risks to zero would clearly be excessive. We should therefore distinguish the precautionary principle from a zero risk approach. To try and adopt the latter across the board could bring us to a scientific standstill since there are risks involved in any new venture."[582]

3.476 Canada claims that it is up to the EC to demonstrate that the Decree is an exception to Article XX(b).[583] According to Canada, the EC did not discharge the burden of proof that lies with them in the arguments they put before the Panel.

(ii) Policy to protect human health

3.477 The **European Communities** maintain that, as explained in their factual arguments, because of their unique characteristics asbestos fibres and products containing them are a proven hazard for human health. The risks linked to the use of these fibres and products are recognized, both by the competent international organizations and by scientific studies, in particular the INSERM study, which was the basis of the Decree. The Decree seeks to halt the spread of this risk and thereby reduce the number of deaths among the French population. The measure taken is the only possible one that enables the spread of the risks due to asbestos exposure to be halted effectively. It therefore falls under the heading of measures for the purposes described in Article XX(b).

(iii) "… necessary to protect human health and life …"

3.478 The **European Communities** contend that the review in the light of Article XX cannot be allowed to undermine the health protection goal set by the Member concerned. Its sole purpose must be to assess whether the trade measure adopted is actually "necessary" to attain that goal. The Panel report on *United States - Gasoline* introduced the GATT 1947 rule on the test of necessity into the GATT 1994. The Panel noted specifically:

> "… the term 'necessary' had been interpreted in the context of Article XX(d) by the panel in the *Section 337* case which had stated that: a contracting party cannot justify a measure inconsistent with another GATT provision as 'necessary' in terms of Article XX(d) if an alternative measure which it could reasonably be expected to employ and which is not inconsistent with other GATT provisions is available to it. By the same token, in cases where a measure consistent with other GATT provisions is not reasonably available, a contracting party is bound to use, among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions."[584] [italics in the original]

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[582] See notably *Who's Afraid of the WTO?:* Address by Sir Leon Brittan to the EPS Consumer Forum *Intergroup*, Strasbourg, 10 February 1999, available on-line: DG I, European Commission >http://europa.eu.int/comm/dg01/1002slb.htm> (access date: 15 May 1999). See *also Message of the European Community to the World Trade Organization*, High Level Symposium on Trade and the Environment, Geneva, 15-16 March 1999 available on-line: DG I, European Commission < http://europa.eu.int/comm/dg01/wtohlsf.htm> (access date: 15 May 1999) where Sir Leon Brittan states that "The principle does not mean [...] that a zero risk option should be pursued." See finally, on-line: *Green issues must be at the heart of the WTO, says Brittan*, European Commission, <http://www.eubusiness.com/approximately/990315co.htm> (access date: 15 May 1999): "I accept the legitimacy of the concept of precaution in the field of environment and health. However, there are dangers in allowing a general, open-ended precautionary principle without defining what it means and in what circumstances it might be used."

[583] According to Canada, it is well established that the burden of proof lies with the EC. See *United States – Gasoline*, Reports of the Appellate Body and the Panel, adopted on 20 May 1996, WT/DS2/AB/R and WT/DS2/9 p.22 and paras.6.20, 6.31 and 6.35; *Canada – Administration of the Foreign Investment Review Act*, adopted on 7 February 1984, BISD 30S/140, and *United States – Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345.

[584] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, para.6.24.

3.479 The EC note that Panel report on *Thailand - Cigarettes* followed the same line of reasoning when reviewing a measure in the context of Article XX(b). This Panel saw no reason not to follow the same interpretation of "necessary" for Article XX(b) as for Article XX(d), stating that:

> "… the import restrictions imposed by Thailand could be considered to be 'necessary' in terms of Article XX(b) only if there were no alternative measure consistent with the General Agreement, or less inconsistent with it, which Thailand could reasonably be expected to employ to achieve its health policy objectives".[585]

It is this line of reasoning that should be followed in the present case in considering whether the French Decree is "necessary" in order to attain the goal of limiting the number of deaths caused by asbestos. The EC will claim that: (i) the ban is justified by the existence of risks to the health of the population; and (ii) the ban is the only measure that enables the objective set by the French authorities (halting the spread of the risk) to be attained.

3.480 The EC maintain that the test of necessity concerns the trade measure and not the level of protection set by the Member. They recall that the purpose of Article XX(b) is not to call into question the level of protection that a Member considers appropriate for its population. The fact that a Member is free to decide what level of protection it considers appropriate in order to safeguard the health of its population was firmly spelled out in the Panel Report on *United States - Restrictions on Imports of Tuna*[586], which stated that:

> "The Panel further noted that Article XX(b) allows each contracting party to set its human […] health standards. The conditions set out in Article XX(b) which limit resort to this exception [...] refer to the trade measure requiring justification under Article XX(b), not however to the life or health standard chosen by the contracting party. The Panel recalled the finding of a previous panel that this paragraph of Article XX was intended to allow contracting parties to impose trade restrictive measures inconsistent with the General Agreement to pursue overriding public policy goals to the extent that such inconsistencies were unavoidable." [587]

3.481 The EC point out that this principle was first established under the GATT 1994 in *United States - Gasoline*, when the Panel stated that:

> "… it was not the necessity of the policy goal that was to be examined, but whether or not it was necessary that imported gasoline be effectively prevented from benefitting from as favourable sales conditions as were afforded by an individual baseline tied to the producer of a product. It was the task of the Panel to address whether these inconsistent measures were necessary to achieve the policy goal under Article XX(b). It was therefore not the task of the Panel to examine the necessity of the environmental objectives of the Gasoline Rule…"[588]

3.482 The EC emphasize that there can be no questioning the right of the French authorities to decide the level of protection they wish to offer their population. According to the EC, this means that in this case the French authorities are free to choose to halt the spread of the risks due to exposure to asbestos, in particular for people who are occasionally and often unknowingly exposed to asbestos. The sole purpose of Article XX(b) is to consider whether the Decree is "necessary" as a regulatory option. The EC state that the so-called "safe" use advocated by

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[585] *Thailand - Cigarettes*, adopted on 7 November 1990, BISD 37S/200, para.75.

[586] *United States - Restrictions on Imports of Tuna*, circulated on 3 September 1991, not adopted, BISD 39S/155, para.5.27.

[587] The EC note that the Panel report on *United States - Restrictions on Imports of Tuna* refers to the Panel report on *Thailand – Cigarettes*, adopted on 7 November 1990, BISD 37S/200, paras.73 and 74.

[588] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, para.6.22.

> Canada does not allow the objective of protecting human health, set by France, to be attained. Canada is thus setting trading interests above the legitimate goal of human health protection. The Panel Report on *Thailand - Cigarettes* states that: "this provision [Article XX(b)] clearly allowed contracting parties to give priority to human health over trade liberalization".[589]

3.483 The EC claim that the Decree constitutes the only adequate measure for the intended purpose. As was indicated in their factual arguments, the EC consider that the Decree pursues the realistic and "reasonable" goal of halting the spread of the risk due to any kind of exposure to asbestos, especially the risk due to occasional and often unwitting exposure. The EC maintain that the Decree is justified by the existence of risks to human health. Canada wrongly argues that asbestos and asbestos-containing products pose "no detectable risk" to health. In the EC's view, this claim relies on the contention that the risk due to levels of exposure in the atmosphere - on which Canada bases its entire submission - is comparable to the risks from the occasional but often very high levels of exposure that may be faced by a substantial proportion of a country's population. Canada seems to suggest that the dangers of inhaling asbestos only concern workers engaged in the extraction and processing of asbestos, in other words "primary users", whose number in Quebec is around 1,700. However, far from affecting only those involved in asbestos extraction and processing, the danger of inhaling asbestos at levels above the minimum threshold (0.1 fibre/ml) primarily concerns users of asbestos or asbestos-containing products, in other words "secondary users", whether occupational (workers in the textile, building, automobile industries, for example), para-occupational (servicing, maintenance), or domestic (such as do-it-yourself) users. In France, there are millions of such secondary users. Several hundred thousand daily users and several million occasional users thus come into contact with a product which, in 1977, was classed by the WHO as a proven carcinogen for humans (category I) and for which there is, according to the 1998 WHO report, no threshold of harmlessness. The EC note that Canada does not fully discuss the occupational risks and completely ignores the para-occupational and domestic risks, although these account for the vast majority of those who suffer exposure.

3.484 The EC maintain that, even in production and processing, which in principle are easier to monitor, there are limits to the so-called "safe" use of asbestos. The "controlled" use of asbestos does not halt the spread of the risks. The 1996 study by the British HSE found a substantially higher than normal incidence of deaths due to mesothelioma among workers entering the asbestos production and processing industries after 1969, in other words even after the United Kingdom had introduced "safe" use.

3.485 The EC also contend that not only is so-called "safe" use unable to halt the spread of risks from exposure to asbestos in production and processing – where the number of people involved is fairly limited and, in principle, easy to manage and control – but it is completely ineffective in cases of occasional exposure to asbestos. Indeed, the principle of "safe" use cannot be applied to the risks affecting a wide range of jobs involving an enormous variety of situations, especially in servicing and maintenance. These workers may only be exposed to asbestos occasionally, but they are subject to exposure peaks that sometimes far exceed the currently accepted dust thresholds. A worker using a grinder outside on corrugated asbestos-cement roofing is subject to a peak exposure of 41 fibres/ml – 410 times higher than the threshold. The EC note that a 1992 study by the Quebec CSST also shows that the risk of mesothelioma has been steadily rising in Canada since 1967, mainly among servicing and maintenance workers. Not once does Canada quote this study.

3.486 The EC point out that the same finding is all the more true for the general population at risk, in other words those who are exposed to inhalation of asbestos on a non-occupational basis. "do-it-yourself enthusiasts" are a typical example of a large sector of the public subject to exposure who are often unaware that this occasional or regular activity may expose them to a potentially fatal risk. According to the EC, Canada conveys the impression that the INSERM report did not appreciate the

[589] *Thailand – Cigarettes*, adopted on 7 November 1990, BISD 37S/200, para.73.

risks described above. Yet the INSERM report shows that it came to be realized during the 1980s and 1990s that the highest risk is no longer to workers in the asbestos industry, namely production and processing. The report clearly states that the risk occurs mainly among those who work with materials containing asbestos. With regard to para-occupational and domestic exposure, the INSERM report states:

> "These are studies which concern cases of mesothelioma in subjects with no known occupational exposure. Several case-control and cohort studies have shown the existence of cases of mesothelioma (pleural and/or peritoneal) attributed to exposure where the source was usually either soiled work clothing brought home by a person subject to occupational exposure or DIY activities. The levels of exposure to asbestos evaluated in these circumstances can be high, comparable to certain occupational exposures. The existence of an increased risk of mesothelioma among those exposed in para-occupational and domestic circumstances seems clearly established."[590]

3.487 The EC indicate that the INSERM report also states:

> "As far as para-occupational exposure is concerned - especially in connection with DIY activities - it is legitimate to consider the exposure peaks as identical to those found in industrial operations of the same nature. The main differences in the level of exposure, in terms of the dose inhaled, are in the length of exposure, as the DIY enthusiast does not generally perform these operations as frequently as the professional."[591]

3.488 The EC maintain that so-called "safe" use will not halt the spread of risk. The EC note that, in Canada's view, "safe" or "controlled" use of asbestos is possible and that, consequently, the prohibition is not "necessary" within the meaning of Article XX(b) of the GATT. Canada also cites the "negligible emissivity of chrysotile-cement products". In support of this statement, Canada argues that the "modern'' uses of chrysotile fibre mean that the fibre is bound in a matrix and cannot be released into the environment. The EC point out that what Canada describes as an innovation is nothing of the kind. For 40 years, the manufacture of asbestos-cement has involved "encapsulating" asbestos in cement (10 per cent asbestos fibres in 90 per cent cement). The EC indicate that, by referring to what it calls "modern" usage or even "modern" products, Canada is misleading the Panel by seeking to promote a "clean" image of chrysotile asbestos, although the name, while less ominous-sounding than amphibole asbestos, cannot hide the fact that is still classed by WHO in "category I" along with other products that are proven carcinogens for humans. The Panel should know that such "encapsulation" cannot be guaranteed to make asbestos-cement, for example, harmless. In fact, once the use of asbestos-cement is permitted, its use can no longer be controlled. Inevitably asbestos-cement, whether in an occupational, para-occupational or domestic context, will be worked in various ways – for instance by cutting, sanding, crushing or sawing. These operations will release large numbers of carcinogenic fibres in the form of dust. Consequently, the EC assert that the "modern" use of chrysotile asbestos to which Canada likes to refer is illusory and merely serves to mask the serious risks involved in the use of asbestos-cement.

3.489 The EC maintain that "safe" use is incapable of halting the spread of the risk due to occasional and often unwitting exposure to asbestos, because instituting the kind of tight constraints that are feasible for a small and "targeted" population - primary users - is wholly unrealistic for the general population. How could such use be effectively ensured for the hundreds of thousands of people exposed every day in sectors where there is little control in terms of health, such as the building industry, where at least 25 per cent of mesothelioma cases in France occur? Not to mention the millions of do-it-yourself enthusiasts subject to occasional and often unwitting inhalation of asbestos when performing quite ordinary operations such as cutting, for instance. The EC note that, as regards practical means of ensuring the effectiveness of "safe" use, Canada stated during consultations that there was no risk of asbestos fibres being released through cutting or sawing

[590] INSERM report, p.401.
[591] *Id.*, p.388.

asbestos-containing products as they were supplied "pre-cut". Canada also refers to an ISO standard issued more than 15 years ago, in 1984. The EC emphasize that, although the standard may have represented a major step forward at the time as compared with the earlier arrangements, it is not sufficient to guarantee an adequate level of protection, given the health objective of an exposure threshold of 0.1 fibre/ml that is recognized by many countries. The EC note that Canada states that "the cutting of roofing sheets or tiles is not a source of emission where the simple techniques laid down in ISO-7337 are followed". These "simple" techniques are: "the use of chains to break pipes by means of pressure, the use of low-speed saws or saws equipped with dust extractors, and the wetting of materials before any operation".

3.490 The EC point out that, in the real world, not all the pieces are pre-cut. And in the real world the thousands of people subject to occasional and unwitting inhalation of asbestos do not put on hermetically sealed protective suits when performing quite everyday tasks. Moreover, the use of a hand saw in accordance with the ISO standard leaves the worker exposed to a level 30 times higher than the permitted limit of 0.1 f/ml. According to the EC, Canada offers no answer to the problem of how to control operations performed further downstream in widely differing circumstances by many different people who are often unaware that they are being exposed to asbestos. The EC note that, once asbestos is on the market, there is no reasonable way of controlling its use and, in particular, of controlling the everyday operations (cutting, sawing, etc.) that many people are likely to perform on asbestos-containing products. In fact, there is clearly no way of ensuring that "safe" use as advocated by Canada can be effectively implemented. According to the EC, recent texts confirm that "safe" use is not feasible and this emerges very clearly from the 1998 WHO report, not cited by Canada, which states:

> "Some asbestos containing products pose particular concern and chrysotile use in those circumstances is not recommended. These uses include friable products with high exposure potential. Construction materials are of particular concern for several reasons. The construction industry work force is large and measures to control asbestos are difficult to institute. In-place building materials may also pose risk control to those doing alterations, maintenance and demolition. Minerals in place have the potential to deteriorate and create exposures."[592]

The EC add that, as the "safe" use of asbestos and asbestos-containing products is unable to halt the spread of risk and anyone affected by current exposure is quite likely to seek redress in the courts at some later stage. However, such claims for damages are notoriously hard to prove and run up against many obstacles, especially on the legal side. There is, then, this additional social justification for recognizing that the ban on asbestos is the only measure truly capable of halting the spread of the risk due to exposure to asbestos. That is the path France has chosen to follow. For the foregoing reasons, it is obvious that "safe" use cannot be implemented effectively and, in any event, significant risks remain for all categories of user.

3.491 The EC note that Canada gives the impression that France has prohibited asbestos and recommended the "indiscriminate use" of substitute products, reinforcing Canada's view that the measure is not necessary. This claim ignores the purpose of the French rules. Far from recommending the use of specific substitute products, the Decree leaves it to businesses to replace asbestos by whichever products or fibres they choose. The public authorities play no part in the actual choices made by enterprises on the market. In practice, firms will carry out technical tests with a view to replacing asbestos products by substitute products. However, if the tests are inconclusive and if firms can show that there are no safer substitute products, they can apply for an exemption in order to continue using asbestos. Such exemptions are provided for in the Decree and are granted only after careful scientific evaluation. Under the terms of Article 2 of the Decree, the use of asbestos is still permitted in exceptional cases and on a temporary basis, if there is no substitute which is capable of performing an equivalent function and which: (i) on the one hand, in the present state of scientific knowledge, poses a lesser occupational health risk to workers handling those materials, products or

[592] *IPCS Environmental Health Criteria (203) on Chrysotile*, WHO, Geneva, 1998, p.144.

devices; and (ii) on the other, provides all technical guarantees of safety corresponding to the use thereof. The EC point out that the replacement of asbestos fibres by substitute fibres is therefore reasonable and justified. In particular, it is grounded in the 1996 and 1998 WHO reports. To conclude on this issue, the EC reject Canada's claim that the only rationale for the excessive impact of the ban has to be the political will of the French Government to respond in spectacular fashion to the pressure it faced from public opinion. The EC maintain that their arguments set out above show, on the contrary, that the ban was the only appropriate solution capable of curbing the number of deaths due to exposure to asbestos. The foregoing shows that the Decree serves to attain the French policy goal regarding asbestos and is compatible with the test of necessity under Article XX(b).

3.492 **Canada** asserts that, in order to determine whether a measure falls under Article XX(b), it must first be examined whether the ban imposed by the Decree is "necessary" to protect human life or health. The only ban that the Decree adds, in practice, is the ban on chrysotile asbestos in non-friable products.[593] The only exposures that the Decree could affect are those, if any, to chrysotile encapsulated in high-density products. A measure will be deemed necessary "… only if there were no alternative measure consistent with the General Agreement, or less inconsistent with it, which [the party] could reasonably be expected to employ to achieve its health policy objectives".[594] The measure that one seeks to justify by invoking Article XX(b) must therefore involve the minimum restriction on international trade. Canada notes that the EC, taking the view that France's choice cannot be called into question, maintain that the French authorities have the right "to decide the level of protection they wish to offer their population … this means that in this case the French authorities are free to choose to halt the spread of the risks due to exposure to asbestos". However, in order to determine whether there is an equally effective alternative that is less restrictive for international trade and that is capable of protecting human life or health just as effectively, Canada considers that the health risk can and must be examined, regardless of what the EC say. The failure to consider whether in fact there is a risk would enable any country to cite a risk - real or not - in support of any prohibition measure.

3.493 Canada is of the opinion that the current uses of chrysotile in high-density non-friable products do not constitute a detectable risk to human health. The risks, which existed in the past and which still persist today in certain cases (amphiboles and friable materials in place), are associated with past uses of asbestos, very often amphiboles, in friable materials. Today, high-density non-friable chrysotile products do not pose a detectable risk. Canada notes that the EC identify the risk as existing both at the levels of extraction and processing and of secondary uses (textiles, construction, maintenance and custodial work, mechanics and do-it-yourself enthusiasts). According to Canada, the EC are clearly trying to mislead the Panel by invoking the risks of the asbestos extraction and processing industry, even though they have already recognized that controlled use is effective here in eliminating the risk. DG III affirmed in April 1997: "the principle of controlled use can be accepted in the asbestos industry".[595] INSERM is of the same opinion: "Given the occupational origin of exposures to asbestos, we are beginning to observe, in a few countries which instituted strict measures to protect workers at an early date, a stagnation in the trends of the incidence of mesothelioma."[596]

3.494 Canada asserts that the EC also show bad faith in citing the risks of building maintenance workers (electricians, plumbers, sheet metal workers and boiler-makers, etc.) and mechanics. The EC

[593] Canada notes that the Decree is not aimed at the use of amphiboles and the manufacture of friable asbestos materials as these uses had already been banned in France.

[594] *Thailand – Cigarettes*, adopted on 7 November 1990, BISD 37S/200, para. 75. See also *United States - Section 337 of the Tariff Act of 1930*, adopted on 7 November 1989, BISD 36S/345, para. 5.26. See finally *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, para.6.24.

[595] European Commission (G. Lohan, DG III), European Justification of Decree No.96-1133 to the Canadian authorities (15 April 1997) following the French notification G/TBT/Notif.97.55, p.2.

[596] See INSERM report, p.182.

do not explain that these exposures are essentially to friable materials very often containing amphiboles of high pathogenic potential. Canada maintains that the risk associated with current uses of chrysotile, if any, is not detectable. According to the data of the United States Occupational Safety & Health Administration (OSHA), the institution of control measures lowers the average exposures of workers handling asbestos-cement pipes to 0.00253 f/ml and of workers handling asbestos-cement sheets to 0.00727 f/ml. The average exposure of mechanics handling friction products, is 0.00294 f/ml.[597] Canada indicates that, despite what the EC appear to believe, these hundreds of thousands of professionals have no need to don "space suits" every morning. Canada asserts that controlled use is sufficient. The use of pre-machined parts and fittings is not a far-fetched or utopian solution. According to OSHA: "pre-cut, pre-tapped pipe has received tremendous marketplace acceptance and represents a large majority of sales. [...] This is significant because the use of pre-cut, pre-tapped pipe may reduce or eliminate some types of field fabrication activities".[598] As a result of pre-fabrication, pre-machining, the use of fittings and compliance with work standards, workers are not exposed to rates of 3 f/ml.

3.495 Canada claims that the EC is wrong in stating that Canada is comparing the exposures associated with the use of chrysotile to those of ambient air. However, Canada, far from using ambient data, bases its position on data for occupational exposures under controlled use conditions to assert that there is no detectable health risk. As for do-it-yourself enthusiasts, Canada notes that the EC also show bad faith in failing to mention that these exposures are essentially attributable to friable materials containing amphiboles. Furthermore, they fail to mention the conclusions of the *Académie nationale de médecine* according to which "… no disease due to asbestos has been formally proven in France outside an occupational type of exposure".[599] Canada considers that few do-it-yourself enthusiasts, certainly not millions, work with high-density chrysotile products. Inasmuch as the only risk associated with asbestos is that of the past use of amphiboles and the use of friable materials, this risk cannot be eliminated by the Decree. The Decree, which prohibits the contemporary uses of chrysotile, is therefore not necessary - and even less useful - to protect human life or health from the risks associated with past uses of asbestos. Canada therefore asserts that the ban is not "necessary" to protect human life or health because high-density chrysotile products do not pose any detectable risk.

3.496 Canada contends that, in the event that, despite the scientific evidence submitted by Canada, Brazil and Zimbabwe, the Panel finds that contemporary uses of chrysotile are a hazard for human health, an examination of less trade-restrictive alternatives is necessary. In its arguments on controlled use, Canada has underlined the "possibility" and the effectiveness of controlled use. Controlled use indisputably constitutes an alternative to a total ban that is significantly less restrictive for international trade and eliminates the risk just as effectively, if any risk remains today. It follows from this analysis that the Decree banning current uses of chrysotile cannot fall under Article XX(b) because it is not necessary to protect human life or health.

3.497 Canada rejects the EC's claim that Canada is placing its trade interests ahead of the legitimate objective of protecting human health. Canada is rather of the opinion that the EC are misusing the objective of protecting human health to justify a measure that does not fall under the scope of Article XX(b). The Decree does not fall under paragraph (b) of Article XX and is not consistent with the introductory paragraph of Article XX. The EC therefore cannot take advantage of the exception provided in Article XX(b) to justify a violation of Article XI:1 and Article III:4 of the GATT. Lastly, Canada refers the Panel to the arguments on the concept of necessity in Article 2.2 of the TBT Agreement because, as it emphasized in its reply to question 33 of the Panel (see Annex II), Canada

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[597] See OSHA, on-line: OSHA: < http://www.osha-slc.gov/Preamble/AmendAsb_data/ASBESTOS_AB4.html> (access date: 20 June 1999), in Tables 5 and 6.

[598] *Id.*

[599] See Académie nationale de médecine (Etienne Fournier), *Amiante et protection de la population exposée à l'inhalation de fibres d'amiante dans les bâtiments publics et privés, Bulletin de l' Académie nationale de médecine*, vol.180, no.4, April 1996 .

contends that the criterion of necessity in Article 2.2 of the TBT Agreement is in many respects similar to that in Article XX(b) of the GATT.

3.498 The **European Communities** refer to the arguments put forward in connection with Article 2.2 of the TBT Agreement (see paragraphs 3.353-3.356 above), which also apply in the context of Article XX(b) of the GATT.

(iv) Preamble to Article XX

3.499 The **European Communities** recall that the Appellate Body stated that the "chapeau" of Article XX applies to: "… the manner in which that measure is applied" and that "If those exceptions [the exceptions under Article XX] are not to be abused or misused, … the particular exceptions must be applied reasonably…".[600] The Appellate Body also noted that:

> "The chapeau of Article XX is, in fact, but one expression of the principle of good faith. […] One application of this general principle, the application widely known as the doctrine of *abus de droit*, prohibits the abusive exercise of a state's rights and enjoins that whenever the assertion of a right 'impinges on the field covered by [a] treaty obligation, it must be exercised bona fide, that is to say, reasonably."[601]

Finally, the Appellate Body suggested that Panels should endeavour "to inquire into how the measure at stake was being *applied in such a manner* as to constitute abuse *or misuse of a given kind of exception*".[602] [italics in the original] The EC maintain that in the present case there is nothing to support the contention that France acted "in bad faith" or in an "unreasonable", "improper" or "abusive" manner in exercising its right under Article XX(b) of the GATT.

3.500 The EC maintain that the Decree is "reasonable". They note that, as has been recognized by the WHO since 1977, asbestos is a product that is a proven carcinogen for humans. It has caused thousands of deaths. So-called "safe" uses of the product cannot prevent deaths from mesothelioma among "primary users" (extraction and processing industries) and cannot feasibly be implemented for all para-occupational and domestic uses, which involve millions of people. Depending on their age, between 18 and 25 per cent of the male population in France have been exposed to asbestos at least once in the course of their working lives. Building industry trades account for a quarter of mesothelioma cases. In view of these figures, France considered that the only measure capable of halting the spread of the risk was the outright ban on the use of asbestos on French territory. The EC contend that, despite Canada's claims, France did not act on impulse. The French decision is based on a reliable scientific report that involved a critical and careful review of the most recent world scientific literature, proving the risks entailed by the use of asbestos, in particular for those subject to exposure in a para-occupational or domestic context. The report, like the Decree, was adopted after "mature reflection".

3.501 The EC claim that the Decree is not applied as a means of imposing arbitrary or unjustifiable discrimination between countries where the same conditions prevail. The prohibition covers products originating in any country (whether domestic or foreign), not only in Canada. The Panel report on *United States - Imports of Certain Automotive Spring Assemblies*, which dealt with a similar case, stated the following:

> "The Panel noted that the exclusion order was directed against imports of certain automotive spring assemblies produced in violation of a valid United States patent from all foreign sources, and not just

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[600] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, pp.22 and 23.

[601] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, para.158.

[602] *Id.*, para.80.

> from Canada. It found, therefore, that the exclusion order was 'not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination against countries where the same conditions prevail'."[603]

3.502 The Appellate Body Report on *United States - Shrimps* elaborated on this idea, noting that:

> "In order for a measure to be applied in a manner which would constitute 'arbitrary or unjustifiable discrimination between countries where the same conditions prevail', three elements must exist. First, the application of the measure must result in *discrimination*. As we stated in *United States – Gasoline*, the nature and quality of this discrimination is different from the discrimination in the treatment of products which was already found to be inconsistent with one of the substantive obligations of GATT 1994, such as Articles I, III or XI. Second, the discrimination must be *arbitrary* or *unjustifiable* in character. We will examine this element of *arbitrariness* or *unjustifiability* in detail below. Third, this discrimination must occur *between countries where the same conditions prevail*. In *United States – Gasoline*, we accepted the assumption of the participants in that appeal that such discrimination could occur not only between different exporting Members, but also between exporting Members and the importing Member concerned."[604] [italics in the original]

3.503 The EC point out that, in this case, the application of the French measure does not involve any discrimination[605] between countries, including France, where the same conditions prevail. All countries that export asbestos or asbestos-containing products, including France (which used to have its own asbestos industry), are covered by the prohibition or by the exemptions, with no difference in treatment. As this does not meet the definition of discrimination laid down by the Appellate Body, the EC consider that the Decree is not being applied in such a manner as to constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail.

3.504 Lastly, the EC maintain that the Decree does not constitute a disguised restriction on international trade. On this question, the Appellate Body noted in its report on *United States - Gasoline* that:

> "… the kinds of considerations pertinent in deciding whether the application of a particular measure amounts to 'arbitrary or unjustifiable discrimination' may also be taken into account in determining the presence of a 'disguised restriction' on international trade. The fundamental theme is to be found in the purpose and object of avoiding abuse or illegitimate use of the exceptions to substantive rules available in Article XX. […] The resulting discrimination must have been foreseen, and was not merely inadvertent or unavoidable. In the light of the foregoing, our conclusion is that the baseline establishment rules in the Gasoline Rule, in their application, constitute 'unjustifiable discrimination' and a 'disguised restriction on international trade'."[606]

3.505 The EC have already shown that the Decree is not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail. This is proof enough that the Decree is not being applied in a manner which would constitute a "disguised restriction on international trade". The EC emphasize in this respect that: (i) the restriction applies to products of any origin (including domestic origin); (ii) the restriction is justified on public health grounds; (iii) the restriction was announced and published; (iv) many other Members of the WTO also apply restrictions to these products; and (v) the restriction takes international standards as a base. The EC therefore hold that the Decree cannot be considered as

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[603] *United States – Imports of Certain Automotive Spring Assemblies*, adopted on 26 May 1983, BISD 30S/107, para.55.

[604] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, para.150.

[605] Canada notes that the Appellate Body has held that this concept of discrimination is different from that already established under Articles I, III or XI of the GATT.

[606] *United States – Gasoline*, Appellate Body Report and Panel Report, adopted on 20 May 1996, WT/DS2/9, pp.25 and 29.

being applied in such a way as to constitute a "disguised restriction on international trade". Any other approach would imply that all international legislation on asbestos and asbestos-containing products (such legislation is, in practice, always restrictive) amounts to "a disguised restriction on international trade". The EC therefore maintain that they did not "abuse" or make "unreasonable" use of their right under Article XX(b) of the GATT.

3.506 **Canada** claims that, in the event that the Panel finds that the Decree is nonetheless covered by paragraph (b) of Article XX, the EC must justify it under the introductory clause of Article XX. However, "… it does not follow from the fact that a measure falls within the terms of [a paragraph of] Article XX that that measure also will necessarily comply with the requirements of the chapeau".[607] The introductory clause of Article XX prohibits any arbitrary or unjustifiable discrimination or disguised restriction on international trade. Whether a measure falls under one of these three types is commented on by the Appellate Body: "The fundamental theme is to be found in the purpose and object [of Article XX] of avoiding abuse or illegitimate use of the exceptions to substantive rules available in Article XX."[608]

3.507 Canada points out that it has already claimed, in respect of Article III:4, that the Decree was discriminatory. The Decree is arbitrary and unjustified first of all because the current uses of chrysotile do not pose any health risk. The ban is also arbitrary and unjustified because it does not have a solid scientific basis. It is arbitrary and unjustified because it takes the INSERM report as a basis for prohibiting current applications of chrysotile, even though this study did not assess the risks associated with modern uses of chrysotile. The ban is also arbitrary and unjustified because it is not motivated by the objective of protecting human life or health but rather by the desire to reassure a panicked population. According to Canada, even the French Senate and National Assembly state that the ban is "… a decision which concerns public opinion".[609] Furthermore, the purpose of the Decree is not to protect the population because it imposes, by its very nature, the blind use of substitute fibres whose lower toxicity is far from proven. What is more, the Decree fosters a false sense of security among the "reassured" population because the public is not afraid of the risks of substitute products, even though these risks are unknown and have not been quantified.

3.508 Canada claims that, in addition to constituting arbitrary and unjustified discrimination, the Decree also constitutes a disguised restriction on international trade. In order for a measure to be a "disguised" restriction on trade, it is not necessary that it be "concealed" or "unannounced". The Appellate Body excludes a narrow reading of the term "disguised restriction": "It is equally clear that *concealed* or *unannounced* restriction or discrimination in international trade does *not* exhaust the meaning of 'disguised restriction.'. " [italics in the original][610] Hence, the fact that the measure was published does not prevent it from being a disguised restriction on international trade. The ban is a disguised restriction on international trade and contrary to the introductory clause of Article XX in the sense that, under the cover of a public health decision, the Decree favours the French national industry of substitute products for chrysotile and products containing it.

(e) Article XXIII:1(b) of the GATT

3.509 **Canada** claims that the incompatibility between the Decree and the obligations of France pursuant to the TBT Agreement and the GATT establishes a presumption that a benefit pursuant to Article XXIII:1(a) of the GATT 1994 and of Article 3.8 of the Understanding has been nullified or

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[607] *United States – Shrimps*, Report of the Appellate Body, adopted on 6 November 1998, WT/DS58/AB/R, para.149.

[608] *United States – Gasoline*, Report of the Appellate Body, adopted on 20 May 1996, WT/DS2/AB/R, p.25.

[609] Le Déault, J.-Y. and Revol, H., *L'amiante dans l'environnement de l'homme: ses conséquences et son avenir*, (1990), 34 Ann. Occup. Hyg., 529.

[610] *United States – Gasoline*, Report of the Appellate Body, adopted on 20 May 1996, WT/DS2/AB/R, p.25.

impaired. However, in the event that the Panel were to conclude that the French measure complies with the TBT Agreement, the application of the latter nevertheless nullifies or impairs the benefits accruing to Canada under these Agreements, pursuant to Article XXIII:1(b) of the GATT. Within the framework of disputes arising from the GATT 1947, Article XXIII:1(b) was interpreted as meaning that, even if a measure is judged to be in compliance with the provisions of the GATT, such a measure may nevertheless be contested as nullifying or impairing benefits. Canada points out that, traditionally, panels under the GATT 1947 have deemed that three conditions must be met for a case of nullification or reduction of benefits in a non-violation situation. This reasoning was confirmed after adoption of the WTO Agreements in the matter *Japan – Measures affecting Consumer Photographic Film and Paper*.[611] These conditions are as follows: (i) the negotiation of a tariff concession; (ii) the subsequent adoption of a governmental measure unfavourably disrupts conditions of competition between the product for which the concessions were granted and the imported product that is a like or directly competitive product; and (iii) the adoption of the measure in question could not reasonably have been foreseen at the time of the tariff concession negotiations.[612]

3.510 Canada asserts that these three conditions are present in this case. First of all, asbestos and many asbestos-containing products are subject to tariff concessions granted by the EC during the Uruguay Round Negotiations.[613] At that time, the EC granted initial negotiating rights to Canada for asbestos. Asbestos and asbestos-containing products were the subject of tariff concessions by France starting in 1947;[614] they were taken up again by the European Economic Community after the 1960-1961 Tariff Conference and have been renewed until now.[615] Secondly, the effect of the Decree's adoption has been to disrupt the competitive relationship in the French market between, on the one hand, chrysotile asbestos fibre and products containing it and, on the other, like and competitive French products. In establishing a total ban, the Decree has destroyed this competitive relationship and has created a monopoly for substitute fibres and products containing them. Thirdly, at the time the tariff concessions were negotiated, Canada could not reasonably have foreseen that France would adopt the Decree. At the time of the negotiations on tariff concessions for asbestos, there was no indication that France was going to abandon its policy of controlled use of asbestos and compromise the value of its commitments by implementing a total ban on chrysotile and any possible use thereof.

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[611] *Japan – Measures affecting Consumer Photographic Film and Paper*, Report of the Panel, (not appealed), adopted on 22 April 1998, WT/DS44/R.

[612] *European Economic Community – Payments and Subsidies paid to Processors and Producers of Oilseeds and Related Animal-Feed Proteins*, adopted on 25 January 1990, BISD 37S/86, paras.142-154.

[613] Uruguay Round of Multilateral Trade Negotiations, Legal Instruments restating the results of the Uruguay Round of Multilateral Trade Negotiations effected in Marrakesh on 15 April 1994, volume 19, List LXXX – European Communities. After the 1996 binding, the numbers of the tariff items in this case, reproduced on the list CXL – European Communities are: 2524.00.30 (initial negotiating right), 2524.00.80 (initial negotiating right), 6811.10.00, 6811.20.11, 6811.20.80, 6811.30.00, 6811.90.00, 6812.10.00, 6812.20.00, 6812.30.00, 6812.40.00, 6812.50.00, 6812.60.00, 6812.70.00, 6812.90.10, 6812.90.90, 6813.10.10, 6813.10.90, 6813.90.10, 6813.90.90.

[614] General Agreement on Tariffs and Trade: Schedules of Tariff Concessions, vol. 3 (New York: GATT 1947), pp.32 *et seq*., Schedule XI – France, tariff item numbers 263, 1187A, 187B, 1188A, 1188B, 1188C, 1188D, 1188E, 1188F, 1188G, 1189.

[615] See *General Agreement on Tariffs and Trade: Protocol to the General Agreement on Tariffs and Trade Embodying Results of the 1960-61 Tariff Conference*, (Geneva: 16 July 1962), Schedule XL – European Economic Community – Part I: tariff headings 25.24, 68.13, 68.14.

3.511 Canada claims that, at the time of the negotiations on the WTO Agreements, it could in no way foresee that France was going to adopt a measure with regard to chrysotile that is obviously incompatible with the treatment it grants to other potentially hazardous products. Other raw materials, such as lead and copper, are potentially hazardous but are not banned. Certain uses of these products are indeed banned, restricted or subject to regulation. Canada was reasonably entitled to expect a similar approach to chrysotile on the part of France. The excessiveness of the French measure could not have been foreseen by Canada. The excess of the measure can be seen in the treatment given to chrysotile-cement products to be withdrawn from the market. As of 1 January 1997, stocks of chrysotile-cement products became "waste" to be handled and stored according to strict orders stipulated in two other measures adopted by France.[616] One of these measures is particularly revealing of the incompatibility and the excessive nature of the overall French regulatory approach to chrysotile. Indeed, a section of the *Note relative aux conséquences de l'interdiction de l'amiante et à l'élimination des déchets* [Note on the effects of the ban on asbestos and the elimination of waste] states that "for waste containing bonded asbestos […] if the waste is composed of asbestos combined only with inert matter, it may be eliminated in accordance with the circular of 9 January 1997 on the elimination of asbestos-cement waste".[617] If France recognizes that products containing bonded asbestos are inert, Canada cannot understand why it had to ban chrysotile and dense products containing it. Thus, a benefit accruing to Canada under the WTO Agreement was nullified or impaired. This benefit was seriously nullified or impaired, i.e. more than *de minimis*. For the foregoing reasons, the Decree has a negative effect on the objective of liberalizing international trade in the WTO Agreement, in violation of Article XXIII:1(b).[618]

3.512 The **European Communities** indicate that, in order to determine whether a measure nullifies or impairs a benefit enjoyed by a Member by virtue of the General Agreement, in the context of Article XXIII:1(b) of the GATT, it must be shown that: (i) the Member enjoys a benefit accruing to it under the GATT; and (ii) the measure in question nullifies or impairs that benefit. To conclude that a measure does indeed nullify or impair that benefit, the complainant must establish that: (i) the measure could not reasonably have been anticipated by that Member when the concession was negotiated; and (ii) the measure upsets the competitive relationship between domestic and imported products that prevailed before the measure was adopted. By way of a preliminary remark, the EC stress that the burden of proof for the application of Article XXIII:1(b) is particularly onerous as a result of Article 26:1(a) of the Understanding, which states that: "the complaining party shall present a detailed justification in support of any complaint relating to a measure which does not conflict with the relevant covered agreement". This provision essentially reflects the practice established under the GATT 1947. A forceful reminder of the weight of the burden of proof was also given under the GATT 1994 in the Panel Report on *Japan - Measures affecting Consumer Photographic Film and Paper*, which found that, in this context, it was the duty of the complainant to provide "a detailed justification for its claim in order to establish a presumption that what is claimed is true".[619] In the

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[616] *Circulaire no. 97-15 relative à l'élimination des déchets d'amiante-ciment générés lors des travaux de réhabilitation et de démolition du bâtiment et des travaux publics, des produits d'amiante-ciment retirés de la vente et provenant des industries de fabrication d'amiante-ciment et des points de vente ainsi que tous autres stocks*, dated 9 January 1997; and Note DPPR/SDPD/BGTD/LT/LT No 97-320 *relative aux conséquences de l'interdiction de l'amiante et à l'élimination des déchets*, dated 12 March 1997.

[617] Note DPPR/SDPD/BGTD/LT/LT No. 97-320 of 12 March 1997, Section III.

[618] Canada notes that Article 26.1 of the Understanding provides that: "Where the provisions of Article XXIII:1(b) of the GATT 1994 are applicable to a covered agreement, a panel… may only make rulings and recommendations where a party to the dispute considers that any benefit accruing to it directly or indirectly under the relevant covered agreement is being nullified or impaired or the attainment of any objective of that Agreement is being impeded as a result of the application by a Member of any measure, whether or not it conflicts with the provisions of that Agreement." The provisions of Article XXIII:1(b) apply to WTO Agreements (because the General Agreement is an integral part of the WTO Agreements under Article II:2 of the WTO Agreement) and to the General Agreement.

[619] *Japan – Measures affecting Consumer Photographic Film and Paper*, Report of the Panel, (not appealed), adopted on 22 April 1998, WT/DS44/R, para.10.32.

case at issue, the EC consider that the very brief explanations supplied by Canada are insufficient to discharge the burden of proof incumbent upon it. In any event, the EC claim that Canada's submission under Article XXIII:1(b) is unjustified for the following reasons: (i) Canada could reasonably have anticipated the French measure when the concession was negotiated under the Uruguay Round; and (ii) the French measure has not upset the competitive relationship between domestic and imported products that prevailed before the measure was adopted.

3.513 Before considering the conditions set out above, the EC point to the observations by the Panel on *Japan - Measures affecting Consumer Photographic Film and Paper*, namely, that the Article in question has been invoked only eight times during the fifty-year existence of the GATT 1947 and that "… most of the cases of non-violation nullification or impairment have dealt with situations where a GATT-consistent domestic subsidy for the producer of a product has been introduced or modified following the grant of a tariff concession on that product".[620] While acknowledging that Article XXIII:1(b) could be applied in contexts other than subsidies, the Panel stated that it "should be approached with caution and treated as an exceptional concept".[621]

3.514 The EC maintain that Canada fails to demonstrate how the French measure could not reasonably have been anticipated. The Panel on *Japan - Measures affecting Consumer Photographic Film and Paper* made the following comments regarding this condition:

> "The second required element which must be considered to establish a case of non-violation nullification or impairment under Article XXIII:1(b) is the existence of a benefit accruing to a WTO Member under the relevant agreement (in this case, GATT 1994). In all but one of the past GATT cases dealing with Article XXIII:1(b) claims, the claimed benefit has been that of legitimate expectations of improved market-access opportunities arising out of relevant tariff concessions. This same set of GATT precedents suggests that for expectations to be legitimate, they must take into account all measures of the party making the concession that could have been reasonably anticipated at the time of the concession ... Of course, as with the first element (application of a measure), the complaining party has the burden of demonstrating the 'benefit accruing'. […] If the measures were anticipated, a Member could not have had a legitimate expectation of improved market access to the extent of the impairment caused by these measures."[622]

3.515 The EC contend that it is important first of all to note that there can be no "legitimate expectations" in the case of a measure that is taken to protect human health and can therefore be justified, particularly with regard to Article XX(b) of the GATT or Article 2.2 of the TBT Agreement. While a Member may have "legitimate expectations" in connection with a purely commercial measure, no such expectations can be pleaded when it comes to health protection matters. The protection of human health is a fundamental duty of any government and it cannot be compromised or restricted by the concept of non-violation.[623] The EC contend that, by their very nature, science and scientific evidence are constantly evolving and a restriction on the right of Members to protect the health of their people, based on Canada's arguments, would run counter to the scope, aims and structure of the GATT as a whole. For example, a Member might have legitimate expectations of computer markets opening up, but it cannot have legitimate expectations of improved access to the market for a carcinogenic product. On the contrary, if there is any expectation, it is that access to that market may be barred or restricted rather than improved. In the EC's view, Canada has been unable to prove that the measure in question could not have been anticipated at the time when the concession

[620] *Id.*, para.10.38.
[621] *Id.*, para.10.36.
[622] *Id.*, paras.10.61 and 10.76.
[623] The EC note that Article XX states that, "Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:... (b) necessary to protect human, animal or plant life or health..."

was negotiated. Canada had good reason to suppose that France would adopt rules prohibiting asbestos.

3.516 The EC point out that, since 1977, asbestos fibres, in particular chrysotile, have been classified as category I carcinogenic products by the WHO. The EC claim that, when the tariff negotiations took place, Canada knew that there was a danger that the product under negotiation could at any time be prohibited by Members of the WTO, particularly if non-hazardous or less hazardous substitutes could be used. In 1986, ILO Convention 162 on asbestos stated that national legislation should provide wherever possible for the "replacement of asbestos or of certain types of asbestos or products containing asbestos by other materials or products or the use of alternative technology, scientifically evaluated by the competent authority as harmless or less harmful …".[624]

3.517 The EC maintain that the scientifically proven carcinogenicity of chrysotile and the impossibility of keeping the risk under control in all cases led the French Government to halt any spread of the risk by applying the principle recommended by the WHO and the ILO - and provided for by the European Union - with regard to carcinogenic products, namely that they be replaced by less hazardous products wherever technically possible. Since 1990, the European Community has provided for the replacement of asbestos under Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC), Official Journal L 196 of 26 July 1990. Under this Directive, the European Community recommends a framework for the health and safety of workers, including the principle of replacing a dangerous substance or process with a non-dangerous or less dangerous substance or process, where they exist. Regarding carcinogens, the principle is set out in the Directive on carcinogens, which provides explicitly for carcinogens to be replaced by less dangerous substances, preparations or processes where technically possible.[625] In 1983, WTO Members began to ban the use of asbestos, including chrysotile. The EC consider that the ban imposed by France could have been anticipated by Canada. Many WTO Members, including Canada itself, have banned amphibole asbestos for many years. In the EC's view, this means that Canada considered that it was impossible to envisage a "safe" use of amphibole asbestos. Based on this and the fact that chrysotile asbestos is classified in the same category of products proven to be carcinogenic for humans as amphibole forms of asbestos, Canada should have expected that several Members, including France, would take steps to ban chrysotile asbestos. Moreover, the EC indicate that France is not the first European Union country to have banned chrysotile fibre. Austria banned chrysotile in 1990, followed by Finland and Italy in 1992, and Germany in 1993. As several European Union countries have banned chrysotile asbestos, Canada could easily have anticipated that other European Union countries, including France, would follow suit.

3.518 The EC maintain that Canada's argument that it could not legitimately have anticipated the ban imposed by the Decree because France did not simultaneously ban other potentially dangerous substances (such as lead and copper) is misleading. There are no provisions in the GATT or the TBT Agreement requiring Members to be so consistent in applying health measures against substances that pose a carcinogenic risk for human health. The EC consider that accepting Canada's argument would be equivalent to preventing Members entirely from taking measures to protect human health on their territory. In the EC's view, Canada can no longer claim a legitimate expectation at the time of the

[624] ILO, Convention concerning Safety in the Use of Asbestos (Convention 162), adopted on 24 June 1996, International Labour Conference, Geneva, Article 10(a).

[625] Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) Official Journal L 196, 26.7.90, p.1. Council Directive 97/42/EC of 27 June 1997 amending for the first time Directive 90/394/EEC on the protection of workers from the risks related to exposure to carcinogens at work (Sixth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) Official Journal L 179, 8.7.1997, p.4.

concession because such a legitimate expectation would have to concern "improved" market-access opportunities. It is clear that a product which entails risks for human health cannot legitimately offer "improved" market-access opportunities. Moreover, the facts clearly show that in industrialized countries the trend in asbestos fibre imports is going down rather than up. The EC maintain that Canada could not therefore have had a legitimate expectation that the opportunities for access to the market in chrysotile fibres would "improve". It also appears that the tariff concession invoked by Canada actually dates from at least as far back as the 1960-1961 negotiating round. The Panel on *Japan - Measures affecting Consumer Photographic Film and Paper* pointed out that "… the establishment of a case based on expectations from rounds concluded 18 or 30 years ago may be difficult".[626] In the case at issue, the EC maintain that Canada must give detailed reasons as to why it could legitimately have expected that France would not adopt measures restricting or eliminating the use of any asbestos product after the Uruguay Round negotiations, given the growing scientific evidence that all types of asbestos and asbestos-containing products were carcinogenic to humans.

3.519 The EC claim that Canada fails to demonstrate how the French measure upsets the competitive relationship between asbestos and fibrous or non-fibrous substitute products. As the EC maintained in the section relating to Article III of the GATT, there is no "similarity" between asbestos and fibrous or non-fibrous substitute products. Because of their different characteristics there can be no distortion of competition between these products. Asbestos and asbestos-containing products (and asbestos-cement in particular) are replaced by many fibrous or non-fibrous products (plaster, ductile iron, etc …). Finally, Canada's exports were essentially, if not exclusively, of raw chrysotile asbestos, which is like only to amphibole asbestos. The EC note that, on this subject, the Panel on *Japan - Measures affecting Consumer Photographic Film and Paper* found that:

> "… it must be demonstrated that the competitive position of the imported products subject to and benefitting from a relevant market access (tariff) concession is being *upset by* ('nullified or impaired ... as the result of') the application of a measure not reasonably anticipated... Thus, in this case, it is up to the United States to prove that the governmental measures that it cites have upset the competitive relationship between domestic and imported photographic film and paper in Japan to the detriment of imports. In other words, the United States must show a clear correlation between the measures and the adverse effect on the relevant competitive relationships."[627] [italics in the original]

3.520 The EC contend that Canada has in no way established such a clear correlation. Furthermore, the conditions of competition on the French market have not been upset. On this point, Canada claims that "the effect of the Decree's adoption has been to disrupt the competitive relationship in the French market between, on the one hand, chrysotile asbestos fibre and products containing it and, on the other, like and competitive French products". On this issue, the EC point to the findings of the Panel on *Japan - Measures affecting Consumer Photographic Film and Paper*: "in an Article XXIII:1(b) case the issue is not whether equality of competitive conditions exists but whether the relative conditions of competition which existed between domestic and foreign products as a consequence of the relevant tariff concessions have been upset".[628]

3.521 The EC claim that the products for which the competitive conditions must be examined are those covered by the tariff concession. If a tariff concession is granted for asbestos, the competitive conditions to be examined are those concerning Canadian asbestos and French asbestos. It is therefore irrelevant for Canada to try to compare chrysotile with French substitute products because such products cannot be considered in terms of the same relevant tariff concession. In conclusion, the EC consider that Canada has not provided detailed explanations to justify its claim that the Decree nullified a tariff concession which, in its view, it could legitimately have expected under the GATT.

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[626] *Japan – Measures affecting Consumer Photographic Film and Paper*, report of the Panel, (not appealed), adopted on 22 April 1998, WT/DS44/R, para.10.70.

[627] *Id.*, para.10.82.

[628] *Id.*, para.10.86.

3.522 **Canada** maintains all its arguments concerning the incompatibility of the French measure with Article XXIII:1(b) of the GATT. It contends that it could not have anticipated, at the time of the most recent tariff negotiations, that France would adopt such a drastic and unreasonable measure as a ban on all forms of asbestos and products containing it. Canada maintains that it could not have anticipated, at the time of the negotiations, that France was going to nullify and impair in this manner its tariff concession concerning chrysotile and products containing it. Canada maintains that, when a complainant proves that it enjoys a tariff concession and the respondent subsequently adopts a measure that affects the value of this concession, the complainant benefits from the presumption that it could not reasonably anticipate that this concession would be nullified or otherwise impaired by this measure. In such circumstances, it is up to the respondent to prove that the complainant should have anticipated the possibility that such a measure would be adopted.[629] In Canada's opinion, the EC have not proved this. Although Canada recognizes France's right to take action in order to protect human health and the health of workers, Canada could not reasonably have anticipated that France was going to adopt a measure totally prohibiting asbestos, without distinction as to the types of fibre or their use. This measure did not exist at the time of the negotiations and there was nothing to suggest that France was going to adopt such a radical measure as a ban on chrysotile and asbestos-cement. The lack of consistency in the nature of the regulatory intervention, as well as its severity compared to the type of regulatory intervention then in place in France and still in effect now concerning products equally harmful, if not more harmful, than chrysotile, mean that it would have been impossible for Canada reasonably to anticipate that France was going to act in the manner that it did.

3.523 Canada claims that, at the time of the most recent tariff negotiations, conducted by the EC during the Uruguay Round, France maintained a controlled use approach for chrysotile asbestos and there was nothing to suggest at the time that it was going to ban the product suddenly without any scientific reason to justify this maximum increase in the restrictive effects on trade in the products concerned. Similarly, at the time these concessions were negotiated, many hazardous products were, and still remain today subject to a controlled use approach whereby certain uses of these products continue to be permitted. Canada therefore had every reason to believe that the controlled use approach was going to continue to be preferred for these products, including chrysotile asbestos. Canada had every reason to believe that the adoption of such a radical measure as a total ban on asbestos was not going to be adopted. In light of the regulatory approach advocated by France up to that point, the extreme nature of such a measure made it unforeseeable. As Canada has already claimed, there is nothing exceptional in the case of chrysotile and products containing it in terms of risk management, if there is any risk. Other products, which moreover have been proven to be hazardous, are the subject of a controlled use policy. Furthermore, the effect of the French prohibition is to impose the replacement of chrysotile by a range of substitute products of domestic or foreign origin, even though they are suspected of being carcinogenic by the French authority which is presented as being the source of the ban on chrysotile, namely INSERM. In these circumstances, Canada's reasonable expectations were that the competitive position of imported chrysotile in France and of products containing it would not be affected by a measure such as a total ban, without distinction as to the types of fibre or their use, in favour of substitute fibres of domestic or other origin. Canada's reasonable expectations were also that this type of measure would not be adopted unless there were exceptional circumstances, which is certainly not the case with respect to the circumstances surrounding the use of chrysotile. There have been no new scientific developments that have changed anything in terms of managing the risks or the effects associated with chrysotile. Finally, Canada's reasonable expectations were that such a ban would not be adopted in favour of substitute products unless these products had been subjected to a rigorous process of examination to

[629] See *India – Patent Protection for Pharmaceutical and Agricultural Chemical Products*, Report of the Appellate Body adopted on 16 January 1998, WT/DS50/1/AB/R, para. 41; *Japan – Measures Affecting Consumer Photographic Film and Paper*, Report of the Panel (not appealed), adopted on 22 April 1998, WT/DS44/R, para.10.79.

prove that their use satisfies the public health objectives invoked by France. The evidence submitted by Canada in this respect shows very clearly that the substitutes do not meet this requirement.

3.524 Canada maintains that Article XXIII:1(b) of the GATT is applicable to the present case because the Decree radically alters the competitive conditions between chrysotile asbestos exported by Canada and substitute products. As a result of the Decree, the latter enjoy a decisive advantage over Canadian chrysotile asbestos, which can no longer be exported to France. Canada rejects the EC's claim that an examination of the impact of the Decree's effect on competitive conditions must be limited to Canadian asbestos and French asbestos, and exclude any examination of the competitive relationship between Canadian chrysotile asbestos and substitute products of French or other origin. Canada points out that this European claim is contradicted by the Panel decisions in *Treatment by Germany of Imports of Sardines*[630] as well as in *Australian Subsidy on Ammonium Sulphate*.[631] In the first case, the Panel sided with Norway on the basis of Article XXIII:1(b) of the GATT 1947, ruling that a German measure which resulted in a reduction of the customs tariff on sardines nullified or impaired a benefit accruing to Norway under a tariff concession relating to sprats and herrings. The Panel invoked Article XXIII:1(b) of the GATT 1947 because it considered that the German measure upset the competitive relationship between these species of fish. It should be noted that sprats and herrings, on the one hand, and sardines, on the other, were treated separately from a tariff standpoint and they were not considered by the Panel as like products for the purposes of Article I of the GATT 1947. Similarly, in *Australian Subsidy on Ammonium Sulphate*, the Panel concluded that benefits had been impaired or nullified within the meaning of Article XXIII:1(b) of the GATT 1947 because the Australian measure upset the competitive relationship between ammonium sulphate and sodium nitrate (mainly Chilean). These two fertilizers were treated separately from a tariff standpoint and were not considered by the Panel as like products. In Canada's view, these two cases therefore clearly establish that Article XXIII:1(b) can be invoked in the case of a measure which upsets the competitive relationship between two products that are not identical.

3.525 For these reasons, Canada asserts that, without regard to the question of whether the measure is consistent with the provisions of the GATT 1994, it nullifies or impairs the tariff concessions granted to Canada by the EC with respect to access to the French market for chrysotile asbestos and products containing it.

3.526 The **European Communities** point out that the Decree cannot be considered incompatible with the provisions of Article XXIII:1(b) of the GATT. The EC stress that the burden of proof, in the context of Article XXIII:1(b) of the GATT, is particularly heavy and lies with Canada. The EC consider that Canada has not provided sufficient evidence of incompatibility with this Article.

3.527 The EC claim that the rules on "non-violation" apply only if the measure in question does not fall under other provisions of the GATT. The EC recall that the Panel on *Japan - Measures affecting Consumer Photographic Film and Paper* noted that "We reach this conclusion in considering the purpose of Article XXIII:1(b), which is to protect the balance of concessions under GATT by providing a means to redress government actions not otherwise regulated by GATT rules ..."[632] The EC consider that Article XXIII:1(b) is applicable only if the Panel reaches the conclusion that the Decree is consistent with Article III of the GATT, or possibly with the TBT Agreement if the Panel were to apply that Agreement to the present case. Otherwise, the EC consider that there cannot be "non-violation". Moreover, in this connection, the EC recall that Article XX of the GATT provides, in particular, that "... nothing in this Agreement shall be construed to prevent the adoption or

[630] *Treatment by Germany of Imports of Sardines*, Report of the Panel, adopted on 31 October 1952, BISD 1S/53.

[631] *Australian Subsidy on Ammonium Sulphate*, Report of the Panel, adopted on 3 April 1950, Vol.II/188.

[632] *Japan – Measures affecting Consumer Photographic Film and Paper*, report of the Panel, (not appealed), adopted on 22 April 1998, WT/DS44/R, para.10.50.

enforcement by any contracting party of measures: ...(b) necessary to protect human ... life or health". Similarly, the preamble to the TBT Agreement states that ".. no country should be prevented from taking measures necessary ... for the protection of human ... life or health ...". The EC therefore conclude that, if the French measure is considered "necessary" for the protection of human health by the Panel and hence if specific rules have been applied in this respect, the provisions of Article XXIII:1(b) of the GATT are inapplicable.

3.528 The EC maintain that Canada could not have "legitimate expectations" with respect to a measure taken to protect human health and which can therefore be justified, particularly with regard to Article XX(b) of the GATT or Article 2.2 of the TBT Agreement. While a Member may have "legitimate expectations" in connection with a purely commercial measure, no such expectations can be pleaded when it comes to health protection matters. The EC note, moreover, that the United States shares this point of view.[633] The EC indicate that Canada, which was aware of past and present scientific research and of the steps being taken by the relevant international organizations to encourage the rapid replacement of asbestos by substitute products, could not have had "legitimate expectations" arising out of relevant tariff concessions, whatever the date of those concessions.

3.529 **Canada** reiterates its arguments on non-violation set out above. The following comments are limited to rejecting certain claims by the EC in paragraphs 3.526-3.528. Canada notes that the EC claim that in a situation of non-violation no action can be taken against a measure deemed justified in accordance with Article XX of the GATT. According to Canada, the cases of *Uruguayan Recourse to Article XXIII*[634] and *United States – Trade Measures affecting Nicaragua*[635] do not support such an interpretation. In the Uruguay case, the Panel considered that measures to protect human health contrary to Article XI but justified under Article XX(b) could nevertheless lead to recourse in a non-violation situation. In the Nicaragua case, the whole procedure was based on the premise that the American embargo was justified under Article XXI. Although it would have been correct to claim that an appeal in a non-violation situation cannot be made if a measure is an exception, in the Nicaragua case, the Panel did not carry out an in-depth examination. This question was, however, never raised by the United States and the Panel therefore carried out an examination and published its findings.

3.530 Canada points out that the EC's reasoning is not substantiated for three additional reasons. Firstly, contrary to the EC's claim, inasmuch as Article 26:1(b) of the Understanding does not provide for the granting of compensation rather than withdrawal of a measure, recourse in non-violation affects neither "the adoption" nor "the application" of the contested measure. Secondly, the EC's attempt to develop a category of "measure(s) of a purely commercial nature" in comparison with a "measure which has health-protection related aspects" is, to say the least, dubious. Not only is it purely artificial, but this distinction has no basis, neither in the texts of the WTO Agreement nor in the case law. Nothing in Article XXIII:1(b) provides for such a distinction. Canada claims that a legitimate expectation does not in any way concern a particular measure or series of measures adopted by a Member, but rather legitimate expectations in relation to the opportunities for competition agreed during multilateral trade negotiations on a given product. Canada notes that the reasoning of the United States cited by the EC suffers from the same confusion. Lastly, the European reasoning is wrong because it does not concur with what was expressed during the preparatory work on the GATT 1947, as it appears in the theory "(…) one of the principal objectives of the Article [XXIII:1(b)] is to prevent circumvention of the provisions of [the Agreement]. Under this Article, if a Member State utilizes the exceptions provided in the Article [XX(b)] as a means of protection, any other Member may take the matter up with the ITO and obtain satisfaction. It is virtually impossible to foresee exceptions that will not lend themselves to abuse if good faith is lacking. The League of

[633] See Section IV above.

[634] *Uruguayan Recourse to Article XXIII*, L/1923, adopted on 16 November 1962, BISD 11S/95, paras.14-19.

[635] *United States – Trade Measures affecting Nicaragua*, L/6053 (1986), p.14.

Nations adopted an article along the lines of the Article [XXIII:1(b)] precisely because it was unable to find a formula for exceptions that excluded any possibility of abuse".[636] Canada claims that it has provided detailed proof of the elements set out in the case of *Japan – Measures affecting Consumer Photographic Film and Paper*[637] that make it possible to determine that the French measure, even if consistent with the GATT, nonetheless nullifies or impairs benefits accruing to Canada under the WTO Agreements or the attainment of one of the objectives of the Agreements.

3.531 The **European Communities** claim that the Decree is not incompatible with the provisions of Article XXIII:1(b) of the GATT and its case law. As they have already pointed out, it is not possible to claim "legitimate expectations" with respect to a measure that is taken to protect human health and can therefore be justified, particularly with regard to Article XX(b) of the GATT or Article 2.2 of the TBT Agreement. While a Member may have legitimate expectations in connection with a purely commercial measure, no such expectations can be pleaded when it comes to measures taken to protect human health. This is also the position taken by the United States in its third party intervention. The EC note that Canada referred to two Panel Reports, one concerning Uruguay (1962)[638] and the other Nicaragua (1986)[639], to claim support for its proposition that a non-violation claim can be made in this case. According to the EC, neither of the two Panel Reports referred to by Canada, nor any other panel report, lends support to such claims. The first Panel has no relevance whatsoever to the issues discussed here. The second, unadopted, Panel Report in the Nicaraguan case is also irrelevant, as the Panel in that case specifically stated that it refrained from taking any position on the non-violation claims made by Nicaragua. The EC note that Canada also argued that the background to Article XXIII.1(b) supports the view that non-violation complaints may and should remain possible to deal with situations of bad faith and abuse in the application of the provisions of the General Agreement and of Article XX. This is not correct. Canada takes a selective look at some parts of the preparatory documents. As the Appellate Body stated in the *United States - Shrimps* case, the conditions laid down in the chapeau of Article XX(b) are meant precisely to address situations in which a Member applies in bad faith and in an abusive manner the exceptions laid down in Article XX. In the EC's view, this means that the potential problem of abuse and bad faith, alluded to by Canada, is adequately covered by the "chapeau" of Article XX and there cannot be two sets of provisions (non-violation and the chapeau of Article XX) which address the same problem twice. The EC therefore propose that this argument of Canada also be rejected.

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[636] Analytical Index, p.764.
[637] WT/DS44/R.
[638] *Uruguayan Recourse to Article XXIII*, L/1923, adopted on 16 November 1962, BISD 11S/95, paras.14-19.
[639] *United States – Trade Measures affecting Nicaragua*, Report circulated on 13 October 1986, not adopted, L/6053.