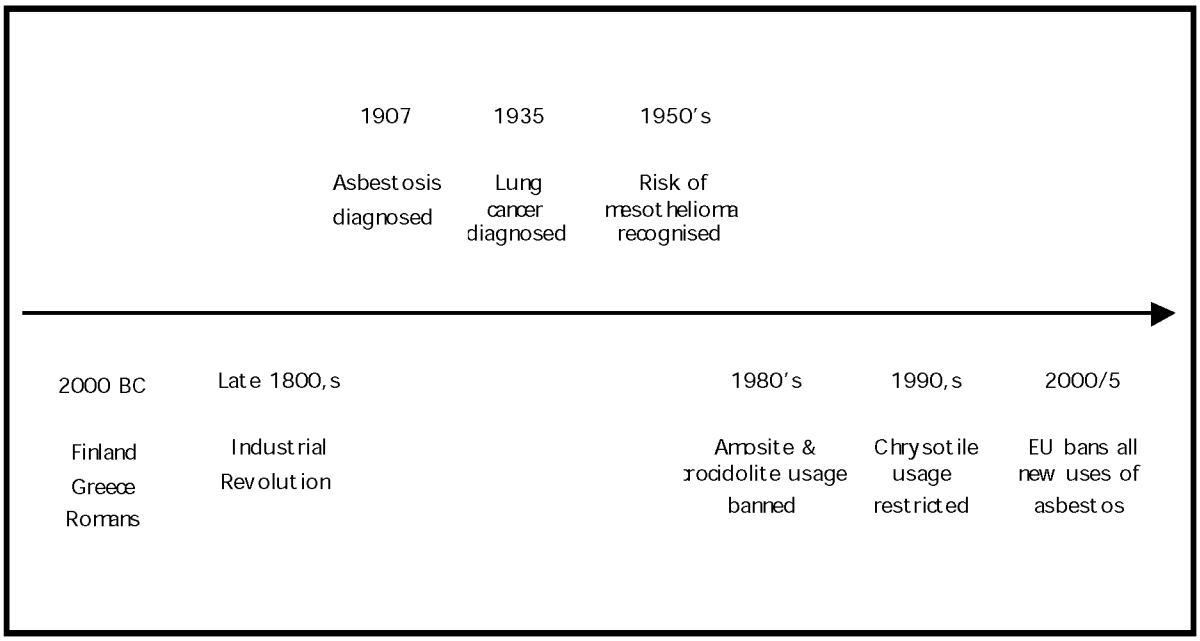
3 INTERNATIONAL TRENDS IN THE REGULATIONS AND CONTROL OF ASBESTOS

3.1 INTRODUCTION

Until the 1970s, some 3,000 products were made that contained varying quantities of asbestos fibres of all types. Today, some sixty countries still use asbestos, but only the chrysotile variety and primarily in cement building materials such as roofing materials, cladding and piping[1].

Figure 2 reflects a representative time line for the discovery and subsequent usage of asbestos on a global scale. This diagram also includes the timing of the international diagnosis of the major diseases associated with exposure to asbestos, and the timing of the subsequent introduction of regulations affecting the use of asbestos.

FIGURE 2: HISTORY OF THE USE OF ASBESTOS



This diagram clearly illustrates the introduction of increasingly more stringent controls on the use of asbestos as a consequence of the increasing awareness of the dangers associated with exposure to respirable asbestos fibres.

3.2 INTERNATIONAL LABOUR ORGANISATION CODES OF PRACTICE

In accordance with the decisions taken by the Governing Body of the ILO at its 219th Session in February/March 1982, a meeting of experts was convened in Geneva in October 1983 to draw up a code of practice on safety in the use of asbestos[6]. The meeting was composed of:

- Five experts appointed following consultations with governments
- Five experts appointed following consultations with the employers group, and
- Five experts appointed following consultation with the workers group of the governing body

The practical recommendations of the ILO code of practice are intended for the use of all those, both in the public and in the private sectors, who have responsibility for safety and health in the use of asbestos. The code is not intended to replace national laws or regulations or accepted standards. It was drawn up with the objective of providing guidance to those who may be engaged in the framing of provisions of this kind and, in particular, governmental or other public authorities, committees or management in related enterprises.

Local circumstances and technical possibilities determine how practicable it is to follow its provisions. Furthermore, these provisions should be read in the context of local conditions, the scale of operation involved and technical possibilities. In this regard, the needs of the developing countries have also been taken into consideration.

The governing body of the ILO approved the text of the code for publication at its 224th Session in November 1983.

The ILO code of practice for the safe use of asbestos incorporates recommendations regarding the following topics:

- The general duties of the competent authorities, employers, workers, manufacturers and vendors
- Exposure limits
- Monitoring in the workplace (i.e. Static monitoring, personal monitoring, measuring methods, monitoring strategies, record keeping, interpretation of data, and application of monitoring data)
- General preventive methods (alternative materials, methods of control, control programmes, designed and installation, local exhaust ventilation, and general ventilation)
- Personal protection (respiratory equipment and protective clothing)
- Cleaning of premises and plant (general, floors, walls, machinery and equipment, overhead structures, vacuum cleaning equipment)
- Taking, transport and storage (initial packing of fibre, packaging for transport, transport, damaged loads and backs, and warehousing)
- The disposal of asbestos waste (waste avoidance, waste collection, identification and isolation of waste, transport of waste, disposal of waste, personal protection and hygiene, and supervision)
- Supervision of the health of workers
- Information, labelling, education and training (labelling of products and risk areas, education and training)
- Control of asbestos exposure and specific activities:
- Mining and milling (opencast mining, underground mining, crushing and screening, chutes, conveyors, packing, and tailings)
- Asbestos cement (fibre preparation, handling finished products, finishing operations within the factory, work on site, and waste disposal)
- Textiles (carding, spinning, doubling and winding, weaving, breaking and plaiting, packaging, fabrication using asbestos cloth, mattress making, installation cladding, rope lagging, and waste disposal)
- Encapsulation or removal of friable thermal and acoustic installation (identification, indications for removal, enclosure of the work area, monitoring of doused and enclosure efficiency, hygiene, respiratory protection, supervision, work side preparation, encapsulation, dry stripping, wet stripping, stripping by high-pressure water jets, waste disposal, and decontamination procedures)
- Friction materials (fibre preparation and mixing, transfer of mixed compound to moulding and forming, preforming, forming, curing and moulding machines, finishing operations, reclamation of materials, processing friction materials infected conditions, use a friction materials and workshops, servicing of breaks and

clutches in garages and workshops, and waste disposal)

- Handling of asbestos fibre in ports and container terminals (packaging, handling, spillages)
- Construction, demolition and alteration work (construction work, demolition and alteration work)

In addition to these recommendations, this code of practice also includes principles of the membrane filter method for the determination of airborne asbestos fibre concentrations by light microscopy, the principles of gravimetric methods of measuring airborne dust containing asbestos at the workplace, and recommendations concerning medical examinations.

3.3 ILO CONVENTION 162

ILO Convention 162 Safety in the Use of Asbestos indicates clearly the responsibilities of employers when using asbestos or handling asbestos products[7]. It establishes the baseline of any corporate or industry product stewardship or preventative and control programme, and includes the following principles:

- Participate, consult and co-operate with government and workers organisations to give effect to national regulations
- Comply with national regulations
- Establish a prevention programme with the participation of workers
- Implement engineering controls to prevent exposure
- Reduce exposure to as low a level as is reasonably practicable
- Establish procedures to deal with emergency situations
- Establish procedures for the training of workers
- Compete information about the health hazards related to work
- Measure airborne concentrations of fibres, and inform the workers and inspectors
- Arrange for medical examinations at no cost to the workers
- Provide full disclosure to the workers of the results of examinations
- Notifying government of certain types of work involving asbestos
- Adequately label containers and asbestos products
- Provide respiratory equipment and protective clothing
- Safely dispose of waste and prevent pollution
- Provide materials safety data sheets to all users of asbestos fibres and asbestos products

The emphasis of ILO Convention 162 is on the controlled use of asbestos-containing materials. The Convention called for two specific prohibitions:

- Crocidolite and all products containing crocidolite, and
- Sprayed-on applications of asbestos of any type.

3.4 ASBESTOS BANS

The Board of Officers of the International Commission on Occupational Health (ICOH), at its meeting in Paris on 30 to 31 August 2001, called for an international ban on the use of asbestos. They recommend that the ban be enforced in all countries, both developed and newly industrialised. They referred to asbestos as "an occupational and environmental hazard of catastrophic proportion".

Many countries have in fact already banned the use of asbestos, or banned the use of the amphibole types of asbestos as early as the 1970s or 1980s. Table 7 provides a list of countries that have banned the use of asbestos[8].

TABLE 7: NATIONAL ASBESTOS BANS

PHASE 1 BAN AMPHIBOLE ASBESTOS FIBRE USAGE	PHASE 2 PLACE RESTRICTIONS ON THE USE OF CHRYSOTILE ASBESTOS FIBRE	PHASE 3 BAN ALL NEW USES OF ALL TYPES OF ASBESTOS FIBRES – WITH EXCEPTIONS
• Argentina (2000) • Australia • Croatia (1993) • Hungary (1988) • Japan (1995) • Luxembourg • Spain • United Kingdom (1985)	• Argentina (2001) • Australia (from Dec. 2003) • Denmark (1986)	• Argentina (Jan. 2003) • Australia (Dec. 2003) • Austria (1990) • Belgium (1998) • Brazil – major towns (2001) • Brazil – whole country (2005) • Chile (2001) • El Salvador (Mid 1980's) • European Union (Jan 2005) • Finland (1993) • France (1996) • Germany (1993, exceptions until 2011) • Iceland (1983) • Italy (1992, exceptions until 1994) • Ireland (2000) • Latvia (2001) • Lithuania (1998, exceptions until 2004) • Netherlands (1991) • Norway (1984) • Poland (1997) • Saudi Arabia (1998) • Sweden (1986) • Switzerland (1989) • United Kingdom (1999) • USA (2005) • Japan (considering in 2002)

An important trend that can be noted from this table is that many countries banned the use of amphiboles before 1980 but allowed the continued use of chrysotile. However, the ban was later extended to include chrysotile, allowing for some "exceptions". One may conclude that very few countries placed an immediate and outright ban on asbestos.

3.5 COUNTRY TRENDS

A number of countries worldwide have implemented asbestos restrictions and prohibitions on the use of asbestos. These countries are in various stages of developing and implementing these bans and prohibitions.

3.5.1 Argentina

Argentina banned amphibole asbestos by a resolution of the Ministry of Health in 2000[9]. The final resolution, signed on 26 July 2001, became law on 31 July 2001 when it was published in Argentina's Official Bulletin.

Resolution 823/01 stipulates that the use of chrysotile in materials such as textiles, paper, rubber, plastic, paint, insulating materials, filters and gaskets will be effectively prohibited sixty days after the publication[10]. It was further declared that the import, trade and uses of chrysotile would be strictly regulated until January 2003, when a total ban on the use of asbestos will be introduced.

3.5.2 Australia

On 17 October 2001, the National Health and Safety Commission declared a prohibition on the import and use of chrysotile asbestos in Australia with effect from no later than 31 December 2003[11].

This prohibition consolidated existing prohibitions on crocidolite and amosite asbestos into the instrument prohibiting the use of chrysotile asbestos, being the Amendments to Schedule 2 of the National Model regulations for the Control of Workplace Hazardous Substances (Prohibition of Asbestos) 2001.

The prohibition is being phased-in to allow producers, sellers and users of chrysotile products to make the necessary adjustments, which may include the development and marketing of new products and increasing supplies of non-asbestos products to meet greater demand.

It should be noted that the prohibition does not require the removal of chrysotile asbestos products in situ.

From December 2003, all uses of chrysotile asbestos will be prohibited, except for:

- Bona fide research or analysis,
- For removal or disposal, or
- Where it is encountered in non-asbestos mining.

The legislation allows for other exemptions that may be granted in limited circumstances where:

- Alternative products do not exist, or
- Where the use of alternative products would create greater risks than the corresponding chrysotile product.

The prohibitions on amosite and crocidolite include all uses of these substances, except for:

- Removal and disposal,
- Situations where they occur naturally

In conjunction with declaring the prohibitions, the NOHSC agreed to measures to support their implementation[12]. These include the:

- Development of a consistent approach for the granting of exemptions,
- Implementation of corresponding bans on importation,
- Information and awareness raising activities targeted to industry and government

agencies,

- Consideration of prohibition of the other three forms of asbestos (actinolite, antophyllite and tremolite).
- Review of the chrysotile exposure standard, given that the prohibition does not extend to removal of in situ chrysotile and natural occurrences that may give rise to exposure.

During the phase out period, the implementation of non-asbestos technology will proceed.

3.5.3 Canada

In Canada, the regulation of hazardous materials is based on the "life cycle" approach. That is, all activities from mining, transportation, manufacturing, installation and repair, to removal and disposal are addressed in order to protect not only public and worker health, but also the general environment.

Canada was one of the first countries to ratify ILO Convention 162. The process of ratification was completed in 1988.

On 28 May 1998, the government of Canada lodged a request with the World Trade Organisation for consultation with the European Communities "concerning certain measures taken by France for the prohibition of asbestos and products containing asbestos". Canada was supported by Brazil and Zimbabwe, two other asbestos producing countries. However, Brazil later withdrawn its support when it announced its intention in 2000 to phase out the use of asbestos by 2005. The appeal was rejected.

3.5.4 Brazil

Brazil does not have a national ban on asbestos[13]. However, the Brazilian government intends to phase out asbestos by the year 2005.

Certain states (i.e. Rio de Janeiro, Matto Grasso and Sao Paulo) and cities (e.g. Osasco, Sao Ceatano du Sul, Mogi Mirim and Sao Paulo) have imposed bans on the use of asbestos.

Sao Paulo, the biggest city in Latin America, has banned the further use of asbestos and asbestos containing materials in the building and construction industry.

3.5.5 Chile

Chile banned the further use of asbestos in January 2001. The production, importation, distribution, sale and use of any material or product that contains crocidolite are banned[14].

All other types of asbestos have also been banned, but with some exceptions. The health authorities may, in terms of legislation, authorise the use of asbestos in manufacturing where it is believed that there is no technically or economically feasible alternative. Under such circumstances strict health and safety measures apply.

Existing stock at the time of the ban must be reported to authorities on a six monthly basis, i.e. quantities moved and their destination.

3.5.6 European Union

A working procedure, the European Directive 1999/77, was adopted on 26 July 1999 that signals the end of asbestos use throughout all member states of the European Union[15]. This Directive prohibits the sale of asbestos-containing materials, such as asbestos-cement, friction products, seals and gaskets, effective from 1 January 2005.

The Directive applies to chrysotile, whereas amosite and crocidolite have already been banned.

Under the principle of subsidiarity, member states of the European Union are free to implement asbestos restrictions before the year 2005. Unilateral bans are already in place in Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Sweden and the United Kingdom.

An exception to the ban is the use of chrysotile asbestos in diaphragms for existing electrolysis installations until such time as they reach the end of their service life, or when asbestos-free substitutes becomes available. In addition, member states will not be required to remove in situ asbestos.

3.5.7 France

The French government announced on 3 July 1996 that asbestos products would be banned, effective from 1 January 1997[16]. This decision stipulates that: "the production, import and sale of asbestos-containing products, notably asbestos-cement, are prohibited".

Exceptions will be granted in those product categories where less hazardous products do not exist, for example heavy truck brake linings and fireproof clothing.

3.5.8 India

Government committees involved in reviewing prominent asbestos issues from1985 to 1995 were in favour of the controlled use of asbestos[17]. The Indian Government lowered import duties on asbestos by 68% between 1995 and 2000. This gave asbestos a decided advantage over the alternatives, and was one of the main reasons why a recent motion to replace asbestos in corrugated fibre cement roofing has failed.

There are signs, however, that the moves to ban asbestos are gaining momentum. Leading Indian academics, who were previously cautious about banning asbestos, have now expressed support for a ban on asbestos. A recent medical conference organised by the Indian Association for Occupational Health supported the banning of asbestos. They urged the Indian government to close tremolite mines, and to ratify the ILO Convention 162 on asbestos.

According to a report in the Times of India (9 November 2001), officials in the City of Delhi are "seriously considering" a ban on asbestos in the city[18]. The Board responsible for water and sewage in Delhi has decided to use cement or ductile iron pipes in place of asbestos-containing water pipes.

The Indian Government's Central Building Research Institute is conducting research into the use of alternative vegetable fibres in order to replace asbestos in fibre-cement building products. The research has led to the development of roofing tiles and building blocks. Further research is being conducted to develop other fibre cement building materials that incorporate by-products of oilseeds and maize

3.5.9 Japan

Japan banned all uses of crocidolite and amosite in 1995[17]. In June 2002, the Japanese Minister of Health, Labour and Welfare announced that the government is considering plans to implement a unilateral ban of chrysotile asbestos. The Ban Asbestos Network of Japan (BANJAN) has been calling for a ban on all types of asbestos for the past fifteen years.

Japan is one of the world's largest consumers of asbestos. In 1999, Japan imported over 100000,000 tons of asbestos from countries such as Canada, South Africa, Zimbabwe, Brazil, USA and the former Soviet Union, more than 95% of which was used in the production of asbestos-cement building products. A total ban on all types of asbestos would have significant implications for the international asbestos mining and producing countries.

3.5.10 Latin America

Government, health and labour representatives from Brazil, Costa Rica, Cuba, Chile, Ecuador, Nicaragua, Paraguay, Peru, Uruguay and Venezuela at the Latin American Asbestos Meeting in 2002 resolved to establish a Permanent Asbestos Forum[10].

The purpose this Forum is to forward recommendations to governments in the region to "accept their responsibility and commit themselves to moving towards the ban on asbestos that was initiated in the Southern Cone".

3.5.11 The Netherlands

The government of the Netherlands began introducing a progressive series of restrictions on the use of asbestos from as early as the 1970's that culminated in a final ban in 1993[19]:

- 1978: a ban of spray applications of asbestos and the use of crocidolite
- 1983: trade in asbestos is limited exclusively to tightly bonded asbestos products
- 1988: the Labour Inspectorate introduces stricter measures relating to working with asbestos
- 1993: a total ban on the use of new asbestos

Despite the control measures that were in place in the 1970's and 1980"s, Government concluded that it was still not possible to control the risks of asbestos exposure adequately and, therefore, a total ban on the use of new asbestos was introduced in July 1993: The Asbestos Decree (Working Conditions Act), (Ministry of Social Affairs and Employment), which bans the professional use of asbestos.

Consumers in the Netherlands were prohibited from purchasing products containing asbestos. Retailers and wholesalers were not permitted to stock asbestos-containing products after July 1993.

In addition, various other asbestos-related decrees have been implemented, covering aspects such as:

- Labelling of asbestos-products
- Removal and disposal of asbestos from buildings and industrial activities,
- Atmospheric emissions, under the Environmental Management Act
- Prohibition on the use asbestos-containing friction materials in private cars, with a few exceptions, and
- Waste removal (chemical waste designation and disposal at landfills).

The unavoidable use of asbestos is permitted with the issuing of an exemption permit. Municipalities are responsible for issuing permits for the removal of asbestos as part of their responsibility for administering municipal building regulations.

3.5.12 United Kingdom

Only Chrysotile asbestos was permitted in the United Kingdom when amosite and crocidolite were banned in 1985[20]. More recently, the UK banned all forms of asbestos with the introduction of the Asbestos (Prohibitions) (Amendment) Regulations 1999, which came into effect in November 1999, five years ahead of the European deadline of 2005. In drafting the legislation for this asbestos ban, the Health and Safety Executive (HSE) worked closely with their counterparts from the European Commission. It was resolved that the UK ban would be pursued under the mantel of European mobilization.

The Asbestos (Prohibition) (Amendment) Regulations of 1999 forbids the import of crude fibre, flake, powder or waste chrysotile and the new use of asbestos cement boards, panels, tiles and other products. The regulations forbid the second-hand sale of asbestos cement products and building materials covered with asbestos-containing coatings.

Chrysotile-containing products installed before 24 November 1999 can remain in place until they reach the end of their service life. The Regulations contain two pages of time-limited derogations that apply to specialised equipment[21].

The residual problem of brake linings was addressed with legislation that implemented European Commission Directive 98/12/EC. The Road Vehicles (Brake Linings Safety) Regulations of 1999 prohibit the supply or fitting to a motor vehicle or trailer of brake linings containing asbestos as of October 1999.

3.5.13 United Nations

The United Nations Environmental Programme (UNEP), an agency of the United Nations, is calling for global trade restrictions on all forms of asbestos[22].

UNEP announced in February 2002 that all forms of asbestos should be added to an international list of chemicals subject to trade controls. This decision by UNEP follows a review that was triggered by the unilateral ban imposed by the European Union.

3.5.14 United States of America

Asbestos is still legal in the United States. However, there is substantial pressure to ban asbestos[23]. U.S Senator Patty Murray introduced broad, comprehensive legislation for the ban of asbestos in the United States in the form of the Ban Asbestos in America Act of 2002. This Act would order the Environmental Protection Agency (EPA) to issue regulations by January 2005 that prohibit the "manufacturing, processing, importation and distribution of asbestos-containing products".

The EPA had previously issued a phase-out schedule for asbestos in 1989 under the Toxic Substances Control Act[24]. Following legal action from the asbestos industry, the Fifth Circuit US Court of Appeal's overturned the Environmental Protection Agency's 1989 ruling on 18 October 1991 that would have banned nearly all uses of asbestos in the US by 1996.

The Court did not find fault with the science and medical opinion, but with deficiencies in how the EPA conducted a cost-benefit analysis. The court found the Environmental Protection Agency's support for a ban under the Toxic Substances Control Act (TSCA) deficient in several major ways:

- The EPA failed "to explore in more than a cursory way, the less burdensome alternatives to a total ban". More specifically, it virtually ignored the feasibility of a controlled-use approach
- The Court chastised the EPA for not evaluating "the harm that will result from the increased use of substitute products"

- The EPA refused to consider the "cost side of the TSCA equation" to meet the statutory requirement to "balance the costs of its regulations against the benefits"

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Though the Court's 1991 decision overturned the EPA rule in its entirety, it did say that the EPA could ban asbestos products listed in the rule, provided they were not being manufactured, imported or processed in the United States when the rule was published in July 1989. On November 5, 1993, the EPA published a notice in the Federal Register confirming that asbestos-cement sheets (corrugated and flat), asbestos-cement shingles, asbestos clothing, roofing felt, mill board, pipeline wrap and vinyl asbestos tiles were not subject to the 1989 ban rule.
The Ban Asbestos In America Act of 2002 intends to banish the six regulated forms of asbestos[25]. The Act further requires the EPA to determine whether people are exposed to asbestos, and how. The EPA would conduct a public education programme and an EPA panel would look into creating uniform standards and protocols across federal agencies.

The Act would require the National Institutes of Health to conduct research on diseases caused by asbestos and to create a registry and treatment centres for mesothelioma.

The Occupational Safety and Health Administration (OSHA) issued revised regulations in 1986 and 1988, covering asbestos exposure in general industry and construction in particular[26]. OSHA has promulgated two standards for protecting workers from asbestos:

- 20 CFR section 1910.1001, which applies to workers in general industry, and
- 29 CFR section 1915.1001, which applies to workers in the construction industry

Both standards set maximum exposure limits and include provisions for engineering controls and respirators, protective clothing, exposure monitoring, hygiene facilities and practises, warning signs, labelling, record keeping, and medical exams. Tremolite, anthophyllite and actinolite were excluded from coverage under the asbestos standard in May 1992.

In both general industry and construction, workplace exposure must be limited to 0.1 fibres per cubic centimetre of air, averaged over an eight-our age work shift. In construction, there are special regulated-area requirements for asbestos removal, renovation, and diminishing operations. These provisions include a negative pressure area, decontamination procedures for workers, and a "competent person" with the authority to identify and control asbestos hazards.

3.6 SUMMARY AND CONCLUSIONS

Currently, asbestos tends to be more commonly used in developing countries. For example, there are more than 30 manufacturers of asbestos-cement products in countries as diverse as Zimbabwe, Pakistan, Indonesia, Argentina, Lebanon, the Philippines, Mexico, India, Thailand, Chile, Turkey and Malaysia[1].

A number of countries worldwide have implemented bans and/or prohibitions on the use of asbestos. These countries are in various stages of developing and implementing these bans and prohibitions.

Based on the available information, it can be concluded that the strategic approach being adopted by most countries involves a three-phased transitional phasing out of asbestos from their economies and societies.

- ***Phase 1: Ban all new uses of amphibole fibres (i.e. crocidolite and amosite), but allow the continued use of chrysotile asbestos***

  Many countries adopted this approach during the late 1970's and early 1980's.

- ***Phase 2: Restrict the use of chrysotile asbestos***

  Many countries began pursuing this approach during the mid 1980's and early 1990's.

- ***Phase 3: Ban all new uses of all types of asbestos fibres***

  A number of countries began pursuing this option from the mid 1990's onwards.

It is worth noting that no country appears to have banned all uses of asbestos as a first step. They all seem to have pursued a "phasing out" approach. A limited number of countries have now introduced a total ban on the new use of all asbestos-containing materials and products of any type.

So far, no country seems to be pursuing a strategy of proactively removing asbestos-containing materials and products from existing installations, except in some cases where the removal of friable asbestos products is practical. Rather, they seem to be adopting a policy of leaving installed asbestos in place, provided that it is in an acceptable state of repair; and only requiring that it be removed when it becomes a health hazard. Strict legislation controls the maintenance, removal and disposal of asbestos in these countries.