

2 EXECUTIVE SUMMARY

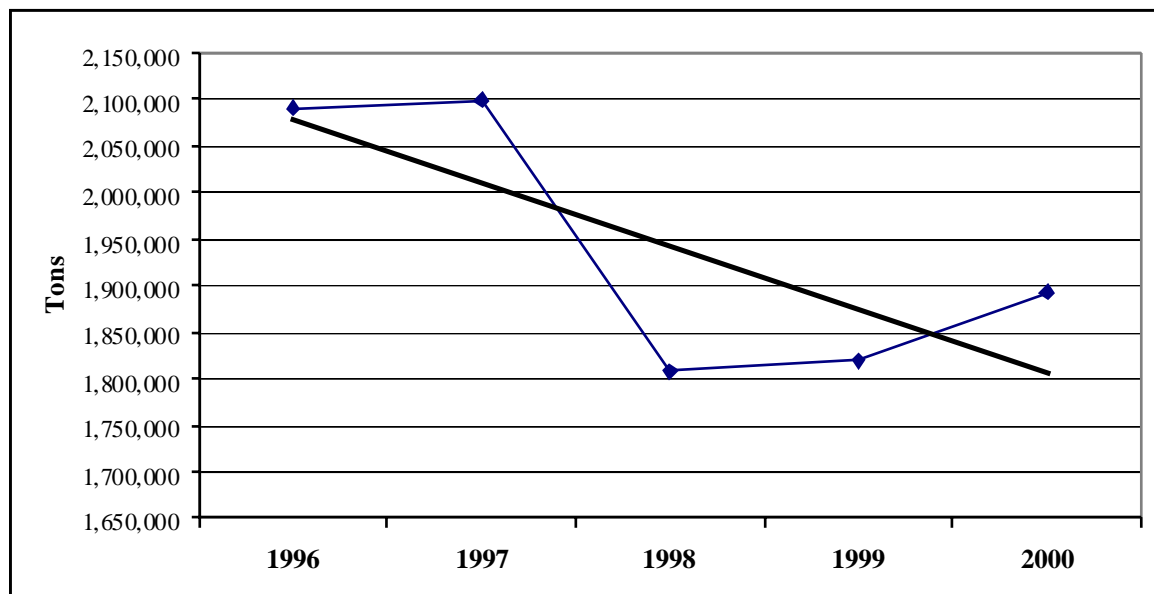
The international trend towards increasingly more stringent restrictions on the use of asbestos is gaining momentum.

A number of developed countries began introducing restrictions during the mid 1990's and this practice has now spread throughout the world, extending into a number of developing countries as well. By 2005 Europe will be "asbestos free" as regards the use of new asbestos containing products, with some exceptions where it is, as yet, still not possible for technical performance reasons to replace asbestos containing materials for certain product applications.

South Africa's current legislation is not aimed at restricting the use of asbestos but, rather, at controlling its use in order to protect workers from exposure to potentially dangerous health risks.

Global asbestos mining production has declined dramatically, particularly during the latter half of the 1990's. This has been caused by declining asbestos usage in (mostly) developed countries as a result of the increasingly more stringent restrictions that are being placed on the use of asbestos in manufacturing and building industries.

FIGURE 1: DECLINING GLOBAL ASBESTOS MINING PRODUCTION



The major asbestos consuming countries are now mostly developing countries, mainly as a result of their need to provide cost-effective building materials for mass housing and pipes for the supply of potable water.

There are many alternative fibres that can be used to replace asbestos, but not necessarily for all product applications. Where alternative fibres can be used, they deliver acceptable performance levels, albeit with higher production costs that can increase end user/customer prices.

The available evidence suggests that organic fibres such as cellulose and inorganic fibres such as Man Made Mineral Fibres have the potential to be less dangerous than asbestos in causing life-threatening diseases

IMPLEMENTING THE 1998 ASBESTOS SUMMIT RECOMMENDATIONS

Were the South African government to consider implementing the recommendation of the National Asbestos Summit of 1998 that "asbestos should be phased out as soon as practically possible, noting that there may be no suitable alternatives for certain applications", the following factors would influence the decision making and regulatory procedures:

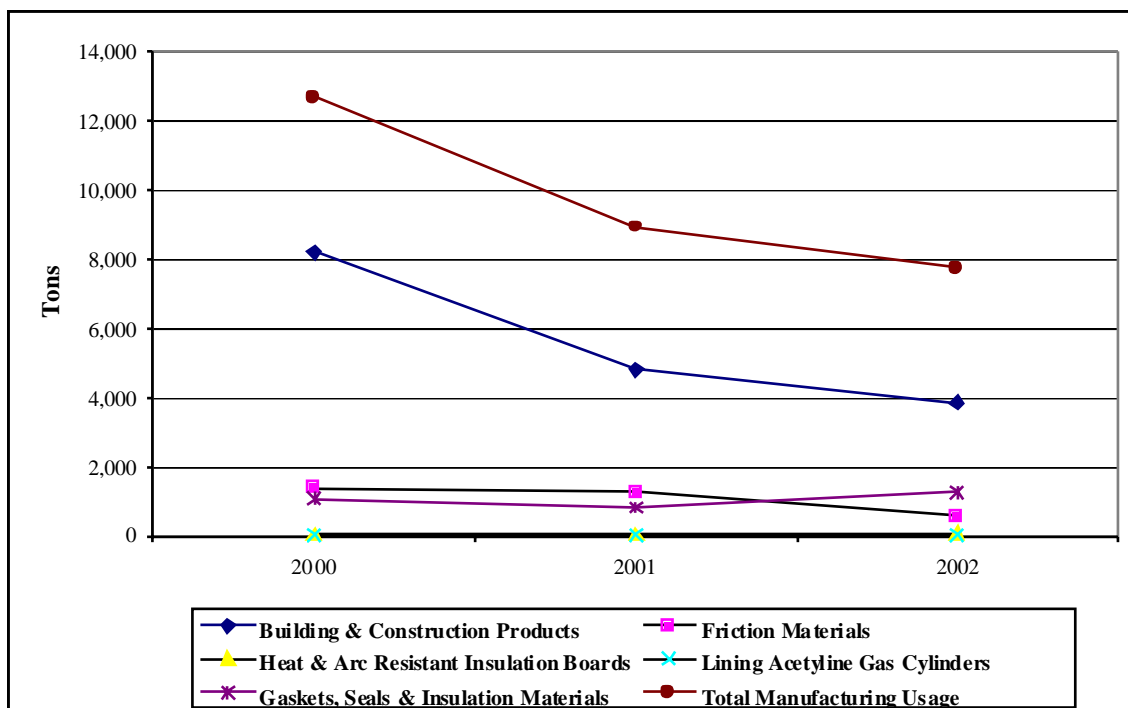
1. With regard to asbestos mining:

- Asbestos mining in South Africa stopped at the end of 2001 and only milled fibre stockpiles remain. At the current rate of sale, South Africa will cease to be a supplier of raw asbestos fibre to both international and local customers by June 2003;
- Local manufacturers of asbestos containing materials are now almost completely dependant on imports of chrysotile asbestos fibre from Zimbabwe

2. With regard to the use of raw asbestos as an input for the manufacture of industrial and consumer products:

- Overall asbestos consumption in manufacturing has reduced by 39% from 12,689 tons in 2000 to 7,744 tons in 2002 driven by a decline in international and local demand.

FIGURE 2: DECLINING SOUTH AFRICAN ASBESTOS USAGE



Notes:

The sole South African manufacturer of asbestos-cement **Building and Construction Products** has completed a conversion program. By the end of December 2002, it will no longer use asbestos as a raw material input. Asbestos will be replaced in certain fibre cement building products by cellulose fibres. Remaining stocks of asbestos cement products will be sold by March 2003. It will then no longer be possible to purchase asbestos cement pipes or building products manufactured in South Africa.

However, in order to completely phase out the use of new asbestos containing products in this industry sector, specific regulations would be required to prohibit the importation of asbestos cement products from SADC countries and, in particular, Zimbabwe

The imminent introduction of the SABS ECE R90 Specifications will compel all of the local manufacturers of Friction Materials to stop using asbestos as a raw material input, and importers to stop importing asbestos containing braking products. When this happens (end 2003), more than 95% of the units used by this industry sector will be made from non-asbestos materials. However, in order to completely phase out the use of new asbestos containing products in this industry sector, specific regulations would be required to prohibit the importation of asbestos containing clutch kits and clutch plates

It is technically to replace asbestos containing 3Kv DC Heat and Arc Resistant Insulation Boards (these are only used by Spoomet) with a substitute product based on a new circuit breaker technology that incorporates an arc chute made from ceramic materials. However, the cost of doing so is significant (R400 million) and full replacement will require 60 to 70 years if allowed to follow the normal course of business activities. As such, specific regulations would be required if this conversion process were to be achieved more quickly

It is technically feasible to replace the asbestos mass in the 250,000 Acetylene Gas Cylinders currently in use, although there are significant cost implications. The conversion would cost approximately R200 million and take somewhere between 12 and 15 years if allowed to follow the normal course of business activities. Specific regulations would be required if this conversion process were to be achieved more quickly

It is technically feasible to replace asbestos with alternative fibres in the manufacturing of most Gaskets and Seals, and all Insulation Materials. However, there are a small number of specific product applications (less than 100) where non-asbestos gaskets and seals will not perform adequately. In order to completely phase out the use of new asbestos containing products in this industry sector, specific regulations would be required to prohibit the local manufacture and import of asbestos containing materials.

As in most other countries, phasing out regulations may, however, have to make special provision (referred to as "exemptions" internationally) for permitting the use of certain asbestos containing gaskets and seals where no acceptable replacement products currently exist. Affected businesses would have to be allowed to continue using asbestos containing materials under strictly controlled conditions until such time as technological developments have provided an acceptable solution.

Furthermore, there are significant cost implications to achieving full conversion without exemptions, which would be difficult to justify as the health risk is considered to be minimal.

3. With regard to the transport of Zimbabwean asbestos fibre exports through South Africa:

- 100% of Zimbabwe's asbestos fibre exports travel through South Africa on their way to foreign markets. There are five known businesses (including Spoomet) involved in transporting, warehousing and containerising Zimbabwean asbestos fibre exports.
- These businesses have significant facilities (i.e. warehouses and office space) and equipment (rail trucks, forklift trucks, vehicles, etc.) dedicated to this business – some of which are owned but most of which are leased.
- Collectively, these businesses employ 100 South African citizens and a further 3 Zimbabwean expatriates

This *status quo* assessment suggests that significant progress has already been made in phasing out the use of asbestos. While it would be technically feasible to replace the majority of new product applications containing asbestos in South Africa, exemptions are likely to be required for the small number of gasket and seals product applications where alternative, non-asbestos materials are not yet capable of delivering acceptable levels of technical performance. This approach would bring South Africa in line with global trends in the usage, regulation and control of asbestos.

IMPLEMENTING A BAN ON THE NEW USE OF ASBESTOS

In the event that a decision were to be made to implement an immediate ban on the use of new products containing asbestos as opposed to allowing “natural market forces” to influence the gradual withdrawal of asbestos, the following economic and social impacts could be anticipated:

1. Capital costs of R60 million:

- A write-off of approximately R31 million of existing redundant capital equipment, and
- An investment of R29 million in new capital equipment.

FIGURE 3: REDUNDANT EQUIPMENT WRITE-OFF AND NEW INVESTMENT COST IMPACTS

INDUSTRY SECTORS	REDUNDANT EQUIPMENT WRITE-OFFS	NEW INVESTMENT
Manufacturing Asbestos Cement Building and Construction Products	Already Completed	R27 million
Manufacturing Asbestos Containing Friction Materials	No Impact	No Impact
Manufacturing of Heat and Arc Resistant Electrical Insulation Boards	R100,000	
Lining of Acetylene Gas Cylinders	R500,000	R2 million
Manufacturing of Gaskets, Seals and Insulation Materials	R30 million	
TOTAL INVESTMENT IMPACT	R30.6 MILLION	R29 MILLION

Notes:

The redundant equipment write-offs associated with the switch to non-asbestos products in the Manufacturing of Asbestos Cement Building and Construction Products have already been absorbed. However, there is still a need for further investment in new equipment in this industry sector.

The conversion from asbestos to alternative fibre would require no investment changes in the Manufacturing of Friction Materials.

The sole local Manufacturer of Asbestos containing Heat and Arc Resistant Electrical Insulation Boards would not be able to convert to producing new technology ceramic arc chutes. This business would close its manufacturing plant and write off most of its production equipment.

The conversion from asbestos lined Acetylene Gas Cylinders to glass fibre lined cylinders would require a small amount of equipment to be written off and replaced with new production equipment.

The two local Manufacturers of Gaskets, Seals And Insulation Materials perceive that they would not be able to produce equivalent non-asbestos products at prices that will be competitive with imported products. Should asbestos be phased out they would either have to downsize or close their manufacturing plants completely.

2. Retrenchment of approximately 372 people

FIGURE 4: EMPLOYMENT IMPACTS

INDUSTRY SECTOR	RETRENCHMENTS	RETRAINING	NEW EMPLOYMENT
Manufacturing Asbestos Cement Building and Construction Products	71*	0	0
Manufacturing Asbestos Containing Friction Materials	0	0	0
Manufacturing of Heat and Arc Resistant Electrical Insulation Boards	18	0	0
Lining of Acetylene Gas Cylinders	0	R300,000	0
Manufacturing of Gaskets, Seals and Insulation Materials	190	0	0
Transport of Zimbabwean Asbestos Fibre Exports	93		
TOTAL IMPACT	372	R300,000	0

Notes:

* This figure includes people employed by the South African manufacturer, as well as South African citizens employed in the marketing and distribution of Zimbabwean exports to South Africa.

3. An increase in economic costs ranging between R1.6-billion over three years, R1.4-billion over six years and R894 million over ten years, depending upon the length of the phasing out period that is allowed

FIGURE 5: ADDITIONAL ECONOMIC COST IMPACTS

PRODUCT CATEGORIES (R MILLIONS)	SHORT TERM PHASING OUT SCENARIO (3 YEARS)	MEDIUM TERM PHASING OUT SCENARIO (6 YEARS)	LONGER TERM PHASING OUT SCENARIO (10 YEARS)
A. Building Materials	19.8	12.2	6.9
B. Friction Materials	418.9	301.6	166.8
C. Special Applications			
◆ Heat & Arc Resistant Electric Insulation Board	301.2	279.8	209
◆ Gaskets, Seals & Insulation Materials	700.3	648.2	331.7
◆ Acetylene Gas Cylinder Stabilization	174.2	174.2	174.2
TOTAL ADDITIONAL ECONOMIC COSTS	1,620.1 OVER 3 YEARS	1,421.7 OVER 6 YEARS	894.2 OVER 10 YEARS

Notes:

Three intervention scenarios have been used as part of the Economic Cost Benefit Analysis:

- ◆ **A Short Term Phasing Out Scenario**, that uses the minimum, practicable phasing out periods for each of the major categories of products analysed within each industry sector. These practicable phase out periods range between 24 months and 60 months, and average out at 36 months
- ◆ **A Medium Term Phasing Out Scenario**, that uses an average 60-month phasing out period, and
- ◆ **A longer Term Phasing Out Scenario**, that uses an average 120-month phasing out period

Despite the fact that a phasing out of asbestos will lead to increased costs in all of the industry sectors studied, it is anticipated that, in most instances, these additional costs can be absorbed by each industry:

In the **Building and Construction Industry**, most of the available alternative products provide a superior value-for-money proposition when compared to asbestos cement products i.e. comparable technical performance at similar or even lower prices

Within the **Friction Materials Sector**, the cost of replacing disc brake pads, brake linings and clutches is frequently less than 1% of the overall maintenance and operating expenses associated with a particular vehicle or piece of industrial equipment. Therefore, it is anticipated that the owners of vehicles and industrial equipment would absorb the additional cost associated with using non-asbestos friction materials.

It should be noted that the additional economic cost figures for friction materials include the additional cost impact associated with the introduction of the new SABS EC R90 Specifications that will prohibit the use of asbestos in on-highway vehicle brake products (i.e. disc brake pads and brake shoe linings). This prohibition will apply to both the local manufacture and importation of these products.

It has been argued that the decision to introduce these SABS Specifications has already been made. Therefore, these costs could be excluded from the total economic cost impacts. If one were to do so, total additional economic costs would decline to R1.2-billion over 3 years, R1-billion over 6 years, and R727 million over 10 years

With regard to Heat & Arc Resistant Electric Insulation Board, it should be noted that, for technical reasons, these costs include the total replacement of the installed base of circuit breakers that use asbestos cement arc chutes and not only the replacement of the asbestos containing arc chutes within the circuit breakers. It has been argued that these additional economic costs (i.e. of the circuit breakers) should be excluded from the total additional economic cost calculations. This would further reduce these totals to R900 million over 3 years, R840 million over 6 years, and R518 million over 10 years.

Despite the fact that non-asbestos **Gaskets, Seals and Insulation Materials** are significantly more expensive, these products usually represent a very small proportion of the total maintenance and operating costs for customers, frequently far less than 1%. Therefore, it is anticipated that converting to non-asbestos materials will not result in an increase in the final price paid by the end-user/consumer for the products manufactured by these businesses (i.e. petrol, electricity, chemicals, paper, foods, etc.). Even if exemptions are allowed, it is anticipated that these small number of cases will not have a significant effect on the overall phasing out costs in this sector. No evidence was found that the phasing out cost could not be absorbed by the affected industries

Within the **Acetylene Gas Cylinder Sector**, customers are likely to be paying 2% more per cylinder of gas used as a result of the replacement of asbestos cylinder linings with glass fibre linings. Given the fact that the cost of acetylene gas represents a small proportion of total operating expenses, it is anticipated that customers will absorb this increase without a corresponding increase to the prices of the products they produce

4. **No significant knock-on effects into other industry sectors**
5. **No significant change in the balance of payments and no significant impact on the exchange rate**

6. A health care and compensation cost saving that varies between R27 million and R10 million, depending upon the length of the phasing out period that is allowed

FIGURE 6: HEALTHCARE COST SAVINGS

(R' MILLIONS)	SHORT TERM PHASING OUT SCENARIO (3 YEARS)	MEDIUM TERM PHASING OUT SCENARIO (6 YEARS)	LONGER TERM PHASING OUT SCENARIO (10 YEARS)
Insulation Industry	12.5	9.5	5.2
Building Construction	6.8	4.8	2.2
Transport Equipment	2.0	1.4	0.7
Electrical Machinery	1.8	1.5	0.8
Vehicle Repairs	1.4	0.9	0.5
Metal Products	1.4	0.9	0.4
Non-Metallic Mineral Products	1.1	0.8	0.4
TOTAL	26.9	19.8	9.9

Asbestos is no longer mined in South Africa and, therefore, no longer represents a source of new asbestos related diseases in this sector. Furthermore, a decision to phase out asbestos in South Africa would reduce the likelihood of additional workers within the industrial sector of contracting asbestos related diseases.

7. The internal Zimbabwean asbestos mining and industrial manufacturing sectors being adversely affected by the loss of the South African market and, possibly, its distribution route to international markets.
8. Very little impact on informal businesses in South Africa, other than to protect informal building contractors and brake shops from exposure to asbestos dust

Relative to the costs associated with this accelerated regulatory approach, the benefits appear small. However, both positive and negative impacts are not significant:

- The additional economic costs of between R894 million and R1.6-billion in effect represent an average economic cost increase of between R89 million and R530 million per year, which is less than 0,02% of current GDP
- The health care and compensation cost savings of between R10 million and R27 million is less than 0,1% of the current health care budget.

SUMMARY OF THE IMPACT OF PHASING OUT ASBESTOS IN SOUTH AFRICA

Figure 7 summarises the impact of the phasing out of asbestos in South Africa. The key areas of impact include:

- The availability of alternative fibres and/or substitute products
- The additional economic costs to the industry sectors that will arise from the replacement of asbestos with the alternative fibres and/or substitute products
- Capital equipment costs that will be necessitated by the replacement of asbestos. These costs include:
 - o The write-off of redundant equipment that is specific to the use of asbestos as a raw material, and that will no longer be required once asbestos has been replaced
 - o The acquisition of new equipment that will be required as a result of a switch to an alternative fibre and/or substitute product
- Job losses that will arise as a result of a switch to alternative fibres and/or substitute products

In addition to these socio-economic impacts, Figure 7 also reflects an assessment of the magnitude of the installed base of asbestos containing materials within each industry sector, and the complexity/difficulty of replacing this installed base with products manufactured from alternative fibres or substitute materials. Finally, figure 1 presents an assessment of the risk of exposure to asbestos fibres that could occur from either the continued manufacturing of new asbestos containing materials, or the removal of the installed base of asbestos containing materials.

In evaluating the various impacts, a three-point scale has been used:

- **Low impact**
- **Moderate impact**, and
- **High impact**

Each impact area has been evaluated separately, plus an overall evaluation has been made for each industry sector.

FIGURE 7: SUMMARY OF THE SOCIO-ECONOMIC IMPACT OF PHASING OUT ASBESTOS

APPLICATION AREAS	AVAILABILITY OF ALTERNATIVE FIBRES	ADDITIONAL ECONOMIC COSTS	CAPITAL EQUIPMENT COSTS	JOB LOSSES	INSTALLED BASE OF ASBESTOS CONTAINING MATERIALS	RISK OF EXPOSURE TO ASBESTOS FIBRES	OVERALL IMPACT ASSESSMENT
Asbestos Cement Building and Construction Products	Many alternatives readily available LOW	Most alternatives are either marginally more expensive or are less expensive LOW	<ul style="list-style-type: none"> Redundant equipment write-offs: Zero New investment: R27 million <p>M ODERATE</p>	45 M ODERATE	<ul style="list-style-type: none"> Volume: very large Ease of Replacement: moderately complex Cost: very large (R20 billion +) <p>HIGH</p>	<ul style="list-style-type: none"> New product manufacturing: no longer applicable Replacing the Installed Base: very high <p>HIGH</p>	<ul style="list-style-type: none"> New product manufacturing: LOW Replacing the Installed Base: HIGH
Friction Materials	Many alternatives readily available LOW	Most alternative formulas 20% to 50% more expensive M ODERATE	Zero LOW	Zero LOW	<ul style="list-style-type: none"> Volume: large Ease of Replacement: simple Cost: normal course of business <p>LOW</p>	<ul style="list-style-type: none"> New Product Manufacturing: moderate Replacing the Installed Base: moderate <p>M ODERATE</p>	<ul style="list-style-type: none"> New product manufacturing: LOW Replacing the Installed Base: LOW
Gaskets and Seals	Alternatives readily available Some products currently irreplaceable M ODERATE	Most alternative products are 200% to 400% more expensive HIGH	<ul style="list-style-type: none"> Redundant equipment write-offs: R28 million New investment: Zero <p>HIGH</p>	120 HIGH	<ul style="list-style-type: none"> Volume: large Ease of Replacement: simple Cost: normal course of business <p>LOW</p>	<ul style="list-style-type: none"> New Product Manufacturing: moderate Replacing the Installed Base: low <p>LOW</p>	<ul style="list-style-type: none"> New product manufacturing: M ODERATE/HIGH Exceptions must be addressed Replacing the Installed Base: LOW
Insulation Materials	Alternatives readily available LOW	Most alternative products are 50% to 300% more expensive M ODERATE	<ul style="list-style-type: none"> Redundant equipment write-offs: R1 million New investment: Zero <p>LOW</p>	71 HIGH	<ul style="list-style-type: none"> Volume: medium Ease of Replacement: very difficult & dangerous Cost: large (R1 billion +) <p>HIGH</p>	<ul style="list-style-type: none"> New Product Manufacturing: moderate Replacing the Installed Base: high <p>M ODERATE/HIGH</p>	<ul style="list-style-type: none"> New product manufacturing: M ODERATE Replacing the Installed Base: HIGH
Asbestos Cement Arc Chutes	No acceptable alternative product available HIGH	Entire circuit breaker must be replaced (R200,000 each) HIGH	<ul style="list-style-type: none"> Redundant equipment write-offs: R100,000 New investment: Zero <p>LOW</p>	18 LOW	<ul style="list-style-type: none"> Volume: medium Ease of Replacement: difficult & dangerous Cost: moderate (R400 million) <p>HIGH</p>	<ul style="list-style-type: none"> New Product Manufacturing: moderate Replacing the Installed Base: high <p>M ODERATE/HIGH</p>	<ul style="list-style-type: none"> New product manufacturing: M ODERATE Replacing the Installed Base: HIGH

FIGURE 7: SUMMARY OF THE SOCIO-ECONOMIC IMPACT OF PHASING OUT ASBESTOS (CONTINUED)

APPLICATION AREAS	AVAILABILITY OF ALTERNATIVE FIBRES	ADDITIONAL ECONOMIC COSTS	CAPITAL EQUIPMENT COSTS	JOB LOSSES	INSTALLED BASE OF ASBESTOS CONTAINING MATERIALS	RISK OF EXPOSURE TO ASBESTOS FIBRES	OVERALL IMPACT ASSESSMENT
Lining of Acetylene Gas Cylinders	An alternative is readily available LOW	Alternative lining approximately 2% more expensive LOW	<ul style="list-style-type: none"> Redundant equipment write-offs: R500,000 New investment: R2 million – depending on the length of the phase out period allowed M ODERATE	Zero LOW	<ul style="list-style-type: none"> Volume: medium Ease of Replacement: simple – normal course of business Cost: moderate (R200 million) M ODERATE	<ul style="list-style-type: none"> New Product Manufacturing: moderate Replacing the Installed Base: moderate M ODERATE	<ul style="list-style-type: none"> New product manufacturing: M ODERATE Replacing the Installed Base: M ODERATE
Zimbabwe <ul style="list-style-type: none"> Asbestos Cement Building & Construction Products exports to RSA Transport of Asbestos Fibre Through RSA 	<ul style="list-style-type: none"> RSA manufactured fibre cement products Not Applicable LOW	<ul style="list-style-type: none"> Zimbabwe imports significantly less expensive – a major threat to locally manufactured products HIGH	<ul style="list-style-type: none"> Redundant equipment write-offs: low (most equip leased) New investment: not applicable LOW	<ul style="list-style-type: none"> Asbestos Cement Building & Construction Products exports to RSA: 25 RSA citizens Transport of Asbestos Fibre through RSA: 75 RSA citizens HIGH	Not Applicable	<ul style="list-style-type: none"> Asbestos Cement Building & Construction Products exports to RSA: low Transport of Asbestos Fibre Through RSA: high M ODERATE	HIGH
Swaziland	Not Applicable	Loss of R1.5 million per year LOW	Not Applicable	Not Applicable	Not Applicable	<ul style="list-style-type: none"> Asbestos fibre transported in closed rail trucks LOW	LOW

CRITICAL ISSUES

Figure 7 highlights the following critical issues that will need to be addressed as part of the phasing out of asbestos in South Africa:

1. Replacing the installed base of asbestos containing materials in the building and construction industry

There are at least two categories of asbestos containing materials involved in this issue:

- Asbestos cement products used as part of the construction of a wide variety and large number of buildings and construction projects. These include: roofing products (i.e. roof sheeting/tiles, roof caps, barge boards, and fascia boards), rain water gutters and down pipes, window sills, ceiling and internal partitioning boards, external cladding boards, and water storage and water/sewage reticulation piping.
- Asbestos containing insulation materials. These were mainly used as coverings to provide temperature insulation for heaters, geysers and hot water piping, and, in a limited number of cases, acoustic sound proofing.

There are no reliable statistics that would indicate the magnitude of this installed base. As an indicator, however, there are thought to be more than one million low cost houses in South Africa with asbestos cement roofs. An unsubstantiated guestimate by the authors suggests that the cost of removing and replacing the entire installed base of all asbestos containing materials would be between R10-billion and R30-billion. Obtaining more reliable statistics would require a separate research study

With regard to exposure to asbestos fibres, the replacement of asbestos containing materials in buildings – both asbestos cement products and asbestos containing insulation materials – will definitely be a very high-risk exercise. All of the asbestos containing materials used in buildings will give off asbestos fibre containing dust as it is disturbed and removed – particularly if it is cut, broken or damaged during removal operations.

As such, replacement will have to be conducted under VERY CAREFULLY CONTROLLED CONDITIONS, with the strictest possible observance of the current regulations regarding the removal and disposal of asbestos containing materials as specified in the Occupational Health and Safety Act (No. 85 of 1993) and the revised Asbestos Regulations 2001 that came into effect in March 2002.

It should be noted that International best practice is to leave asbestos containing products that are in good condition in place until the end of their operational life.

Decisions will have to be made as to whether this installed base should be pro-actively replaced, or allowed to remain in place until it has reached the end of its natural life which, in some cases could be as long as 50 to 70 years – this applies to both asbestos cement products and asbestos containing insulation materials.

2. Permitting the continued usage of a limited number of asbestos containing gaskets and seals

There are a limited number of instances where it is currently not technically feasible to replace certain asbestos containing gaskets and seals with products manufactured from alternative, non-asbestos materials. These relate mostly to the use of gaskets and seals in very high temperature and high-pressure environments, where the currently available non-asbestos alternatives cannot deliver an acceptable level of performance.

Evidence indicates that these are exceptional circumstances and will be very few in number – possible less than one hundred separate occurrences across the entire South African economy. This research study has not been able to “pin point” exactly where these occurrences are.

Provision will have to be made to allow the end-using customers to continue using asbestos containing materials until such time as technological developments have advanced to the point where non-asbestos materials can provide adequate technical performance.

Decisions will have to be made as to whether South Africa will permit the continued use of certain specified asbestos containing gaskets and seals on an “exceptions” basis or not. And, if so, how will these exceptions be controlled?

3. Replacing the installed base of asbestos containing Arc Chutes

There are approximately 2,000 asbestos containing arc chutes currently installed as an element of the 3 KV DC circuit breakers that are used by Spoornet in the electrified portion of its rail network.

It is technically not possible to manufacture an arc chute from alternative fibre based products that will perform adequately with these specific circuit breakers. The only viable solution is to replace the entire circuit breaker with a new one, based on a different technology that uses an arc chute made from ceramic fibres.

The total cost of replacing a circuit breaker with the new technology is R200,000 per circuit breaker, which computes to a cost of R400 million (at current prices) to replace all 2,000 3 KV DC circuit breakers that are currently using asbestos containing arc chutes.

At the current “normal course of business” rate of replacement, it will take somewhere between 60 and 70 years for all 2,000 asbestos containing arc chute circuit breakers to be replaced with the new technology ceramic arc chute circuit breakers.

A decision will have to be made regarding the length of time that Spoornet will be allowed for the replacement of the circuit breakers that use asbestos containing arc chutes.

4. Replacing the installed base of asbestos containing acetylene gas cylinders

There are approximately 185,000 acetylene gas cylinders in circulation in the South African economy, plus a further 65,000 in other African countries (i.e. Botswana, Kenya, Malawi, Namibia, Tanzania, Zambia and Zimbabwe), giving a total of 250,000 cylinders in circulation. All of these cylinders belong to one company. Currently, all of these gas cylinders are lined with an asbestos containing mass that stabilises the acetylene gas and prevents cylinder explosions.

It is technically feasible to replace the asbestos containing lining with a glass fibre based lining. The cost of replacing the asbestos lining with a glass fibre lining is R825 per cylinder, which computes to a total replacement cost of approximately R200 million.

At the current “normal course of business” rate of replacement, it will take somewhere between 15 and 18 years to replace all 250,000 asbestos lined cylinders with fibreglass lined replacements.

A decision will have to be made regarding the length of time that will be allowed for the replacement of the asbestos lined gas cylinders with cylinders lined with glass fibre.

5. Dealing with the import of asbestos containing materials into South Africa

Currently, it is permissible to import asbestos containing materials into South Africa without any restrictions. This applies to all of the different categories of asbestos containing materials and products investigated as part of this study.

The industry sectors that are most affected by imports are:

- **Asbestos cement building and construction products.**

Over the past five years, the Botswana, Mozambique and Zimbabwean manufacturers of these asbestos containing materials have built up their exports to South Africa.

The most active of these is the Zimbabwean manufacturer. This organisation has established a nationwide sales and distribution infrastructure, leasing warehouses and equipment in Gauteng, KwaZulu Natal, and the Eastern and Western Capes, and employing 25 South African citizens.

The Zimbabwean organisation is aggressively capturing market share as a result of its weak currency, and is now a serious threat to the survival of the sole South African manufacturer of fibre cement building and construction products. This South African business has almost completed a fifteen-year long conversion process that involved replacing asbestos with alternative fibres in the manufacturing of its products.

A decision will have to be made regarding the length of time that these foreign businesses will be allowed for "winding down" and closing their export operations in South Africa

- **Friction materials.**

Currently, all of the local manufacturers and importers of brake products (i.e. disc brake pads and drum brake shoe linings) are working in conjunction with the South African Bureau of Standards (SABS) to introduce the SABS ECE R90 Specifications that specify that "no friction material containing asbestos will be imported or manufactured locally after January 2004".

However, the SABS regulations do not apply to friction materials associated with clutch plate linings. Currently, all of the clutch plate linings used in South Africa are imported. Approximately 45% of these imports contain asbestos.

There is a concern amongst both local manufacturers and importers of friction materials that, were asbestos to be completely phased out in South Africa, a "black market" may develop for imported asbestos containing disc brake pads, brake shoe linings and clutch plate linings. This could happen as a result of the price differential between asbestos containing and non-asbestos containing products, which could be as much as 50% in some instances.

Decisions will have to be made regarding the prohibition of imported asbestos containing clutch plates, and the prevention of the development of a black market for imported asbestos containing friction materials.

- **Gaskets and seals.**

Similarly, in this industry sector, there is a concern that a black market may develop for imported asbestos containing gaskets and seals, which, in some instances, could be significantly less expensive than non-asbestos alternatives.

A decision will have to be made regarding the prevention of the development of a black market for imported asbestos containing gaskets and seals

6. Dealing with the impact on SADC countries

A complete phasing out of asbestos in South Africa will have some “knock on” effects on other SADC countries. The most significant of these include:

- The transport of Zimbabwean asbestos fibre exports through South Africa

Zimbabwe transports 100% of its asbestos fibre exports through South Africa, using a network of rail and road transport services, and warehouses. A portion of these exports (less than 5%) is destined for South African customers, whilst the remainder is exported to overseas markets.

Asbestos fibre is mined, milled, bagged and palletised in Zimbabwe. Pallets are either loaded onto road trucks and covered with tarpaulins, or loaded into closed rail trucks and transported through South Africa. Part of the shipment goes via rail to Durban, passing through Swaziland on the way. The other part travels to Durban via Johannesburg, where it stops off in Gauteng.

The palletised bags of asbestos fibre are repalletised and containerised, either in the Johannesburg or Durban warehouses, before being transported to the Durban Harbour Container Depot, from where they are loaded onto ships and exported to foreign markets.

Some of the facilities that make up this network (i.e. trucks, forklift vehicles, warehouses, etc.) are directly leased by Zimbabwean businesses. The remainder (i.e. rail trucks, etc.) is rented from third party service providers. 75 South African citizens are directly employed in this network.

A decision will have to be made regarding the future of this transport network, i.e. will it be allowed to continue or not? And, if so, under what conditions?

- Swaziland's income from Zimbabwe asbestos fibre exports

Swaziland derives approximately R1.5 million per year in freight charges for allowing a portion of Zimbabwe's asbestos fibre exports to pass through its territory. A decision will have to be made regarding this issue

SECONDARY ISSUES

In addition to these critical issues that will require definite, proactive responses, there are a number of secondary issues that may require some form of reactive response. These include:

1. Managing the impact of capital equipment costs (i.e. writing-off of redundant equipment, and the purchase of new equipment)

Some form of Government support may be required by some of the affected businesses in dealing with the financial implications of these impacts

2. Staff retrenchments

There are already a number of provisions in place that will assist affected businesses in dealing with this issue. However, given the sensitivities associated with the phasing out of asbestos, some form of additional support may be required.