

15.9 MINING ASBESTOS IN SOUTH AFRICA: LABOUR, CAPITAL AND THE STATE

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Introduction:

A great deal has been written about South Africa's gold and diamond mines. They were masculine industries feeding on the labour of single and married men who left their homes for the compounds of Kimberley and the Rand. Little has been written about asbestos even though South African mines produced almost all of the world's amphibole fibre. South African mining communities also produced the first evidence that exposure to amphiboles causes mesothelioma, the most lethal of the asbestos related diseases.

The mining of white asbestos (chrysotile), and the amphiboles- blue (crocidolite) and brown (amosite) -was carried out in the northern and eastern Transvaal and in the north-western Cape. Mining began in 1893, in the Cape, and will end within two years with the closure of the Msauli mine, near Barberton. The economies of those regions were dependent upon asbestos and for that reason state authorities and local white elites were supportive of the industry. In the absence of alternatives labour accepted the conditions offered by employers. One of the most remarkable and least recognised features of the mines was the degree to which they were dependent upon female labour.

The major crocidolite and amosite mines were owned and operated by the British firms Cape Asbestos Company, the Griqualand Exploration and Finance Company Limited (GEFCO) and Turner and Newall (T&N). The asbestos industry has always been global and from the beginning Cape, GEFCO and the subsidiaries of T&N exported fibre to more than fifty countries. Company structures were complex and the use of subsidiaries was common, making it difficult in retrospect to identify ownership and control.

Fibre from South African mines damaged the health of the men, women and children who mined asbestos; it injured those who transported the fibre by donkey, wagon, truck, rail and ship; it injured those worked with fibre in British and American factories as it did the consumers who used asbestos-based products. Current estimates of the total cost of asbestos related disease in the United States run as high as five hundred billion dollars.¹ To understand the impact of the industry it is necessary to examine the life of the mines, the conditions under which they were operated and their effects upon the health of labour.

The Companies

¹See Barry Castleman Asbestos: Medical and Legal Aspects forth edition New Jersey: Aspen Law & Business, 1996.

The Cape Asbestos Company Ltd was formed in London in December 1893. Its first chairman, Rudolf Hinrichsen, was a member of the De Beers board. The company acquired land in the north western Cape and began mining near Prieska. South African fibre lay close to the surface which allowed simple methods of extraction to be used. Cape began mining with capital of only fifty thousands pounds. Blue fibre was not so soft as the Canadian or Italian varieties nor so easy to weave. But it could spin a finer and much stronger yarn and Cape hoped to capture the markets for cordage and fishing nets. Within a matter of months Cape had representatives to sell its products in Australia, Italy, France, Germany and Holland.

In 1916 two companies EGNEP and Amosa (Asbestos Mines of South Africa) began to exploit the amosite deposits at Penge in the north east Transvaal. Both had limited capital and were run by Solomon Weingarten, an original member of the Cape mineral syndicate. Cape's management was concerned that deposits at Prieska would run out and the company began to look for other sites. It decided upon Penge. In September 1925 Cape bought EGNEP and Amosa. The takeovers were designed to take advantage of the US and Japanese markets for amosite.ⁱⁱ

Cape had little success during its first twenty years of mining. It issued no dividend to investors until 1916. For most of the period between then and 1936 it paid a return of less than 10%. The demand for asbestos was erratic and the Great Depression saw the US market collapse. In 1929 Cape's profit was 39,000 pounds; one year later it had fallen to a third of that figure. Recovery was slow and it was not until World War Two that the company's position improved.ⁱⁱⁱ With the outbreak of war asbestos became a strategic material and the demand for amphiboles was in effect unlimited. Cape's Pluto board was used by the British Navy for bulk-head lining and amosite insulation was manufactured by a string of Union Asbestos factories in the US.^{iv} The company also made brake linings for armoured vehicles and fire proof clothing for the Air Ministry. Cape's Acre Mill factory, near Hebden Bridge, produced pad filters for gas masks.

By the end of the war Cape had mines over an area of two hundred and fifty miles stretching from Prieska to Kuruman. The company's head office and board of directors were in England. Its main South African offices were in Cape Town and Kimberley.^v Cape's success in the post war era can be gauged by the dramatic rise in its capital base. In 1938 the company had assets of 589,000 pounds; by 1945 that had doubled. Six years later Cape's assets were in excess of 4,000,000 pounds.^{vi}

ⁱⁱ Cape Asbestos: The Story of The Cape Asbestos Company Limited, 1893-1953. London: The Cape Asbestos Company Limited, 1953. pp. 32-36.

ⁱⁱⁱ Cape Asbestos p. 52.

^{iv} Cape Asbestos p. 78.

^v "Report by O.T.Jannasch for Secretary for Labour" 21/10/1947" NTS 7684 212/332 Strike Westerberg mine: Cape Asbestos Company p. 2.

^{vi} Cape Asbestos p. 80.

Dividends to shareholders reflected that growth.^{vii} To strengthen and centralise Cape's administration in 1948 two new companies were formed: one was a holding company, Cape Asbestos South Africa Pty. Ltd, the other Cape Blue Mines acquired the groups mining assets.^{viii} Ownership and control remained in London.

The company's immediate post war expansion was centred on Penge. The capacity of the mine was increased as the old system of piece work was replaced by industrial mining. Employment rose from 2,500 in 1948 to 5,000 in 1953. In that year for the first time the mine achieved an annual output of 50,000 tons of amosite.^{ix} New houses for white workers were built, and street lighting was installed. The hospital was enlarged and modernised with an operating theatre and X ray equipment. In the north west Cape output was also increased but the mines were hampered by poor roads, lack of water and primitive methods of processing. The major problem was the distances between the outlying mines and the main milling centres at Prieska, Kuruman and Pomfret.

Each year in the period from 1946 until 1951 Cape returned a dividend to its shareholders in excess of 20% per annum but the most bountiful years were the 1960s and 1970s. It is significant that Cape's profits and levels of output were greatest in the period after South African researchers had established the dangers of exposure to crocidolite and amosite.

Senior staff tended to stay with Cape for life and in that sense its management was unusually stable. Its company structure, however, was complex. From its earliest days there was a close relationship between Cape and Central Mining and Investment. In later years Central Mining's involvement was superseded by Charter, an Anglo American subsidiary. That relationship has significance for current litigation in the United States and the UK. Cape also had close contact with other companies. From 1952 it was involved in joint ventures with the American conglomerate Johns-Manville.

Cape's major competitor was the Griqualand Exploration and Finance Company Limited. Founded in London in 1895 as the African Saltpetre Company (GEFCO) became the world's largest producer of amphibole asbestos. At its peak it operated nine mines, employed 10 000 people and supplied some 180 000 tons of fibre per annum to customers around the globe. The company's demise was made more dramatic by management's determination to mine asbestos. Despite a flood of litigation and mounting opposition from governments and trade unions in US and western Europe the company increased its investment in mining and exploration.

Between 1966 and 1977 GEFCO enjoyed record output and profits. In 1970, for example, profits rose by 32%. On the basis of good prices and strong demand in

^{vii} From 1945 until 1951 dividends were mostly above 20%. Cape Asbestos p. 85.

^{viii} Cape Asbestos p. 56.

^{ix} Cape Asbestos p. 59.

1976 GEFECO upgraded four plants and began an aggressive exploration program.^x It dismissed as unscientific media concern about the dangers of crocidolite and anticipated strong long-term demand for fibre. As the result of trade union opposition in the EC and litigation in the United States sales of amosite and crocidolite fell dramatically in 1977.^{xi} The following year sales fell by 30%. South African producers and the Department of Mines blamed Canadian and Russian interests for seeking to have to their chrysotile capture the markets vacated by the amphiboles. GEFECO's management reassured investors that bad publicity was in fact an asset; it would dissuade others from entering the industry. On that basis the company decided to lower production costs by increasing output and market share. In 1981 GEFECO acquired the former Cape Blue Mines at Kuruman, an amosite mine at Penge and another crocidolite mine at Pomfret. Within twelve months amphibole sales had fallen 20% and the board was forced to acknowledge that GEFECO's production capacity was in excess of demand.^{xii} In the company's annual report for 1986, that is four years after undertaking a major investment in new mines, the director admitted that the industry had no future.

Production

The north west Cape asbestos belt stretches more than four hundred and fifty kilometres from just south of Prieska on the Orange River to the Botswana border. Prospecting and exploitation began in the Hay district in the early 1880's and a small quantity of asbestos was produced. Output reached 1345 tons in 1895 but rinderpest and the Anglo-Boer war forced the industry to close. When the mines re-opened the major producer, Cape Asbestos, was joined by competitors. After 1910 mines expanded north into the Danielskuil, Kuruman and Vryburg districts. Fibre was found along the whole length of the Asbestos Hills in broken strata, with outcrops showing at intervals. Some of the leases formed narrow strips just wide enough to exploit a particular seam. Once mining began the hills were soon pock marked with primitive shafts or adits. In 1910 the value of fibre exported was 26,225 pounds: in that year copper exports were worth 478,722 and gold 34,000,000 pounds. Whale oil was a more valuable commodity than asbestos.^{xiii}

A Department of Mines review of the Cape fields from 1916 noted the region's remarkable potential. The field was so rich in fibre that its author, B. Frood, feared its exploitation would depress the world price. "In the south" he wrote, "the actual amount of asbestos already to be seen in some places, and which will no doubt be

^xSee GEFECO Annual Report 1976 p. 6.

^{xi}South Africa production in slumped from 379,000 tons in 1977 to 163, 000 tons in 1985. See P.H.R. Snyman "Safety and Health in the northern blue asbestos belt" Historia vol 33 May 1988 p. 32.

^{xii}See GEFECO Annual Report 1982

^{xiii}Annual Report Department of Commerce and Industries for the year ending 31 December 1910 Pretoria: Government Printing and Stationary Office, 1911 p. 4.

found in others in course of time, is rather staggering. I have visited one place myself, and been told of a least one other, where you might count on perhaps one vein of asbestos to every yard on the average from the bottom to the top of a hill three or four hundred feet high".^{xiv} The first few feet of digging into hill sides produced the best return and so there were few proper shafts. Producers were getting 22 pounds per ton on the European market from which they made around 5 pounds profit.^{xv}

Despite its potential the industry faced many problems. Roads were poor making transport slow and expensive. Water was scarce and on some properties it had to be carted seven or eight miles. With the exception of Cape which had its own factories in Britain, France and Italy most producers struggled to find buyers for their fibre. A notable feature of the industry was the high turnover of listed producers; most companies failed within twelve months. Deposits were highly variable and what may have begun as a rich vein could in a matter of yards dry up. Many companies lacked capital and without a guaranteed market were forced to sell to the larger producers like Cape which could to a degree set their own price.

By 1919 the value of output had doubled and South Africa was exporting almost 4000 tons of crocidolite per annum. According to official figures there were fourteen mines employing fifty whites and sixteen hundred blacks and Coloureds seventy per cent of whom worked in the Cape province.^{xvi} In that year a number of leases were taken up in the Lydenburg, Pietersburg and Barberton districts of the north eastern Transvaal. The Penge mine was particularly promising and there were hopes of sustained demand for its amosite.

In 1922 the market collapsed and many mines closed. In the north west Cape more than five thousand men, women and children lost their major source of income. Those who could not find alternate employment starved. According to the district magistrate at Kuruman the industry was being strangled by the high costs of production and heavy transport charges.^{xvii} The roads were very bad and it cost 2/- per 100lbs to transport fibre to the nearest station.^{xviii} The methods of extraction and

^{xiv}"Report on Asbestos Mining in the Cape Province, Kuruman district" by B. Froom Kimberley part 2 1916" Department of Mines, MNW 1696/16 p. 6.

^{xv}"Report on Asbestos Mining in the Cape Province, Kuruman district, B. Froom Kimberley part 2 1916" Department of Mines, MNW 1696/16

^{xvi}Annual Report Department of Mines and Industries for the year ending 31 December 1919 Pretoria: Government Printing and Stationary Office, 1920 p. 22.

^{xvii}"Letter from the Magistrate, Kuruman to Secretary for Native Affairs, Pretoria, 5/9/1922 Department of Native Affairs NTS 2043 54/280

^{xviii}"Letter from the Magistrate, Kuruman to Secretary for Native Affairs, Pretoria, 5/9/1922 Department of Native Affairs NTS 2043 54/280

milling were, he claimed, primitive and poorly organised. Given the rates of pay for Coloured and black miners and their families it is difficult to imagine how the costs of production could have been lower.

Output from the Cape Province grew steadily from the mid 1920's increasing from 3000 tons in 1924 to more than 6000 tons in 1929.^{xix} Fibre was mined in the area between Kuruman and Prieska with most of the production being controlled by Cape. There were also some fifty small producers who sold to the major companies. The Great Depression led to a loss of demand from which the industry only recovered with the outbreak of war. Asbestos was a strategic material and the mines worked at full capacity from 1940 until 1945. The post war economic boom saw the demand for asbestos remain strong. Between 1950 and 1960 the value of South African output trebled.^{xx}Annual Report Department of Mines for the year ending 31 December 1960 Pretoria: Government Printing and Stationary Office, 1961 p. 40. By 1960 the mines were employing 1000 Europeans and more than 20,000 black and Coloured miners. Production had reached almost 200,000 tons of which half came from the Cape.^{xxi}Annual Report Department of Mines for the year ending 31 December 1960 p.34.

Labour

From the turn of the century there was some formal mining in the north west Cape. A few companies employed wage labour and sank proper shafts into hillsides. However, the dominant labour form and the means of mining were unique to the asbestos fields. Under a tribute system the primary unit of labour was the family

^{xix}"Memo from Inspector for Mines, Bloemfontein, to Secretary for Mines and Industries, Pretoria, 6/8/1932" Department of Native Affairs NTS 2043 54/280

^{xx}Sales of Asbestos

All values in British pounds.

1960	10,795,883	1950	3,623,589
1959	9,696,590	1940	497,016
1958	9,573,348	1930	304,795
1957	9,543,623	1920	114,195
1956	7,674,389	1911	20,839

^{xxi}There was a 17% increase in tonnage sold in 1960 but the value of sales was only 12% higher than in 1959.

Province	Amosite		Chrysotile		Crocidolite	
	tons	value	tons	value	tons	value
Trans	71,331	3,284,070	29,430	1,467,800	9814	657,604
Cape					74,672	5,385,182

all values in pounds

rather than the individual male worker.

Throughout the asbestos belt fibre was found in the same host rock, banded ironstone. Often there was a steady low dip and some deposits were almost horizontal. There were no large continuous seams and asbestos was found at countless points across the veldt. The outcrops of fibre encouraged constant shifting. In effect most mines were small quarries; as one site ran dry miners and their families moved to another. There were no jackhammers and blasting holes were made by hand drills or "jumpers". Miners would hit the end of the jumper with a hammer with one hand and turn it with the other. Because of the hardness of the host ore it could take all day to drill a 30cm hole.^{xxii} The hand processing of fibre or cobbing was done close to the mouths of adits. The ore was pounded on stone anvils by women using square faced hammers. The separated fibre was then sorted by length and bagged. Miners had to provide their own hammers, drills, picks, and spades. The costs for explosives were also borne by miners who were obliged to sell their fibre to the store run by the lessee.^{xxiii}

It was common for a farm to be worked at several points and by 1920 there were already many abandoned mines. Holdings would change hands as prices rose or fell. While the output from a single working would be small that from a farm as whole could be considerable.

The tribute system relied upon manual labour. After blasting or digging adits into hillsides the ore was moved by hand to be cobbled. There would be three or four women, old people or children for each miner who would chip off the rock surrounding the fibre. At the end of the day's work miners and their families could face a long walk to their homes and a similar journey to the company store to deposit asbestos. There was no one to check the quantity or quality of the fibre and miners had no scales of their own. It was common practice among owners to pay miners with chits or "good fors" which were only reclaimable at the company store. The system, which survived in places until the 1970s, was designed to reduce labour costs and tie miners to the companies. Employers recognised only claim workers and not women or children. That meant that rates of pay were never calculated according to the actual number of workers. If a miner earned two pounds per month his wage should rightfully have been divided by a factor of three or four.

According to a Department of Mines survey of the Cape fields carried out in 1919 individual miners received 10 pounds per ton for No 2 grade fibre from which were deducted the cost of explosives. That fibre brought between 30 and 50 pounds a ton at Port Elizabeth. It could take a family months to produce that much material. A good indication of the cost of labour can be gained by comparing the rates of pay for

^{xxii}Anthony Hocking Kaias & Cocopans: The story of mining in South Africa's Northern Cape Johannesburg, Hollards: undated 1985? p. 41

^{xxiii}When miners found they could get higher prices from other buyers there was illicit selling of asbestos, a practice that ruined many small owners. See "Letter from Magistrate, Kuruman to Secretary for Native Affairs, Pretoria, 28/5/1926" NTS 990 3/149

miners with domestic servants and labourers in Kuruman. Servants received on average 30/- to 40/- per month in wages plus food and housing. In the building trade 2/6 per shift was average without food or accommodation. Returns for miners were poor and remained static between 1914 and 1919 when the cost of living increased by around 40%^{xxiv}

A.L.Hall of the Department of Mines surveyed the fields of the northern Cape in 1930.^{xxv} He found that under the tribute system there was a steady supply of labour. Management provided explosives, miners did their own prospecting and were paid according to the amount of graded fibre they produced. Miners lived close to adits and their families worked with them to increase income: "Thus", wrote Hall, "probably more often than not the family and not the individual is the labour unit. The whole labour situation is not unlike a more widely applied tributer's system"^{xxvi} Hall identified a number of advantages to the companies. Because miners were paid for what they produced there was little "dead mining". More correctly the costs of "dead mining" were borne by the miners. Since in the Cape blasting could be done by Coloureds there was only a small permanent staff of whites who checked the fibre grade, or issued stores thereby further reducing the costs of production. Among the disadvantages was the lack of control exercised by the companies. Tributing also led to illegitimate mining and a black market for fibre. Hall doubted that the system would survive or that it was in the best interests of the industry.

The same method of mining was used on the north eastern Transvaal. Individual miners would dig asbestos from adits blasted into hillsides. Women and children cobbled the fibre by hand which was then transported down the mountain sides by donkey.^{xxvii} Life at Pietersburg was hard. The land was poor and apart from the mines there was little employment.

There were a number of important advantages which Hall ignored. The system of production meant that miners and their families fell outside the provisions of the Mines acts. As a consequence the companies escaped having to provide compounds, rations or medical care for its workforce. It also enabled Cape and its competitors to employ large numbers of women and juveniles. The Cape subsidiaries EGNEP and Amosa both employed workers under the age of sixteen. In October 1940, for example, the Penge mines employed 447 juveniles out of a total labour

^{xxiv}"Labour Conditions Asbestos Report by W.Walker, June 1919"
NTS 990 3/149

^{xxv}24. Hall also carried out inspections in 1917 and 1918. See A.L.Hall Asbestos in the Union of South Africa 2 edition Memoir No 12 Department Mines and Industries Geological Survey, Pretoria, 1930

^{xxvi}A.L.Hall Asbestos in the Union of South Africa p. 92.

^{xxvii}For an account of mining at Mafefe see Marianne Felix "Risking their Lives in Ignorance" in J. Cock & E. Koch eds Going Green: People, Politics and the Environment in South Africa Cape Town: Oxford University Press, 1991, pp. 33-43.

force of 1625.^{xxviii} Young workers pressed fibre into hessian bags, and swept mill benches and floors for less than adult pay. In many cases their parents were also employed at the same mine. That minority of women who actually received wages were paid on average one third of the male rate; the majority were paid in "good fors" which meant they cost employers even less. They were the cheapest and possibly the most productive workers in the industry.^{xxix}

Miners and their families had to provide their own accommodation, a practice criticised by Department of Health and Native Affairs officers for almost half a century. Cape allowed its employees to cut poles from the banks of the Orange River and helped out with second hand bags from which a family would construct a sack hut. As the family became established it would build another hut of poles and mud plaster and usually aimed to have a corrugated iron roof to replace the thatch. Though they were tenants such workers were not charged rent for the land on which they lived nor were they charged for the grazing of livestock.^{xxx}

When Brian Froot, an inspector with the Department of Mines, visited Kuruman in 1916 he heard many complaints about the rates of pay and the price of food. He was particularly disturbed by what he learnt about company stores. There were no oral or written contracts between miners and the companies and workers were only paid for the fibre they produced. The system was made cheaper for owners by the "good for" method of payment. One of the largest employers told Froot: "That whereas his actual working costs amounted to 17 pounds per tons of asbestos, it might easily be called 15 pounds, as he got back 2 pounds from sale of stores to the natives". It was an iniquitous system in which: "money is advanced in the shape of stores to the native, who must sometimes accept them or starve. Once he gets behind he is apt to remain so and the position of the native who is thus left in the hand of his employer may fall little short of slavery".^{xxxi} The deposits were so variable and the rates of pay so low that there was no guarantee of a decent return for labour. In many cases miners made barely sufficient to cover the cost of food.^{xxxii} The "good for" system so impoverished workers that many found it impossible to pay their hut tax. As a result

^{xxviii}"Letter from E.W.Lowe, Acting Director of Native Labour to Secretary for Native Affairs, Pretoria, 19/10/1940" Department of Native Affairs NTS 2217 408/280

^{xxix}The best indication we have as to the rates of pay come from internal company document. Schalk Lubbe worked as an accountant with Cape plc at Koegas for many years. In the mid 1990's he deposited the company pay records at the Mary Moffat Museum, Griquatown. Those papers show that women were paid around one third of the male wage.

^{xxx}See "Letter from R.R.Falck, general manager Cape Blue Asbestos, Kuruman to the Native Commissioner, Griquatown, 30/10/1940" NTS 9991 188/408(D)

^{xxxi}Report on Asbestos Mining in the Cape Province, Kuruman district" by B. Froot Kimberley part 2 1916" Department of Mines, MNW 1696/16 p. 15.

^{xxxii}"Report on Asbestos Mining" p. 13

at Kuruman in 1919 the government was owed 1600 pounds on the 10/- hut tax and 340 pounds of road tax.^{xxxiii}

Small companies with little capital relied upon chance to find rich veins or used whatever means they could to turn a profit. Dishonest managers would cheat miners on the weight of asbestos delivered then cheat them again on the sale of goods at inflated prices. It was common when a company failed for miners to be were left with worthless chits.^{xxxiv}

In the decade after 1937 Cape plc mines were inspected regularly by the Departments of Native Affairs and occasionally by the Department of Health. Both were critical of the lack of medical care and sanitation.^{xxxv} In November 1944 an officer from Native Affairs made the following comment upon the housing of Cape employees: "The majority of the labourers live in miserable sacking hovels. The Company have given me to understand that they provide the old sacking free, I am not prepared to accept this as correct. These hovels are scattered all over the mine property at Westerberg, each labourer erecting his sacking hovel as it suites his fancy".^{xxxvi} He completed his report with the observation: "This Company (Cape) has enjoyed a free and unrestricted hand for the past 52 years and they are not likely to undertake improvements in respect of suitable housing for their Native labourers unless they are compelled to do so according to law".^{xxxvii} Over the next decade little changed. Even in the context of apartheid government inspectors viewed the conditions on Cape mines as deplorable.^{xxxviii}

Conflict between labour and management was common. In January 1945 350 miners at Westerberg, Cape's largest mining centre, went on strike. There was no violence and the men simply presented a list of demands to the manager. They asked for higher wages especially for lower paid workers, free firewood and water, and second hand sacking to build huts. The miners also asked Cape to supply free planks for the

^{xxxiii}That was the opinion of at least one inspector from Native Affairs. See "Labour Conditions Asbestos fields" Report by W.Walker, inspector, Department Native Affairs June 1919" NTS 990 3/149

^{xxxiv}See "Letter from Magistrate, Kuruman to the Secretary for Native Affairs, Pretoria, 3/11/1925"NTS 990 3/149

^{xxxv}"Memo: Cape Asbestos Company, from Dept of Native Labour, unsigned 8/11/1944" Native Affairs NTS 10011 188/408F part 1

^{xxxvi}"Memo: Cape Asbestos Company, from Dept of Native Labour, unsigned 8/11/1944" Native Affairs NTS 10011 188/408F part 1

^{xxxvii}"Memo: Cape Asbestos Company, from Dept of Native Labour, unsigned 8/11/1944" Native Affairs NTS 10011 188/408F part 1

^{xxxviii}. See for example "Survey of the Conditions at the Asbestos Fields in the Vryburg District 8-11 August 1950, Labour Officer, Krugersdorp" Native Affairs NTS 10011 188/408F

building of coffins as such materials were difficult to obtain.^{xxxix} Cape agreed to supply firewood, planks and sacking but rejected the miners other demands as too expensive.

In 1947 a survey of conditions at Cape mines was conducted for the Department of Native Affairs by O.T.Jannasch. Jannasch described the labour process, the company administration and the living conditions of black and Coloured workers. Jannasch was told that all decisions involving the expenditure of more than thirty pounds were made in London.^{xl} If that was true then the company's refusal to improve the living and work conditions at the mines came from the Board.

Jannasch found that for almost fifty years Cape had used a contract system of labour. Coloured and black families mined asbestos as best they could; when a seam petered out or a mine got too deep or dangerous they simply moved on to another site. Only the best pickings were worked and deposits which could have been exploited by industrial methods were ignored. That form of labour appealed to local workers because it enabled them to avoid the kinds of disciplines imposed on gold and diamond miners. They could come and go as they pleased and the company allowed them to run goats, donkeys and cattle on adjacent land. "The relationship of employer and employee was non-existent", Jannasch wrote, "so that the Company during this period could largely be regarded as a receiving and distribution depot, and were not mining in the strict sense of the word".^{xli}

Families would labour on the mines during the winter months and in summer trek down to the Orange River settlements to work in picking fruit. In winter they would return to the mines. Although some workers remained with Cape for years the company had a high labour turnover. To overcome the problem Cape began recruiting workers from the Transkei. Jannasch noted that Cape sold maize, sugar, coffee and clothing at below cost to its employees. At Koegas it established a garden to grow fruit and vegetables and built a school. Cape also granted free grazing to miners to encourage permanent employment, a privilege few local farmers gave to their workers. Jannasch said little about sanitation, health care or the quality of housing. He said nothing about occupational safety.

Women Miners

For various reasons the official estimates of the number of women employed in the industry are unreliable. At times women were paid independently of their husbands, at others their pay was incorporated into the male wage. Many were paid in "good fors" and so they do not appear in labour returns. Much of their work was casual and employers had no wish to alert the Department of Mines or Health to their presence. To gauge their number it is necessary to examine the correspondence from

^{xxxix}"Memo from Lieut-Col Howe, Dept Comm SA Police to Kimberley to the Comm SA Police, Pretoria, 21/2/1945 Native Affairs NTS 10011 188/408F part 1

^{xl}"Report by O.T.Jannasch" p. 8.

^{xli}"Report by O.T.Jannasch" p.9.

individual mines.

A report from 1919 on the Kuruman district written by W.Walker, an inspector with the Department of Native Affairs, gives some idea as to the importance of their labour. The blasting and recovery of ore was carried out by men. Cobbing would then begin. According to Walker there were three or four women and children cobbing for each miner.^{xlii} He found that Cape plc employed around 240 adult males and 190 women and children.^{xliii} But those figures probably under-estimate the number of women involved. There were no oral or written contracts and employers like the Department of Mines only recognised claim workers. Consequently Walker concluded it was impossible to gauge the actual number employed or the average wage paid.

During the 1930s a small mine was operated by Cape at Pomfret, in the Morokwen Hills, about 130 miles north west of Vryburg. The mine closed in 1932 and re-opened in March 1937. In that year its output was around 16 tons per month. It was run for Cape by a European manager and his two sons. There were 106 male workers and 70 to 80 women who cobbled and sorted fibre. The men were paid a daily rate of between 1/- to 2/6 with food: the women, most of whom were wives of miners, were paid 2/3 per 100 lbs of fibre. They earned between 12/- and 15/ per month. Unlike the men they received no rations.^{xliv}

Women were also prominent at GEFCO mines. A Department of Health inspection of the mine at Bretby, in the Kuruman District, was carried out in September 1937. The inspector found fifty men and fifty women in the workforce. The men worked on contract and were paid by output; the women cobbled.^{xlv} Those ratios were typical. In 1937 Cape was working three mines to the south of Kuruman, at Mansfield, Klipvlei and Hurly. At Mansfield there were fifty men and fifty women; at Hurly thirty four men and fifty women and at Klipvlei twenty men and forty women.^{xlvi}

In April 1940 officers from the Department of Native Affairs carried out a rare inspection of Cape's Sardinia and Maurotonc mines. Sardinia had a white manager, thirty male labourers and sixty women. The men received 2/- per day and the women 2/6 for each 100 lbs of asbestos cleaned. The pattern of employment and the

^{xlii} "Labour Conditions Asbestos Fields" Report by W.Walker, Inspector Native Affairs Department, June 1919" NTS 990 3/149

^{xliii} "Labour Conditions Asbestos Fields" Report by W.Walker, Inspector Native Affairs Department, June 1919" NTS 990 3/149

^{xliv} "Report of Inspection of Cape Asbestos Mines at Pomfret, Vryburg, L. Fourie, Assistant Medical Officer, 4/9/1937" Department of Health GES 949 862/13

^{xlv} "Report of Inspection of Asbestos Mine at Bretby, Kuruman District L. Fourie, Assistant Medical Officer, 4/9/1937" Department of Health GES 949 862/13

^{xlvi} "Report of Inspection of Cape Asbestos Mine in Kuruman District, by L. Fourie, Assistant Medical Officer, 4/9/1937" Department of Health GES 949 862/13

conditions of work and pay were much the same at Maurotonche. There were forty day labourers and fifty women workers. Both mines were nearly worked out and Sardinia was producing only eight tons of fibre per month.^{xlvii}

Probably in response to wartime conditions in July 1941 the Department of Native Affairs carried out a major inspection of Cape's operations in Griqualand West. It found that a large number of women were employed either by a native contractor or directly for the company. In the southern half of the fields Cape employed 566 women and children, 341 black and 244 Coloureds males.^{xlviii} Six years later P. L. Hattingh, the native commissioner at Kuruman, inspected the Cape and GEFCO mines in the same districts. He found that each mine employed about fifty male labourers, fifty women and an equal number of children.^{xlix}

The pattern of employment was much the same in the northern Transvaal. At the beginning of 1949 J.S.De Wet of the Department of Native Affairs conducted a survey of the Pietersburg and Letaba asbestos fields. De Wet found that many youths aged between twelve and sixteen were working as sorters in the mills, a practice specifically forbidden under the Mines Act No 15 of 1911. "I have also noticed" he wrote, "fair numbers of women employed at the mills chiefly for filling and pressing processed asbestos into bags. I have mentioned earlier that these mills are very dusty. I am not certain whether the dust is harmful to health, but I should imagine that it might be, and for that reason I strongly feel that the employment of women and children is very undesirable".^l De Wet's ignorance of the risk of asbestosis was indicative of the state's lack of concern about the hazards of airborne fibre. Despite his protest nothing was done. Three years later one of De Wet's successors found that most mills in the area employed twenty to thirty male workers and six to eight women to bag fibre.^{li}

The Shift

There was over time a natural progression from small, speculative mines using labour intensive methods to large-scale mining with its big capital, clear divisions of

^{xlvii} "Report from A. K. Good, Assistant Native Comm. Kuruman inspection of Mines, 19/4/1940" Native Affairs NTS 10011 188/408F part 1

^{xlviii} "Report on Cape Asbestos Mines, Griqualand West, by B. M. Clark, Sen. Ass. Health Officer to Sec. for Public Health 11/7/1941" Native Affairs NTS 10011 188/408F part 1

^{xlix} Memo: P. L. Hattingh, Native Comm Kuruman to Chief Nat. Comm Potchefstroom, 28/4/1947" Native Affairs NTS 10011 33/209

^l "Survey of the Conditions on the Asbestos fields, Districts of Pietersburg and Letaba, 7-19 November 1949" by J.S.De Wet, Labourer Officer, Krugersdorp 8/1/21949", NTS 2258 695/280 volume 1 p. 12.

^{li}"Letter from Inspector of Native Labourers, Pietersburg to the Chief Native Commissioner, Pietersburg, 28/1/1952" NTS 2258 695/280 volume 1

labour and high levels of output. Supposedly the tributer system was used until around 1945. Once the demand for fibre reached a certain level the major companies took the opportunity to shift to industrial methods. They sank large shafts, set up compounds, imposed discipline on their work force, introduced wages in the place of piece rates and removed women and children.

The orthodox view of the industry's history is perhaps best expressed by J.C.Wagner, the pathologist who played a major role in discovering the connection between asbestos and mesothelioma. According to Wagner: "After the 1939-45 war the increased demand for crocidolite led to the establishment of modern mills at larger mines, and the gradual disappearance of the tribute system. Today, (1962) the only mill working on material brought by tributers is that at Prieska".^{lii}

According to company and Department of Mines records the shift from tributing to industrial mining was inevitable. After 1945 higher demand for asbestos could not be met by existing methods. The introduction of deep mining to exploit fresh seams supposedly made female labour redundant. There were also the imperatives of apartheid and in particular the policy of segregating mines site by gender. It was official policy to limit to 3% the number of married miners on any site. If applied to asbestos mines that would have driven women out of the labour force and broken up the family work units which had been the basis of the industry from its inception.

An inspection of Cape's mines and mills at Koegas, Geelputs, Westerberg, and Prieska in April 1952 showed that 900 blacks and Coloureds were housed in compounds and married quarters. There were also 1000 workers including women and children squatting on property owned by the company.^{liii} In April F.Brownlee, an inspector of native labourers, wrote to Cape's manager at Koegas; "In regard to married quarters it was pointed out that this Department is adverse to the provision of married quarters on any but the scale to meet the labour requirements of your company, as isolate settlements of married natives are likely in course of time to increase in size and lead to administrative and other difficulties".^{liv} Cape agreed to employ no more than the allowed number of Union "natives" who had their families with them. The families of foreign labourers were to be sent home. Cape promised to build compounds for 1800 men. Three years later nothing had been done and in November 1955 the Director of Native Labour again demanded that Cape remove families from its mines. Cape was given six months to build the approved facilities.^{lv}

^{lii}See J.C. Wagner The Pathology of Asbestos p. 22.

^{liii}"Letter from F.Brownlee, Inspector of Native Labourers, Cape Western Area, to the Director of Native Labour, Johannesburg, 9/4/1952" Department of Native Affairs NTS 9880 189/408C(2)

^{liv} "Letter from F.Brownlee, Inspector of Native Labourers, Cape Western Area, to the local manager of Cape Blue Mines, Koegas 9/4/1952" Department of Native Affairs NTS 9880 189/408C(2)

^{lv} "Letter from Director of Native Labour, to Urban Areas Inspector Cape Town 23/11/1955 Department of Native Affairs NTS 9880 189/408C(2)

The company pleaded that the cost would force it to closed down mines and retrench workers. The solution was written into the new Mines act.

Under the Mines and Works Act 27 of 1956 asbestos mines were allowed to employ women provided they were only engaged to cobb and sort fibre and they were not accompanied by children. Women were not to work in closed shelters and dust levels had to be acceptable to the Chief Inspector of Mines. In another innovation female workers were to be given medical checks and records kept of their employment.^{lvi} There are few surviving documents but oral evidence suggests that those regulations were never enforced. In her 1987 survey of Mafefe, a group of some thirty mining villages in the Northern province, Maria Anne Felix has found that over half of the mine labour force was female.^{lvii} Child care was a problem, and invariably, children especially babies, accompanied their mothers as they cobbled fibre. Felix also found that even though prohibited by legislation children were commonly employed in mills.^{lviii}

Those who have written on asbestos usually assume that the advent of industrial mining meant the end of both tributing and female labour. It is true that after 1945 a few major companies dominated the industry. Their success saw the demise of the smaller firms which had proliferated in the earlier period. But the shift to industrial mining was never simple and some of the work processes used in the first phase of the industry's history survived. The most important of those survivals was cobbing. The Prieska mill, for example, ran on cobbs produced by female labour until its closure in the 1970s.^{lix} The same was true of Koegas. By cleaning the ore and removing the hardest material they reduced dramatically the milling process which as we know was one of the major costs of production.

Health, Disease and Dust

The men, women and children who worked on the asbestos fields went unprotected by labour legislation. They did not qualify as tenant farmers and until 1956 their employment fell outside of the various Mines and Masters and Servants Acts. Consequently Department of Health and Native Affairs officers had no means to force companies to provide health care, housing or rations. It also meant that before

^{lvi}See "Restrictions upon Employment of Juvenile and Females" section 11 (1-5) Mines and Works Act No 27 of 1956 Pretoria: Government Printer, 1956.

^{lvii} Of the adults over 24 years of age 18% had worked in the asbestos industry of those 398 or 54% were females and 338 or 46% were males. See Maria Anne Felix Environmental Asbestos and Respiratory Disease in South Africa PhD University of the Witwatersrand, 1997. p.101.

^{lviii} Felix Environmental Asbestos p.150.

^{lix}This has verified by the former manager of the Prieska mill. Interview with Willhemina Jacoba Schnyders carried out by Engela Venter at Bloemfontein 7 April 1999.

the 1950s mines were rarely inspected by Department of Mines officials.

A medical officer from Native Affairs who visited Cape's Kuruman mines in July 1941 was shocked by what he found. The miners huts were scattered over the veldt and gave no protection against rain, wind or dust; "They are all squalid" he wrote, "and it seems to be only the constant work of the housewife in keeping the shelter in repair and the floor smeared that the place is not overwhelmed by filth".^{lx} There was no medical care, sanitation or rubbish collection and the threat of disease was constant. Because of climate and isolation miners were forced to buy most of their food on credit from the company. Low wages and the high prices charged by Cape meant few workers or their families had a balanced diet. Little meat was consumed and each labourer ate about 90 lbs of mealie meal a month.^{lxi} One native commissioner was told by a Cape manager that food was sold to miners at such inflated prices the company was getting their labour for nothing.^{lxii}

In 1946 there were a number of cases of scurvy at Cape mines and several men, women and children were hospitalised. Two patients died. The treating physician Dr. H Anderson pointed out to Cape's manager there was no scurvy at the nearby manganese mines and that with a regular ration of fresh meat, fruit and vegetables disease could be prevented.^{lxiii} In January 1952 there were further outbreaks at Koegas and Westerburg. Seventeen miners fell ill with scurvy and three with pellagra. Cape's own medical officer admitted that 75% of new labour suffered from vitamin deficiency as they tried to save money by living solely on mealie meal.^{lxiv} He made no mention of the price charged by his company for meat and vegetables.

When asked by the Department of Native Affairs to improve conditions Cape managers always gave the same reply; the mines were too marginal to justify the investment.^{lxv} If pressed they threatened to close the mines. Native commissioners were not satisfied for as one wrote in 1948; "To me as an official of the Native Affairs Department it is distressing to see so many natives living in such conditions and to

^{lx}"Memo: Dr. M Clark, Sen Medical Officer, Mines in Kuruman and Hay districts, 4/7/1941" Native Affairs NTS 10011 33/209

^{lxi}"Memo: P. L. Hattingh, Native Commissioner, Kuruman to Chief Native Commissioner Potchefstroom, 28/4/1947" Native Affairs NTS 10011 33/209

^{lxii}"Memo: P. G. Caudwell, Chief Native Commissioner to Director of Native Labour, 29/1/1948" Native Affairs NTS 10011 33/209

^{lxiii}See "Letter from A. A. Ackerman, Manager of Cape Asbestos, Kuruman to Native Comm Kuruman, 16/1/1946" Native Affairs NTS 10011 33/209.

^{lxiv}"Letter from Director of Native Labour to the Managing Director of Cape Blue Asbestos, 26/1/1952" Department of Native Affairs NTS 9880 189/408C(2)

^{lxv}"Memo: P. L. Hattingh, Native Commissioner Kuruman to Chief Native Commissioner Potchefstroom, 28/4/1947" Native Affairs NTS 10011 33/209

find the children being raised in these circumstances".^{lxvi} The few Department of Health officers who visited the mines were concerned about the risk of relapsing fever, plague, tuberculous, malnutrition, and typhus. There was no sanitation, water was scarce and the miners could not afford to buy soap.^{lxvii} In such a context it is not surprising that state officials should have overlooked the threat of pneumoconiosis.

In the past twenty years much has been written about the medical history of gold and diamond mines. As a result we can date with some precision the state's response to the dangers of dust and tuberculosis.^{lxviii} In 1903, for example, the Miners Phthisis Commission found there was a pandemic of silicosis among European rock drillers on the gold fields. Between 1912 and 1916 a series of acts enforced periodic medical checks of white labour and saw attempts to monitor and reduce dust levels. Each year in their annual reports the Secretary for Mines and the Government Mining Engineer addressed the issues of dust suppression and avoidance, and the treatment and compensation of white miners. The story of how knowledge of asbestosis and mesothelioma were assimilated into South African mining practice has yet to be written. What we have is a number of sign posts which gives some indication as to the attitude of employers and the response by state authorities.

By the early 1930s officers at the South African Institute for Medical Research, were conducting research into asbestosis and a voluntary code of conduct to reduce dust levels was operating in the asbestos cement industry.^{lxix} While no attempt was made to implement such a scheme at mines it is reasonable to assume that by that time the Department of Mines was aware of the dangers of airborne fibre. Therefore it is somewhat surprising that prior to the 1950s mines inspectors rarely visited the asbestos fields and the few references to asbestosis come from other sources.

In 1930 a Department of Health inspector commented of the Dominion Blue Asbestos Company mill at Kuruman: "Some of the workers" he wrote, "in the grading rooms live in a cloud of dust, and are liable to contract silicosis- or miners' Phthisis unless some effective precautions are taken without delay".^{lxx} It is significant that he

^{lxvi}"Memo: P. G. Caudwell, Chief Native Comm to Director of Native Labour, 29/1/1948" Native Affairs NTS 10011 33/209

^{lxvii}"Memo of a discussion between officers from the Departments of Mines, Health, and the Director of Native Labour held at the Office of the Director of Native Labour, 8/3/1948" Native Affairs NTS 10011 33/209

^{lxviii}See for example Elaine Katz, The White Death: Silicosis on the Witwatersrand Gold Mines, 1886-1910. Johannesburg: Witwatersrand University Press, 1994 and Randall M. Packard, White Plague, Black Labour: Tuberculosis and the Political Economy of Health and Disease in South Africa. Berkeley: University of California Press, 1989.

^{lxix}See F.W.Simson, "Pulmonary Asbestosis in South Africa" British Medical Journal Part 1: 1928, pp. 885-887.

^{lxx}"Memo: Secretary for Public Health, Pretoria to Chief Inspector of Factories, 11/2/1930" Department of Labour: Chief Inspector of factories ARB CF 16/10/3 vol

did not use the term asbestosis. In July 1941 the district surgeon at Griquatown observed that the mortality rate from chest diseases at Cape mines was very high. There was also, he observed, much malnutrition which contributed to the death rate.^{lxxi}

It was not until after World War Two that the problem of dust in mines appeared with any regularity in official correspondence. In 1949 as part of the first survey of the north east Transvaal Gert Schepers of the Silicosis Medical Bureau visited Penge mine. He found the labour conditions appalling.^{lxxii} Children were working in clouds of fibre and no attempt was being made to control dust. Cape Asbestos, which ran Penge, was British owned and therefore, in Schepers view, had reason to be aware of the dangers of asbestosis.

In 1946 crocidolite mines were declared registered mines under Section 29 of the Silicosis Act No 47. Registration required medical checks of workers before employment and regular periodic examinations. Asbestosis was also added to the Pneumoconiosis Bureau's list of certifiable diseases.^{lxxiii} The Act prohibited the employment of any boy under the age of sixteen years or any female if employment was deemed injurious to health. From that date, in theory, juveniles were no longer worked on mines.

The act had little effect. After 1950 Cape continued to employ under age workers at its Pomfret mill where boys as young as twelve sorted and bagged fibre, two of the dirtiest jobs.^{lxxiv} The company also employed seventy youths aged between thirteen and sixteen years at Vryburg. They did not work underground and no contracts were entered on their behalf.^{lxxv} The boys received 1/11 per day. When questioned about the practice Cape claimed it would be uneconomic to employ adults.^{lxxvi}

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^{lxxi}"Report on Cape Asbestos Mines, Griqualand West, by B. M. Clark, Sen Ass. Health Officer to Sec. for Public Health 11/7/1941" Native Affairs NTS 10011 188/408F part 1

^{lxxii}See G.W.H. Schepers, "Asbestosis in South Africa: Certain Geological and Environmental Considerations" in Annals of the New York Academy of Sciences No 132, 1965, pp. 246-7.

^{lxxiii}See Annual Report Department of Mines for the year ending 31 December 1955

^{lxxiv}"Conditions on Pomfret Asbestos Mine: 11/8/1950" Labour Office, Krugersdorp Native Affairs NTS 10011 188/408F

^{lxxv}See "Letter from the Native Commissioner, Vryburg to the Director of Native Labour, Johannesburg, 24/11/1953" Native Affairs NTS 10011 188/408F

^{lxxvi}. See "Letter from Cape Blue Asbestos, Pomfret 30/4/1951 to Native Commissioner" Native Affairs NTS 10011 188/408F.

The local inspector of native labour, L. Labuschagne, visited the Pietersburg fields in December 1951. He found no provisions for housing, medical care, rations or sanitation. He was even more alarmed by work conditions. The mines and mills were filthy and he demanded immediate action.^{lxxvii} Seven months later the assistant health officer Dr. G.B. Peacock, reported again on conditions at Pietersburg.

Peacock was well informed about asbestosis. He believed, correctly, that the main hazard came from small asbestos fibres rather than host rock dust.^{lxxviii} He too found the mills were filthy and he was shocked to see so many juveniles processing fibre. Where attempts had been made to provide ventilation some machinery actually sucked the fibre past the face of workers. Peacock examined twenty six blacks and found lung disease in six. In the worst British factories it usually took between seven and fifteen years for a worker to develop asbestosis. One of the Penge miners had been employed for only seven months.^{lxxix} Peacock also referred to as "despicable" the common practice of sacking employees the moment they showed signs of disease. "Previous experience amongst natives living under tribal conditions in the immediate vicinity of our biggest asbestos mine in the Northern Transvaal, (Penge) showed a large number of natives who had left the mines because their vital capacity had been so reduced that they could no longer perform any useful work".^{lxxx} He wanted the Department of Native Affairs to force a reduction in dust levels.

Perhaps the most telling evidence as to what work conditions were like comes from a Health Department survey of the Pietersburg fields dated November 1955. A mobile X ray unit visited some of the twelve active mines in the district and examined 250 to 300 men out of a workforce of nearly 4000. Twelve were found to have tuberculosis, seven had possible tuberculosis and fourteen asbestosis.^{lxxxi}

Visible dust levels in mines and mills were such that health inspectors wanted regular samples taken and exposure levels reduced.^{lxxxii} The Mines Department agreed and in January 1954 it advised the Director of Native Labour: "Dust surveys indicate that persons doing work of hand-cobbing, sorting fibre, etc., are exposed to harmful concentrations of dust and I suggests therefore, that you refuse the application in

^{lxxvii}"Monthly report: L. Labuschagne, Inspector of Native Labourers, Pietersburg: June 1952, 5/12/1951" NTS 2258 695/280 volume 1

^{lxxviii}"Report on Health conditions at Asbestos Mines to Pietersburg, Dr. G.B. Peacock, assistant health officer, June 1952" NTS 2258 695/280 volume 1

^{lxxix}"Report on Health Conditions" p. 7.

^{lxxx}"Report on Health Conditions" p. 7.

^{lxxxii}"Letter from the Head of the Health Department, Pietersburg to the Secretary of Health, Pretoria, 24/11/1955" NTS 2258 695/280(2)

^{lxxxiii}"Report: Health Conditions Cape Blue Mines, Pomfret: Department Chief Health Officer, Bloemfontein to the Secretary for Health, 29/4/1953" Native Affairs NTS 10011 188/408F

regard to youths under the age of sixteen years".^{lxxxiii}

By 1954 the Departments of Mines, Health and Native Affairs were aware of conditions on the asbestos fields. They were also aware of the current medical literature on asbestosis. Yet little was done to make work environments safe. The high dust levels noted by Labuschagne and Peacock were produced by the new mills and machinery installed at Cape and GEFCO mines in the early 1950s to meet rising demand. Medical knowledge of the risk of asbestosis predated the construction of the new plants by at least two decades.

According to the Department of Mines annual report for 1960 most asbestos mines relied upon natural ventilation and in only a few cases were fans installed. In that year 216 underground and 440 surface konimeter dust samples were taken at amosite and crocidolite mines.^{lxxxiv} In underground stopes dust concentrations averaged from 112 to 190 parts per cubic centimetre while surface readings varied between 140 and 440.^{lxxxv} p. 71 The department noted with enthusiasm that some mines had installed automatic bagging machines. Subsequent reports show that conditions remained hazardous.

In the 1960s and 1970s production rose to record levels. Unlike other minerals asbestos is milled dry thus creating dust. The host ore, banded ironstone, was particularly abrasive and would wear out ducting in a matter of hours. As production rose so did dust emissions. The references to asbestos mines in the Department of Mines annual report for 1978 are disturbing. The department noted that efforts were being made to prevent the escape of dust from mills and some mines had special maintenance crews to keep dust suppression machinery in order. It appears that such measures were of limited success for the report notes: "The surrounds of certain mills were covered with concrete slabs which are watered down daily. Additional stretches of road on which asbestos is transported were tarred. Asbestos spillage on such roads is removed more readily than on dirt roads".^{lxxxvi} The first major improvements in health standards only came with the emergence of black trade unions by which time the industry was already in its twilight.^{lxxxvii} Subsequent

^{lxxxiii}Letter from the Govt Mining Engineer to the Director of Native Labour, 30/1/1954" Native Affairs NTS 10011 188/408F

^{lxxxiv}Annual Report Department of Mines for the year ending 31 December 1960 p. 70.

^{lxxxv}See Section V "Pneumoconiosis and Health" in Annual Report Department of Mines for the year ending 31 December 1960

^{lxxxvi}Annual Report of the Department of Mines for the year ending 31 December 1978. Government Printer, Pretoria. p. 21.

^{lxxxvii}The General Workers Union and the Black Allied Mining and Construction Workers Union ran a campaign in 1984 to improve conditions at asbestos mines. For a history of dust standards in South African asbestos mines see Marianne Felix et al "Three Minerals, Three Epidemics" in Upton, M.M. ed Advances in Modern Environmental Toxicology pp. 281ff

research has confirmed that mines and mills continued to produce asbestosis until they closed.^{lxxxviii}

There were a number of factors which masked the incidence of asbestosis in South African mines and the existing figures certainly underestimate the number of cases. The mines were infrequently visited by Department of Health officers and before the mid 1950s no attempts was made to monitor or reduce dust levels. Most miners were black and the state had little interest in protecting them from occupational injury. On both the Cape and Pietersburg fields only one in five was a local man or woman and no checks were made on the fate of migrant labour. The practice of sacking sick workers removed the most obvious cases from the gaze of the Department of Health.^{lxxxix} As a consequence we can only guess as to how many died as a result of their employment.

The threat to health was not confined to those employed in mines and mills. Dr.C.A. Sleggs recalled his first visit to Kuruman in 1948: "When I first saw it, the land was blue for miles around the asbestos settlements. The mills indiscriminately spewed blue dust clouds over the countryside. and whenever the wind rose, a blue haze hovered over the dumps. Dust concentration in some houses near the mills were so high that konimeter samples could not be analysed because the fibres were too dense to count".^{xc} In the northern Cape tailings were commonly used for road gravel and in brick and plaster making. Children played on fibre rich waste ground.^{xcⁱ} The Prieska golf course was originally laid out with asbestos waste. In the Pietersburg fields waste from milling was dumped close to villages and roads were surfaced with tailings. At Mafefe tailings were mixed with mud to plaster the walls of homes and the floors of courtyards. Although mining ceased in 1975 the dumps survive as does the threat to community health.^{xcⁱⁱ}

^{lxxxviii} See for example J.M. Talent, W.O.Harrison, A.Solomon, and I.Webster, "A Survey of black Mineworkers of the Cape Crocidolite Mines " in J. C. Wagner ed Biological Effects of Mineral Fibres Vol 2 IARC Scientific Publications, No 30 International Agency for Research into Cancer, Lyons, 1980 and J. L. Botha, et al "Excess Mortality from Stomach Cancer, Lung Cancer and Asbestosis and/or Mesothelioma in Crocidolite Mining Districts in South Africa" American Journal of Epidemiology 123(1), 1986, pp. 30-40.

^{lxxxix}"Report on Health Conditions" p.7.

^{xc}C.A. Sleggs, personal correspondence, 1989 quoted in Paul E. Marchand "The Discovery of Mesothelioma in the Northwestern Cape Province in the Republic of South Africa" American Journal of Industrial Medicine 19:(1991), p.244.

^{xcⁱ}See P. H. R. Snyman "Safety and Health in the northern blue asbestos belt" Historia vol 33 May 1988 pp. 31-52.

^{xcⁱⁱ}For a discussion of the environmental threat from waste dumps in the Pietersburg region see Marianne Felix "Risking their Lives".

Conclusion

The mid 1950s was the turning point for occupational health and safety in South Africa's asbestos mines. It was the point at which the demand for crocidolite and amosite grew at an unprecedented rate; new mills and mines were opened; evidence of asbestosis was identified; some attempts were made to remove juveniles from the workforce. It was the point at which Chris Wagner, Chris Sleggs, Paul Marchand were in the process of discovering the link between mesothelioma and asbestos.^{xciii} The failure of state authorities to monitor and reduce dust levels sealed the fate of the next generation of asbestos miners and those who lived in mining communities. The consequences of that failure are now being played out in British courts.

South African governments were directly involved in the development of the asbestos industry. The state recruited labour for the mines, and it subsidised freight costs. During the two world wars asbestos was classified as a strategic material and government monitored every shipment of fibre from Cape, T&N and GEFECO mines. The state was also complicit in the harsh and dangerous conditions which were characteristic of the industry. Over a period of forty years Department of Native Affairs and Health officers queried the incidence of scurvy, the lack of rations and medical care and the housing provided for African and Coloured labour. Cape and its competitors argued that although conditions were poor the benefits in terms of employment, taxation, and export earnings far outweighed the costs. When the risk of asbestosis and later mesothelioma were identified the same rationales were used to justify filthy mills and hazardous waste dumps.

At what point should Cape and GEFECO have addressed the problem of airborne fibre and what standards should they have used in their mines and mills? We know that a pandemic of asbestosis was identified among Penge miners in 1955 and one or two years earlier on the fields of the north west Cape. Many of the smaller mine owners would have known little of pneumoconiosis and even less of how to prevent disease. The behaviour of British owned companies has to be judged in a rather different light. Cape plc, for example, had reason to know about the risks of airborne fibre because from 1930 it was obliged to comply with British industrial law regarding the exposure of factory workers. Cape also had resources the smaller mines lacked. During two world wars Cape had important British and US military contracts which enabled it to make good profits. The company had the capacity to invest in ventilation, automatic bagging machines and leak proof containers. It chose not to. In 1955 knowledge of the risk of asbestosis was at least twenty five years old and Chris Wagner had already begun to uncover the link between mesothelioma and asbestos. We know that in 1957 he discussed his concerns with Cape's management in London.^{xciv} In 1959 he and Chris Sleggs presented their findings to an international conference on

^{xciii} See C.Wagner, C.A.Sleggs, and P.Marchand, "Diffuse Pleural Mesothelioma and Asbestos Exposure in the North West Cape Province" British Journal of Industrial Medicine 17, 1960 pp. 260-65

^{xciv} Interview with Dr.Chris Wagner, Weymouth, Dorset 22 March 1998.

pneumoconiosis in Johannesburg. Six months later those results were published in The British Journal of Industrial Medicine. Cape and GEFCO responded with higher levels of production and dust sampling. The latter did little to reduce the risk of pneumoconiosis. It did nothing to reduce the risk of mesothelioma. Polluted mills still belched fibre over mine communities, women still cobbled asbestos, and Coloured and African children still played on tailings heaps.

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