FILE NAME: Cape Asbestos (CAPE)

DATE: 2004

DOC#: CAPE020

DOCUMENT DESCRIPTION: Journal Article - McCulloch & Tweedale, Double Standards: The Multinational Asbestos Industry & Asbestos-Related Disease in South Africa [The Politics of Environmental Health Policy]

DOUBLE STANDARDS: THE MULTINATIONAL ASBESTOS INDUSTRY AND ASBESTOS-RELATED DISEASE IN SOUTH AFRICA

Jock McCulloch and Geoffrey Tweedale

This study documents and contrasts the development of knowledge about asbestos-related disease (ARD) in South Africa and the United Kingdom. It also contributes to the globalization debate by exploring corporate decision-making in a multinational industry. Between the 1930s and 1960s, the leading U.K. asbestos companies developed a sophisticated knowledge of ARD, though in South Africa, where the leading companies such as Turner & Newall and Cape Asbestos owned mines, there was little attempt to apply this knowledge. Asbestos mines (and their environments) in South Africa were uniquely dusty and ARD was rife. Social and political factors in South Africa, especially apartheid, allowed these companies to apply double standards, even after 1960 when the much more serious hazard of mesothelioma was identified. This shows the need for greater regulation of multinationals. Because of the lack of such regulation in the early 1960s, an opportunity was lost to prevent the current high morbidity and mortality of ARD both in South Africa and worldwide.

The purpose of this article is two-fold: to document the development of knowledge about an occupational health hazard in a multinational industry and to contribute to the literature on globalization. The chosen industry is asbestos; the country is South Africa. Asbestos is now one of the best-studied industrial and environmental health hazards, reflecting the enormous current (and projected) mortality from asbestos-related disease (ARD). Brodeur (1) and Castleman (2) have documented the history of the American asbestos industry. Flynn (3) and McCulloch (4) have studied South Africa. Wikeley (5), Tweedale (6), and Johnston and McIvor (7) have explored the British experience.

International Journal of Health Services, Volume 34, Number 4, Pages 663–679, 2004

© 2004, Baywood Publishing Co., Inc.

Cape_Receiver_00124637

These studies have sometimes examined the international ramifications of asbestos, but as yet there has been no systematic attempt to link and contrast British and South African developments. This article brings together for the first time research that we have undertaken since the mid-1990s. This work was conducted and published independently, but new insights have been gained by subsequent collaboration, which has allowed a much closer scrutiny and comparison of the United Kingdom and South Africa. This is important for several reasons. It was in Britain that the hazards of asbestos manufacture were first appreciated and the first attempts were made to control dust and compensate workers. It was also British firms that were most active in the South African asbestos mining industry. Asbestos therefore provides an excellent case study of the behavior of multinationals in a major industry. This is more than merely academic interest: it also impinges on contemporary legal, political, and social issues (8). Many of the current concerns about globalization are reflected in the history of asbestos in South Africa. Did multinational companies behave responsibly? What was the extent of their knowledge about ARD? To what extent did political and economic factors shape corporate decision-making? Above all, did multinational asbestos companies seek to apply (as they claimed) best-practice standards in health and safety abroad?

ECONOMIC AND MEDICAL CONTEXT

Asbestos is a fibrous mineral, which can be subdivided into three main types: white (chrysotile), blue (crocidolite), and brown (amosite). The relative indestructibility, high tensile strength, and fireproof qualities of asbestos fiber made it a key engineering and building material in the 20th century.

World asbestos production became dominated by Johns-Manville in the United States, and Turner & Newall (T&N) and Cape Asbestos in the United Kingdom. These were multinational companies, with mines in South Africa and Canada, and factories in the United States and the Far East. It was in South Africa and also in former southern Rhodesia (now Zimbabwe) and Swaziland that U.K. firms were most active (Table 1). Blue asbestos was mined in the north and eastern Transvaal and north-western Cape of South Africa from 1893 until 1997. In Rhodesia the first chrysotile mines opened in 1917 and are still operating. The major mines were owned and operated by three U.K. firms: Cape Asbestos, and its subsidiary Cape Asbestos South Africa Pty (CASAP); the Griqualand Exploration & Finance Company Ltd. (GEFCO); and T&N (which operated a string of African mining subsidiaries, such as Rhodesian & General Asbestos Corporation and New Amianthus Mines). Ownership of the mines, usually through a web of holding companies and cross directorships, was often complex; but, although routine management was in the hands of the "man-on-the-spot," they were directed from head office and frequently visited by U.K. managers and medical personnel. This trio of companies exported fibers to more than 50 countries; they also used

Cape_Receiver_00124638

Table 1

U.K. asbestos companies and South African mines

	Year established	Headquarters	South African mines	Period operational (under U.K. ownership)
Cape Asbestos	1893	London	Egnep (Penge, Transvaal) Amosa (Penge) Koegas (Cape Province)	1893–1979
Turner & Newall (T&N)	1920[a]	Rochdale/ Manchester	Havelock (Swaziland) Shabanie (S. Rhodesia) Mashaba (S. Rhodesia)	1917–1995
Griqualand Exploration & Finance Company Ltd. (GEFCO)	1895	London	Small mines in the Northern Cape, then: Riries (Northern Cape) Whitebank (Northern Cape)	1897–1996

Note: Some of the mines continued operating after U.K. companies withdrew (e.g., the former T&N chrysotile mines in Zimbabwe are still working).

[a]The originating firm, Turner Brothers Asbestos, Rochdale, began asbestos manufacture in 1879.

fiber themselves to manufacture products at factories in the United Kingdom, Italy, France, India, and South Africa.

African regions where these U.K. firms were active became highly dependent upon asbestos, and so state authorities and local white elites supported the industry. In the absence of alternatives, black and Colored labor accepted the conditions offered by employers. Asbestos was therefore intrinsically bound up with apartheid. This meant low wages and high profits. Cape Asbestos's annual reports show that the major share of revenue always came from mining. In 1953, when Cape celebrated its Diamond Jubilee, the management paused to survey the company's achievements in building up a global sales organization: "Those in the London head office fully realise that the basic prosperity of the Company must depend on the efficiency and productive capacity of the mines" (9). This was reflected in the company's employment structure; in 1965, Cape had only 50 employees at its London head office, but about 10,000 on the mines and another 3,000 or so in its U.K. factories (10).

T&N was less dependent on mining. In the late 1950s, for example, T&N employed about 16,500 in the United Kingdom and 20,000 worldwide (about 11,000 of whom worked in the South African mines). Nevertheless, once T&N

Cape_Receiver_00124639

had purchased two mines in the Mashaba district in 1917 and the Amianthus mine in 1924, its South African mines (and the Bell mine in Canada) were the linchpin of its global operations. These mines were consistently profitable—sometimes extraordinarily so. In 1957, for example, T&N recorded a post-tax profit of nearly £6 million, of which more than half (£3.2 million) was from South African mining. Raw fiber could be sold to other manufacturers, while T&N could enjoy the benefits at cost price. Even GEFCO, which originally was much smaller than either T&N or Cape and produced insignificant amounts of fiber, from the mid-1960s garnered substantial profits as it emerged as the world's largest producer of crocidolite and amosite (4).

Given the huge input from South Africa toward the prosperity of these companies, one would expect management to have shown some concern with overseas occupational health and safety issues. After all, they were aware of the mortal dangers of inhaling asbestos dust as early as 1899, when government Factory Inspectors singled out asbestos because of its "easily demonstrated danger" to the workers' health (11). In the 1920s, deaths at T&N's Rochdale factory and at Cape's London plant led to the first medical descriptions of "asbestosis"—the chronic fibrosis of the lungs, which killed workers by suffocation (or heart failure or pneumonia) (12). Such was the prevalence of asbestosis that the British government launched an inquiry (13), which in 1931 resulted in government medical examinations, workmen's compensation, and dust regulations. The carcinogenic potential of asbestos then began emerging (14). By the 1940s, the company doctor at Cape Asbestos in London, Hubert Wyers (15), accepted that there was a lung cancer risk for asbestos workers—a hazard confirmed by an epidemiological study of T&N's Rochdale workforce (16).

By the end of the 1950s, therefore, U.K. asbestos companies operated under specific health and safety regulations for asbestosis (and they also had scientific evidence of asbestos-related lung cancer). Their compliance with these controls was often variable and so too was enforcement by the Factory Inspectorate (6, 7). Nevertheless, a basic regulatory framework of dust control, medical surveillance, and compensation existed in the United Kingdom from 1931. What was the situation in South Africa?

ASBESTOS-RELATED DISEASE IN SOUTH AFRICA: THE EMERGENCE OF ASBESTOSIS

Compared with gold or diamonds, asbestos mining in South Africa was a relatively small industry. The mines were isolated and the workforce was overwhelmingly black or Colored. South African scientists therefore had little incentive to study occupational disease among asbestos miners. Public health authorities showed little interest, and not until the mid-1950s did the issue of dust in asbestos mines appear with any regularity in official correspondence. By contrast, the dangers of working (and breathing dust) underground had been

Cape_Receiver_00124640

known for centuries (17). By 1900, South Africa's large gold mining industry was well aware of the dangers of silica dust, and companies knew in theory how to prevent pneumoconiosis (knowledge that could have been useful in the asbestos industry). Consequently, T&N, GEFCO, and Cape could draw upon the accumulated knowledge within the gold industry or the Department of Mines.

Asbestos mining proved particularly dusty. Unlike other minerals, asbestos was milled dry, thereby increasing dust. The host ore associated with crocidolite and chrysotile was particularly abrasive and would wear out ducting in hours. Thus as production levels rose, so did dust emissions. The impact was soon noted by the mining companies and the Department of Mines, with their access to local knowledge. The first published study (in 1928) of asbestosis among mine workers was written by F. W. Simson of the South African Institute for Medical Research (SAIMR) (18). He used post-mortem material from four men, which had been forwarded by the chief medical officer at T&N's Shabanie mine in Southern Rhodesia (19). Simson described how exposure caused serious pulmonary disability, but suggested that processing rather than mining was the major problem. He was concerned that in South Africa, asbestos was being used increasingly in cement products and that many factories were dusty. In response, the Chief Inspector of Factories approached the Miners Phthisis Bureau. The bureau proposed a system of voluntary examinations for workers in the fabricating industry (20). Bureau officers then visited the Asbestos Products Ltd. factory in Johannesburg and examined eight black workers, who were employed mixing cement and fiber in what was described as "a dirty environment." The only man to have been employed for more than one year was found to have "some consolidation in the upper lung" (21). There were no specific asbestos regulations, and the inspectorate relied upon voluntary compliance to reduce dust. Although no attempt was made to survey the mines, the correspondence certainly shows that by 1928 the Department of Mines, which was responsible for the Miners Phthisis Bureau, had reason to be abreast of the current medical literature. For example, letters refer to a paper by I. G. Ross on asbestos mining and wet milling, which was discussed at the Second (Triennial) Empire Mining and Metallurgical Congress in Quebec on September 5, 1926 (22).

Even had the asbestos industry not been prompted by the government, it had its own research and experience. George Slade was a medical officer at a large chrysotile mine in the Transvaal (almost certainly T&N's New Amianthus) during the late 1920s. The mill alone employed 100 workers, making it one of the largest asbestos mills in the country. Few asbestos mines in the 1930s had dressing stations to treat workers injured in accidents, let alone a resident physician. Having noticed what he believed was a high incidence of ARD among the mill workers, Slade approached management about conducting research. The company agreed, perhaps with the blessing of head office in the United Kingdom, and Slade began work on an M.D. thesis (23). Between 1926 and 1930, Slade examined the working conditions at the mine, the incidence of disease, and the

Cape_Receiver_00124641

effects of continued inhalation of dust. There were no X-ray facilities, so Slade conducted a careful physical examination of each worker. As Professor A. C. Davies (formerly Director of the National Centre for Occupational Health in Johannesburg) suggested to one of the authors (J.M.), the poor quality of contemporary X-ray equipment meant that Slade's method was probably more accurate. He listened to each patient's chest and examined each subject for changes in weight and skin tone, using illnesses such as bronchitis as indicators of ARD. The highest rates of disease were in mill workers and the lowest among those employed in surface jobs.

The mill was choked with dust, so that objects were "indistinguishable . . . at a distance of a few yards" (23). The mill never stopped, so the dust never settled, and thick clouds of it spread throughout the building and clung to "the hair, face and clothing of the workers whom it eventually covers with a uniform white film" (23). The men worked eight-hour shifts and were continuously exposed to airborne fiber. Not surprisingly, the sputum of almost all mill workers contained asbestos "bodies" (fibers coated with proteins by the lungs' defense mechanisms); 72 of the 100 had shortness of breath, the classic symptom of asbestosis. Most had lost weight (23). The only worker who wore a respirator in the mill, a white miner, had lung fibrosis. The most frequent symptom was a persistent cough, which was universal in the workers examined by Slade and was associated with fibrosis. Of the 12 "illustrative cases" cited by Slade, for which he had a work history and clinical profile, 10 were migrant workers from Mozambique, Swaziland, or Malawi. This suggests that most employees were migrants (23). We know from the later period that it was management policy in amosite and crocidolite mines to sack sick workers, who would then be sent home to die.

Slade's thesis was notable in two respects: it was the first M.D. thesis completed at Witwatersrand University, and it was the first detailed study of occupational disease among asbestos miners. Examining the bodies of black miners so carefully was unusual for a white physician in South Africa (but then Slade seems to have been an unusual man). He obviously wanted management to improve work conditions. Having found evidence of ARD in 70 percent of mill workers, Slade recommended periodic X-rays of any man who showed signs of disease. The findings were potentially disastrous for T&N and had relevance to Cape and GEFCO. The medical research community in Johannesburg at that time was very small, and the thesis was readily available to officers from the Departments of Mines and Health, both of which had a statutory responsibility for asbestos miners.

In 1931 Slade was the only trained specialist in South Africa working on ARD. Yet, having completed that work, he left T&N almost immediately, never published his research, and spent the next 15 years in general practice in Johannesburg before retiring to the Channel Islands. Possibly Slade's commercially damaging research proved unacceptable to his employers, or he became disillusioned. Faced with his thesis—and the evidence of Merewether and Price (13) in the United Kingdom and the beginnings of asbestosis litigation in the

Cape_Receiver_00124642

United States (2)—T&N should have closed the New Amianthus mill (or reduced dust) and closely followed up Slade's pioneering work. It did neither. As South African occupational health experts have highlighted, "Incredibly, Slade's study, the first of any local asbestos mine or manufacturing operation, was also the last study of chrysotile mines and mills in South Africa. To this day [1994] no further study of disease in a local chrysotile mine has been published, and the authors are unaware of any published studies" (24).

Consequently, Slade's thesis in 1930 marks a divergence between two occupational health practices. On the one side were conditions in the U.K. factories and lagging trades operated by T&N, Cape, and GEFCO (the latter being linked to Central Asbestos, a manufacturer in London). Despite the introduction of government regulation in 1931, we know that these remained dangerous, both in the factories and especially in the lagging trades (where government regulation mostly did not apply). But at least for some workers in the asbestos textile division (such as T&N in Rochdale and Cape in Barking), dust conditions were steadily improved and some monitoring of workers by the government continued. On the other side, conditions in South Africa remained appalling (4). The companies were fully aware of this. But mining in South Africa was highly profitable because of the low labor costs and the industry's facility in avoiding legislation. Like its U.K. competitors, T&N wished to continue taking advantage of that situation. From 1931, T&N decided to continue to run a filthy mill in South Africa, a decision made with the tacit agreement of the Department of Mines Inspectorate. It was not until 1968, almost 40 years after the Merewether and Price study and more than 70 years after asbestos mining began in South Africa, that asbestosis was mentioned in a Department of Mines annual report (25). That decision in 1931 condemned successive generations of South African mine workers to disease and disability.

In contrast to the documentation about the industry's behavior and the extent of ARD in the United Kingdom and United States, evidence on working conditions in the South African asbestos mines is sparse. Most of T&N's South African records appear to have been destroyed (26). Cape Asbestos has never produced a substantial archive in litigation, and most of its records, including those of its South African operations, are also apparently lost or destroyed. Nevertheless, the evidence that has survived is damning.

In 1949, as part of the first survey of the north-east Transvaal, Dr. Gerrit Schepers of the Silicosis Medical Bureau visited Penge mine. He later described how he found "young children, completely included within large shipping bags, trampling down fluffy amosite asbestos, which all day long came cascading down over their heads. They were kept stepping lively by a burly supervisor with a hefty whip. I believe these children to have had the ultimate of asbestos exposure. X-ray revealed several to have radiologic asbestosis with cor pulmonale before the age of 12" (27).

CASAP, which ran Penge, was British owned and therefore, in Schepers' view, knew about the dangers of asbestos. Schepers was living in the United States when

Cape_Receiver_00124643

he made these comments, but he was immediately threatened with a libel action from Cape Asbestos (28).[1] At the time, the government responded by temporarily closing the mill, but overall conditions in the industry did not improve. Schepers found that asbestosis was almost universal in long-serving workers at the Barberton mill on the border between South Africa and Swaziland (28). This mill processed fiber from T&N's Havelock mine. In 1950, T&N directors visiting the company's Rhodesian mines noted that asbestos tailings polluted the environment and that dust conditions in many mills left a "lot to be desired" (6). This was partly due to the rapid rise in demand for fiber worldwide, which meant that the mines needed to operate at full capacity, despite problems with shortages of labor and materials. T&N's misgivings about working conditions were private ones: its annual reports extolled the mines for their technical excellence, harmonious race relations, commitment to African advancement, and a "full social life," with tennis courts and golf courses.

The various regulatory authorities were not impressed. In June 1952, Dr. G. B. Peacock (29), an assistant health officer with the Department of Native Affairs, reported on conditions in the Northern Transvaal. Peacock was well informed about asbestosis, and he believed that the main hazard came from small asbestos fibers rather than host rock dust. He too found that the mills were filthy, and he was shocked to see so many juveniles processing fiber. Inadequate exhaust ventilation actually sucked the fiber past the faces of workers bent over sacks. Peacock examined 26 black workers including five women; he found lung disease in six, of whom three had probably sustained their disability from their current employment. "The one of these three who had been employed on the asbestos mine for the shortest period," wrote Peacock, "had been doing this kind of work for the past seven months" (29). More than 20 years earlier, Merewether and Price had found that in British factories it took at least eight years of heavy exposure to produce asbestosis! Peacock also referred to the common practice of sacking employees once they showed signs of disease as "despicable." With no X-ray units on the fields, employers made such decisions on the basis of symptoms, such as shortness of breath and chronic coughing.

ASBESTOS-RELATED DISEASE IN SOUTH AFRICA: THE EMERGENCE OF THE CANCER THREAT

Until the 1950s, the United Kingdom and South African asbestos industries, despite their close commercial links, operated in isolation as regards ARD. Medical and company knowledge in the United Kingdom counted for little in Africa, while any health lessons that could be learned from the mines were ignored at head office. For example, there is no mention of Slade in T&N papers that survive from the 1930s. However, by 1960 the knowledge of ARD was becoming

[1] Schepers kindly provided his memoir (28) to one of the authors (G.T.).

Cape_Receiver_00124644

much more integrated. This was partly due to the increasing closeness of the medical community, facilitated by faster telecommunications and by jet travel. But it was also due to the irresponsibility of the asbestos industry in South Africa, which by providing a perfect "test tube" for asbestos cancers helped detonate an "asbestos bomb" in the mid-1960s. ARD subsequently became a topic of world concern.

In the United Kingdom in the late 1950s, the number of asbestosis cases began rising sharply—the long-term result of the industry's failure to control dust and the inadequacies of government regulation. Lung cancer was also occurring more frequently among asbestos workers. Increasingly, these lung cancer cases involved malignancy of the pleura (the lining of the chest)—a type of cancer described in the early literature as "endothelioma." In the 1940s, pleural cancers were observed in Germany (30) and in the United Kingdom, where Cape Asbestos (31) and the Chief Inspector of Factories (32) logged cases. More evidence accumulated during the early 1950s, when the term "mesothelioma" was increasingly used and when peritoneal cancers in asbestos workers were also highlighted by T&N's consultant pathologist, Matthew Stewart (33). The significance of pleural changes was also noted in South Africa. Schepers found in a 1949 study of workers in the north-eastern Transvaal that several had marked pleural sclerosis. Schepers saw several such mesotheliomas from North American workers, when he was resident at the industry-sponsored Saranac Lake facility in upstate New York in 1949 (2). He later wrote: "After I saw my first example of pleural mesothelioma, I 'knew' what had occurred" (27). However, mesothelioma excited little interest, because it was still such a rare disease; there was no appreciation that it could be caused by trivial exposure.

The events that forced mesothelioma into world prominence began in South Africa. In 1954, the South African government appointed a young pathologist, Dr. Christopher Wagner (1923–2000), as an asbestos research fellow to the Pneumoconiosis Research Unit (PRU) in Johannesburg. Coincidentally, mesothelioma cases were appearing in significant numbers at West End Hospital, a chest diseases facility at Kimberly, close to the asbestos fields of the northern Cape. In 1929, Simson at the SAIMR had described a "malignant pleural endothelioma" (24), but Wagner was the first South African scientist in a generation to study asbestos and follow up this work. Initially the industry was cooperative. In September 1958, Wagner visited the head offices of CASAP in Johannesburg and was granted access to Cape's mine and mills (34, 35). The material Wagner gathered proved invaluable in writing his Ph.D. thesis, the results of which he soon shared with the industry. While in the United Kingdom on sabbatical in 1958, Wagner visited T&N in Rochdale (where he met the company physician, Dr. John Knox, and other managers) and Cape Asbestos's Barking factory, where he met with officials that almost certainly included Cape's senior medical officer Walter Smither (36). Wagner alerted them to the link between mesothelioma and crocidolite.

Cape_Receiver_00124645

In 1959 Wagner presented a paper to the Pneumoconiosis Conference in Johannesburg (37), in which he described how he had made a connection between mesothelioma and asbestos. He ended his paper with the warning that a very serious hazard may exist on the asbestos fields. Within days of the conference the asbestos industry approached the South African Council for Scientific and Industrial Research, the major state scientific research body in South Africa, to establish an asbestos research project. While negotiations for the survey were in progress, Wagner and his colleagues Kit Sleggs and Paul Marchand submitted a paper in April 1960 to the *British Journal of Industrial Medicine* (38). The article was based on an analysis of 30 cases of pleural mesothelioma, with all but one patient having a proven exposure to Cape blue asbestos. It became one of the classic occupational health studies of the 20th century.

The Government Mining Engineer accepted the link between asbestos and mesothelioma and asked Ian Webster from the PRU to coordinate a survey of the north-west Cape (39). According to Webster, asbestos producers, including Cape, T&N, and GEFCO, provided £25,000. That is the figure cited many years later by Justin Mackeurtan, of Cape Asbestos, but is far in excess of the R8,000 (about £4,000) acknowledged officially (39). According to the official estimates, in the first year the project cost R12,000, of which the asbestos industry contributed R8,000 and the South African Cancer Association R4,000 (40, 41). Whatever the level of funding, the industry's contribution enabled it to decide the PRU survey's fate, after it was conducted between November 1960 and February 1962. The terms of reference were to study the incidence of mesothelioma and the possible relationship between asbestos dust, mesothelioma, and asbestosis. In April 1962 the interim report was completed (although the final version did not appear until July 1964). The survey covered a total of 2,389 residents drawn from the mining towns of Prieska, Koegas, Kuruman, and Penge, The PRU took 1,018 X-rays of adult residents, only a minority of whom had worked in the mines. The results identified a hazard for every person who lived in those towns, and tests for fiber in the sputum also revealed high levels of exposure (42). The study identified four new cases of mesothelioma—a disturbing discovery in such a tiny population, especially since the people of Prieska, Koegas, Kuruman, and Penge were contracting asbestosis from *environmental* exposure.

The industry's response was decisive. The Northern Cape Asbestos Producers Advisory Committee attacked the survey's methodology and protested that the "whole survey appears to have been undertaken with the underlying object of implicating Crocidolite asbestos as being directly responsible for the comparatively rare tumour known as mesothelioma of the pleura" (43). All funding by industry and the South African Cancer Association was canceled and the project was abruptly halted. In his annual report in March 1962, the PRU director Dr. I. G. Walters noted that three factors had ended the survey: the reaction by certain members of parliament and the subsequent scare campaign in the

Cape_Receiver_00124646

press; the asbestos companies' concern about recruiting labor; and the industry's refusal to support further research (44). The existing results were then finalized under an arrangement whereby "such a 'report' would not be published or made available outside the Unit, other than to sponsors and the various members of the working committees that had been concerned with the conduct of the 'survey'" (45). The results were then suppressed and all research in the north-west Cape ceased. When a final report was completed in 1964, virtually all reference to mesothelioma was erased.

It is easy to demonstrate how successful the industry was in suppressing the PRU survey. In 1974 Dr. Bill Harrison, from the PRU, began research with Dr. Jennifer Talent into mesothelioma in the northern Cape. Ian Webster, who was then the director, and Bill Harrison both knew how much mining was harming those communities. Webster had seen the PRU's research aborted in 1962, while Harrison's father, Oliver Harrison, who worked for Cape at Koegas and Pomfret, had died from mesothelioma. However, what looks like a follow-up to the 1962 and 1964 report was nothing of the sort. Neither Harrison nor Talent were shown the PRU's results or told of its existence (46, 47). It was as if those reports had never existed.

They also had no impact in the United Kingdom. Once South African pathologists had provided the flash of insight, Cape and T&N were well placed to address mesothelioma in the United Kingdom. Wagner knew little about the disease burden in Britain and stated in 1959 that he could find only one mesothelioma in the literature (at T&N, cited in 16). But he and his colleagues in their research published in 1960 had not cited Wyers, or Stewart, or Wedler, or looked at published Factory Inspectorate data. They also did not appreciate that by the early 1960s the asbestos companies themselves already had records of several pleural and peritoneal malignancies in their medical case files, some dating from the 1930s (6, 48). Moreover, Cape and T&N had the resources to investigate the problem through the Asbestosis Research Council (ARC), a privately sponsored organization that had been launched in 1957 (49). Their reaction to the PRU work is instructive. In June 1962, within weeks of the completion of the PRU report, Cape's medical officer, Dr. Walter Smither, was dispatched to South Africa. He made a three-day visit to the mines (and a four-day tour of game parks), confirming the severe dust conditions in the mills and the ARD problem (alongside other illnesses such as scurvy). Having read the PRU report, Smither saw clearly the financial stakes for his company (and the whole industry) as regards mesothelioma. He did not recommend further research (or a drastic improvement in dust conditions): instead, he belittled the PRU researchers, and his only suggestion was that ten mesothelioma sufferers in Prieska should be removed from the "area of conflict . . . and taken some hundred miles away" to Johannesburg (50). Within days of his return to the United Kingdom, Smither met with the ARC; yet the minutes of that meeting in July 1962 make no mention of mesothelioma or South Africa, though Smither and his fellow scientists did

Cape_Receiver_00124647

agree that labeling imported bags of fiber with a health warning was "completely unnecessary, impracticable and undesirable" (51).

It was another three years before mesothelioma hit the headlines in the United Kingdom, when independent studies by Dr. Irving Selikoff in New York and Dr. Molly Newhouse (52) in London alerted the public to the threat of the "killer dust." Cape Asbestos had supplied some of the data for the Newhouse study, but the findings were particularly damaging for the company. Cape's Barking factory was in the heart of this London "area" and was clearly associated with many of the mesotheliomas listed, which included nonoccupational cases. Yet Cape told its shareholders as little about the dangers of asbestos as it did its employees. One can read Cape's annual reports between 1956 and 1966 and be oblivious to the ever-darkening cloud of disease and litigation gathering over the industry. Similarly, T&N's published annual reports made no mention of the growing problems of ARD until 1968. To the public and its customers, T&N denied that there was any proof that asbestos caused mesothelioma and dismissed Wagner's work as no more than "statistical theory."

CONCLUSION

Double standards continued to operate in the South African asbestos mines into the 1970s, when the gap between U.K. and overseas safety practices was as wide as ever. Aside from the fact that asbestos companies were obliged to comply with increasingly stringent fiber thresholds in the United Kingdom (whereas there was little attempt even to count dust levels in South Africa), it was in their policy toward crocidolite that the U.K. companies demonstrated their indifference to workers abroad. The U.K. industry agreed to cease importing blue asbestos in 1970, because it was so dangerous; yet it was mined in South Africa into the 1990s.

In the late 1970s, a clean-up of sorts was launched with the introduction of the first ever dust counts and a number of modest epidemiological studies. For example, T&N sent its own physician, Dr. Hilton Lewinsohn, to the mines in 1976. His damning reports on dust conditions have survived in the T&N archives. A study of ARD at the Havelock Mines, completed by 1979, showed that asbestosis was rife throughout the community (53). Crocidolite mines and mills operated by Cape remained equally dusty and dangerous (54).

This clean-up policy—when U.K. medical knowledge was at last made available to South Africans—was not the result of any new-found concern for black workers. It was largely a public relations exercise forced on the companies by the media and the respective governments, which in turn reacted to pressure from labor and various nongovernmental organizations. In London, conscientious shareholders began asking searching questions about ARD at Cape's annual meetings, and were staggered to learn that five black South Africans a week were being incapacitated by asbestosis (55). In 1974, a U.K. government inquiry confirmed that T&N and Cape were among several companies that paid

Cape_Receiver_00124648

indigenous workers below the poverty level and operated wage discrimination (56). Television documentary makers then targeted the asbestos companies. In 1981, one documentary, "Dust to Dust," highlighted the mesothelioma problems in Cape Asbestos's South African mines (3, 57).

But the first major improvements in health standards came only with the emergence of black trade unions in the early 1980s, by which time the industry was already in its twilight. The U.K. companies were about to apply the most effective company medicine known for ARD—selling or closing the mines. Cape, T&N, and GEFCO willingly abandoned their workings, leaving a polluted environment and a legacy of ARD, the scale of which is only now becoming apparent. South Africa is a poor country and can ill afford to clean up the mining landscapes of the Northern Cape, North West Province, and Limpopo Province. In November 1998, a National Parliamentary Asbestos Summit was held in Johannesburg to address the legacy of pollution and ARD bequeathed by British companies and their subsidiaries. Since then, more than R100 million of public money has been spent on reducing the risk to former miners and their families. Much work remains to be done, and whole communities, and most especially children, still live daily with the risk of mesothelioma.

In retrospect, two things appear important. First, as commentators have noted, it is the application of such double standards by multinational companies "that gives the lie to the efficacy of self-regulation" (24). The U.K. asbestos companies proved incapable (or reluctant) to apply even the most basic standards of hygiene in South Africa. This was a particularly telling offense, because these firms were not backstreet affairs, but blue chip companies. Ultimately, only government regulation was capable of compelling them to adopt better health standards, making the need for improved control of multinationals self-evident. Increased accountability of these companies is also necessary, because since leaving South Africa they have not hesitated to use complex and confusing corporate structures to distance themselves from legal liability. It took a long legal battle before 7,500 South African plaintiffs and their lawyers succeeded in bringing a class action suit against Cape in London (58). Begun in 1997, the action resulted in a modest settlement in 2003, when the owners of Cape agreed to pay £7.5 million compensation, after initial promises of a £21 million trust were broken. The Cape settlement, though, may have wide-ranging implications for multinationals based in the European Union. The Brussels Convention on jurisdiction, which applies to all E.U.-based companies, stipulates in article 2 that the place of jurisdiction of a case is the country of domicile of the parent company. By contrast, the way in which Cape was able to argue for years in the English courts over where the case should be tried shows that many legal ambiguities await resolution and that the legal control of multinationals as regards health and safety is still in its infancy (59).

Second, the operation of double standards resulted in a tragic lost opportunity between 1955 and 1965. The South African mining communities were unique,

Cape_Receiver_00124649

because ARD could not be studied so easily elsewhere. The only crocidolite mine outside South Africa, at Wittenoom in Western Australia, was small and operated for only 20 years until its closure in 1966, when the labor force dispersed and there was no community to study (60). By 1966 asbestos had been mined in the northern Cape for more than 70 years. Large communities lived in the 400-mile strip from Pomfret to Prieska. It was the ideal place and time to research ARD and launch the PRU survey. Levels of production were still modest, and the heaviest investment in new mines and mills by GEFCO and Cape Asbestos had yet to happen. If the mines had to close, the industry's losses could have been minimized, while the numbers of people exposed in mining, processing, transport, and manufacture would have been relatively small. It is worth reflecting upon what could have happened if the industry had not sabotaged the PRU research. If the survey had been completed and made public, the mining of crocidolite and amosite could have ended by the mid-1960s, thereby pushing the global asbestos industry into terminal decline. Consequently, the burden of disease in South Africa itself, and in every country that imported South African fiber, would have been greatly reduced.

REFERENCES

1. Brodeur, P. *Outrageous Misconduct.* Pantheon Book, New York, 1985.
2. Castleman, B. I. *Asbestos: Medical and Legal Aspects,* Ed. 4. Aspen Law and Business, Englewood Cliffs, N.J., 1996.
3. Flynn, L. *Studded with Diamonds and Paved with Gold: Miners, Mining Companies and Human Rights in Southern Africa.* Bloomsbury, London, 1992.
4. McCulloch, J. *Asbestos Blues: Labour, Capital, Physicians and the State in South Africa.* James Currey, Oxford, 2002.
5. Wikeley, N. *Compensation for Industrial Disease.* Dartmouth Publishing, Aldershot, U.K., 1993.
6. Tweedale, G. *Magic Mineral to Killer Dust: Turner & Newall and the Asbestos Hazard.* Oxford University Press, Oxford, 2000.
7. Johnston, R., and McIvor, A. *Lethal Work: A History of the Asbestos Tragedy in Scotland.* Tuckwell, Glasgow, 2000.
8. Hertz, N. *The Silent Takeover: Global Capitalism and the Death of Democracy.* Free Press, New York, 2001.
9. Cape Asbestos Company Ltd., Diamond Jubilee. *Asbestos,* July 1953, pp. 7–8.
10. Deposition of Geoffrey Higham: In re: asbestos personal injury cases, Arrington lead No. 93-9-114 Civil Action no. 93-9-1114: 167–8. London, October 24, 1996.
11. Chief Inspector of Factories. *Annual Report . . . for the Year 1898,* Part 2, p. 171. HMSO, London, 1899.
12. Greenberg, M. Cape Asbestos, Barking, health and environment: 1928–1946. *Am. J. Ind. Med.* 43: 109–119, 2003.
13. Merewether, E. R. A., and Price, C. W. *Report on Effects of Asbestos Dust on the Lungs and Dust Suppression in the Asbestos Industry.* HMSO, London, 1930.
14. Tweedale, G. Asbestos and its lethal legacy. *Nature Rev.Cancer* 2: 311–315, 2002.
15. Wyers, H. That Legislative Measures Have Proved Generally Effective in the Control of Asbestosis, pp. 89–90. M.D. thesis, Glasgow University, 1946.

Cape_Receiver_00124650

16. Doll, R. Mortality from lung cancer in asbestos workers. *Br. J. Ind. Med.* 12: 81–86, 1955.
17. Morgan, W. K. C., and Seaton, A. *Occupational Lung Diseases,* Ed. 3, p. 1. W. B. Saunders, Philadelphia, 1975.
18. Simson, F. W. Pulmonary asbestosis in South Africa. *BMJ* 1: 885, May 26, 1928.
19. Investigations of the asbestos mines. In *Report of the Commission to Study Silicosis and Other Industrial Pneumoconiosis,* p. 85. Government Printer, Salisbury, S.A., 1938.
20. Department of Labour. Memo: Chief Inspector of Factories to the Secretary for Mines and Industries, 15/9/1928. In *Chief Inspector of Factories ARB CF 16/10/3, vol. 912.* National Archives of South Africa, Pretoria.
21. Department of Labour. Report: L. G. Irvine, Chair Miners' Phthisis Medical Bureau to Chief Inspector of Factories, 9/11/1928. In *Chief Inspector of Factories ARB CF 16/10/3, vol. 912.* National Archives of South Africa, Pretoria.
22. Department of Labour. Memo: K. Leinberger, Deputy Inspector of Mines to Inspector of Mines, Johannesburg, 11/1/1929. In *Chief Inspector of Factories ARB CF 16/10/3, vol. 912.* National Archives of South Africa, Pretoria.
23. Slade, G. F. The Incidence of Respiratory Disability in Workers Employed in Asbestos Mining with Special Reference to the Type of Disability Caused by the Inhalation of Asbestos Dust. M.D. thesis, University of Witwatersrand, 1930.
24. Felix, M. A., Leger, J.-P., and Ehrlich, R. I. Three minerals, three epidemics—Asbestos mining and disease in South Africa. In *Advances in Modern Environmental Toxicology, Vol. 22: The Identification and Control of Environmental and Occupational Diseases: Asbestos and Cancers,* ed. M. A. Mehlman and A. Upton, pp. 265–286. Princeton Scientific, Princeton, 1994.
25. Department of Mines and Industries. *Annual Report for the Year Ending 31 December 1968.* Government Printing and Stationery Office, Pretoria, 1969.
26. Tweedale, G. Sources in the history of occupational health: The Turner & Newall archive. *Soc. Hist. Med.* 13: 515–534, 2000.
27. Schepers, G. W. H. Comments on G. K. Sluis-Cremer, Asbestosis in South Africa—Certain geological and environmental considerations. In *Ann. N.Y. Acad. Sci.* 132(1): 246–247, December 1965.
28. Schepers, G. W. H. Adventures in Toxicology, pp. 256–257. Typescript memoir, n.d.
29. Peacock, G. B. Report on Health Conditions at Asbestos Mines to Pietersburg . . . assistant health officer, June 1952. NTS 2258 695/280 Vol. 1. South African National Archives, Pretoria.
30. Wedler, H.-W. Uber den lungenkrebs bei asbestose [asbestosis in lung cancer patients]. *Archiv fur Klinische Medizin* 191: 189–209, 1943.
31. Wyers, H. Asbestosis. *Postgrad. Med. J.* 25: 631–638, December 1949.
32. Chief Inspector of Factories. *Annual Report . . . for the Year 1947.* HMSO, London, 1949.
33. Bonser, G. M., Faulds, J. S., and Stewart, M. J. Occupational cancer of the urinary bladder in dyestuffs operatives and of the lung in asbestos textile workers and iron-ore miners. *Am. J. Clin. Pathol.* 25: 126–134, 1955.
34. Wagner, C. Interview with J. McCulloch, Weymouth, Dorset, March 22, 1998.
35. Pneumoconiosis Research Unit. Visit to head offices of Cape Blue Asbestos company, Johannesburg, J. C. Wagner, 30/9/1958, General Arrangements, The MS Survey Files 1201/1. National Centre for Occupational Health Papers, Johannesburg.

Cape_Receiver_00124651

36. Pneumoconiosis Research Unit. The Pneumoconiosis Research Unit annual report for the year 1 April 1957 to 31 March 1958. Council for Scientific and Industrial Research. National Centre for Occupational Health Papers, Johannesburg.
37. Wagner, J. C. Some pathological aspects of asbestosis. In *Proceedings of the Pneumoconiosis Conference, Held at the University of the Witwatersrand, Johanneshurg, 9–24 February 1959,* ed. A. J. Orenstein, pp. 373–382. J. A. Churchill, London, 1960.
38. Wagner, J. C., Sleggs, C. A., and Marchand, P. Diffuse pleural mesothelioma and asbestos exposure in the north west Cape Province. *Br. J. Ind. Med.* 17: 260–265, 1960.
39. Brammfontein, I. W. Interview with J. McCulloch, Johannesburg, December 4, 1997.
40. Pneumoconiosis Research Unit. PRU Field Survey in the North West Cape and at Penge in the Transvaal (Asbestosis and Mesothelioma). PRU report no. 1/64, p. 3. Council for Scientific and Industrial Research, 1964. National Centre for Occupational Health Papers, Johannesburg.
41. Mackeurtan, J. Deposition of Justin Mackeurtan 19/11/1996, Johannesburg, in re: asbestos personal injury cases, Arrington lead no. 93-9-114 Civil Action no. 93-9-1114, p. 234.
42. Pneumoconiosis Research Unit. Report on the progress of mesothelioma survey as at 30 April 1962, pp. 2–3. Council for Scientific and Industrial Research. National Centre for Occupational Health Papers, Johannesburg.
43. Pneumoconiosis Research Unit. PRU 5th annual report for year ending 31 March 1963. Council for Scientific and Industrial Research. National Centre for Occupational Health Papers, Johannesburg.
44. Pneumoconiosis Research Unit. PRU 4th annual report for year ending 31 March 1962. Council for Scientific and Industrial Research. National Centre for Occupational Health Papers, Johannesburg.
45. Walters, I. G. Covering letter 23 June 1964. Field survey in the North West Cape and at Penge in the Transvaal. Asbestosis and Mesothelioma Pneumoconiosis Research Unit report no. 1/64. Council for Scientific and Industrial Research. National Centre for Occupational Health Papers, Johannesburg.
46. Harrison, B. Interview with J. McCulloch, Killara, Sydney, October 15, 1999.
47. Talent, J. Interview with J. McCulloch, Fish Hoek, South Africa, December 16, 1999.
48. Enticknap, J. B., and Smither, W. J. Peritoneal tumours in asbestosis. *Br. J. Ind. Med.* 21: 20–31, 1964.
49. Tweedale, G. Science or public relations? The inside story of the Asbestosis Research Council. *Am. J. Ind. Med.* 38: 723–734, 2000.
50. Smither, W. Visit to South Africa, 1962. Barking, August. National Centre for Occupational Health Papers, Johannesburg.
51. Minutes of 19th Meeting of Research Committee of ARC, Cambridge, 12 July 1962. Chase Manhattan Bank microfilm of T&N archive (in possession of G.T.), reel 81, frames 1830–35.
52. Newhouse, M. L., and Thompson, H. Mesothelioma of pleura and peritoneum following exposure to asbestos in the London area. *Br. J. Ind. Med.* 22: 261–269, 1965.
53. McDermott, M., et al. Lung function and radiographic change in chrysotile workers in Swaziland. *Br. J. Ind. Med.* 39: 338–343, 1982.
54. Botha, J. L., Irwig, L. M., and Strebel, P. M. Excess mortality from stomach cancer, lung cancer and asbestosis and/or mesothelioma in crocidolite mining districts in South Africa. *Am. J. Epidemiol.* 123(1): 30–40, 1986.

Cape_Receiver_00124652

55. Batty, A. South African asbestos workers (letter). *Times* (London), July 26, 1971.
56. House of Commons Expenditure Committee. *Fifth Report . . . on Wages and Conditions of African Workers Employed by British Firms in South Africa.* HC 116, 78–9; *Memoranda* HC 21-IV, pp. 754–63, 1973–4. London.
57. World in Action. Dust to Dust. Transcript, November 16, 1981. Chase Manhattan Bank microfilm, reel 30, frame 1712.
58. Dyer, C. South African asbestos victims win £21m. *Guardian* (London), December 22, 2001.
59. Meeran, R. The buck stops somewhere else. *Guardian* (London), December 6, 1999.
60. McCulloch, J. *Asbestos: Its Human Cost.* University of Queensland Press, St. Lucia, 1986.

Direct reprint requests to:

Dr. Geoffrey Tweedale
Centre for Business History
Manchester Metropolitan University Business School
Aytoun Street
Manchester M1 3GH
United Kingdom

e-mail: g.tweedale@mmu.ac.uk

Cape_Receiver_00124653