FILE NAME: Colonial Sugar Refinery (CSR)

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IV. KNOWLEDGE OF ASBESTOS DISEASES

G. DEFENDANTS' KNOWLEDGE

(1) KNOWLEDGE OF CSR AS INDUSTRIAL ORGANISATION

4.256 During the period 1943-1955 the CSR group of companies was engaged in a range of industrial activities in which dust was generated, including sugar milling, quarrying, cement manufacture, plaster milling, hardboard manufacture (Vernon T6055 and 6056) and asbestos sheet manufacture (see King at T9217-9219) . It is also evident that considerable expertise was available within the company which was utilized in the design and construction of dust control equipment, eg, the dust control equipment in the Caneite factory for collecting sawdust (ex 526) which was constructed in the early 1940s (Brown T7448). There were, as of the mid-1950s, approximately 80 design and construction engineers on the CSR staff (Vernon T6072). Since the need for dust control was a basic principle of designing industrial plants, there can be no doubt that there was within the CSR group an awareness of the dangers to the health generally of workers exposed to industrial dust (Vernon T6055 and 6056).

4.257 Engineering texts and handbooks of the relevant times were replete with references to the general hazard to health dust exposure presented (see for example exs 89a, 89b, 89c, 89d, 89e, ex 189, ex 590). Those and other material containing references to the health hazards of asbestos libraries at relevant times (ex 369 appendix 12B) and were used by engineers of the day (Basden - ex 188 pp 5-6).

(2) GENERAL ENGINEERING KNOWLEDGE OF DUST HAZARD

4.258 It is also not in dispute that the men principally involved from a technical point of view with the design

and development up to 1955 of the Wittenoom mill, namely Broadhurst, Brown and King, were all experienced engineers (as to Broadhurst - Brown T6861-6862; Brown - ex 542; King - ex 687), each of whom ought to have had at least the general knowledge of industrial engineers as to the health dangers of dust exposure. Brown has recorded his awareness at the time the Wittenoom mill was being developed. In a report dated December 1944 on his visit to Wittenoom Brown stated in relation to the mill (ex 92, p5) :

> "Dust. No serious attempt to eliminate dust has been made and those concerned are awaiting the arrival of the dust collecting equipment which is on order. The dust is very, very bad and is aggravated on windy days by the open buildings which allows grit, dust and fibre to be blown off the belt conveyors and screens. The main sources of dust are the No 2 crusher, the rolls, the Rotex screens, the cleaning trommel and the discharge from the waste bin. The mill is so dusty that it is definitely hazardous to health."

(See also Brown's description at T6887.)

4.259 However, the knowledge that CSR and ABA had of the hazards went beyond knowing that dust in general was a health risk and beyond having available material in which that information could be found. The evidence indicates that in addition responsible officers were aware at relevant times of the specific health hazards of inhalation of asbestos-bearing dust and further that during the period 1948-1955 specific warnings of health hazards posed by the Wittenoom operations were given to CSR and ABA. Separate consideration is given to what Brown and King indicated they knew of asbestos as a health hazard.

(3) INSTANCES OF SPECIFIC KNOWLEDGE OF ASBESTOS DISEASE RISKS

(a) Brown's Zeehan report

4.260 In December 1943 Brown visited the Zeehan asbestos mill run by the CSR subsidiary Tasmanian Asbestos Pty Ltd and prepared a report dated 14 December 1943 (ex 90). In commenting on the dust levels he mentioned that "a certain quantity of very fine asbestos dust" was discharged into the dust room, the need for replacement of the dust room with an efficient cyclone separator, and the fact that it was almost impossible to clean out the inner dust room without "a complete service respirator" (p8). He stated that it was "possible to walk freely about the mill without a dust mask unless one wishes to bend over a screen or tailings chute, where a dust mask is essential." He then recorded (at p9) :

> "I believe that the amount of asbestos and silica dust about would be injurious to health over a period and we must eliminate the nuisance."

In those passages Brown makes specific reference to asbestos in the dust and distinguishes asbestos dust from silica dust. His denial that he had made any such distinction (T7691-7692), it is submitted, is unconvincing.

(b) Broadhurst's letter re Dignam

4.261 In a letter dated 6 September 1946 from Broadhurst as Wittenoom manager to the ABA managing director, Broadhurst wrote, in relation to the mill foreman, I. Dignam : (ex 614)

> "When examined by the travelling laboratory some months ago Dignam showed signs of Asbestosis and it is probably advisable to get him away from the dust for a time if at all practicable."

Dignam worked as foreman in charge of the operation of the mill for four years up to July 1947 (ex 616). Broadhurst's letter was initialled by Brown, Baird and Springhall and bears a tick consistent with the practice of Powell to tick letters seen by him. [ie Ex 614]

4.262 Broadhurst's reference to asbestosis indicates that as of 1946 he was aware of the existence of it as a distinct disease. His reference to getting Dignam away from the dust indicates a knowledge of its cause. The letter appears not to have drawn any written comment from those who saw the letter.

4.263 Since the mill commenced operation in 1944 (Brown T7694) and the signs of asbestosis were detected "some months" prior to September 1946, Dignam's exposure to dust in the ABA mill could only have been for a short time. Brown recollected that Dignam also worked at the Nunyerry chrysotile mine (T7694-7695) but the evidence was inconclusive as to whether that was before or after he worked at Wittenoom (T7727). There is no evidence that Broadhurst or the officers in Sydney were prompted by Dignam's condition to make any inquiry of any sort into asbestosis or particularly the exposure required to induce it. Brown made no inquiries (T7694, 7696).

(c) Morgan/Young conversation

4.264 Young was employed at Wittenoom as an agency clerk from the end of 1948 (Young T397-398) and was there when Morgan took over as manager (T399) in about February 1949 (CSR board minute 26 January 1949). Morgan was an Englishman with experience in coal mining and treatment (King T9236). Young said that Morgan told him that asbestos was dangerous and that "it was a job for black people and

foreigners" (T423). Young was quite sure Morgan talked of asbestos diseases (T447). Young himself spoke to Dr Kyle in Perth in late 1949 about the dangers of asbestos diseases which he relayed to others (T447).

(d) Death of Tolson

4.265 The CSR board minutes of 4 January 1950 record that the death of mill shift boss Cyril Tolson by drowning at Wittenoom on Christmas Day was reported. Brown was acting manager at Wittenoom at the time and he reported the event (letter of 28 December 1949 - ex 558). Tolson had been employed from the beginning of the Wittenoom operations in 1943 (Brown T7731). Dr Saint performed a post mortem on 26 or 27 December 1949 (death certificate - ex 50 and see T1273/4-1275), the body having been stored in a coffin in a timber shed with a galvanized iron roof used for storing explosives (Brown T7730a). Saint had only a vague recollection of having done the post mortem and no specific memory of any conversation relating to it (T1273/4). Saint thought that in the circumstances in which the autopsy was carried out, the body would have been in a considerable state of putrefaction and "such refinements as looking for microscopic fibrosis would have been impossible in the circumstances" (T1275 and 1280-1).

4.266 Brown said that Broadhurst told him he had met Saint after the autopsy and had asked if there was any sign that Tolson's lungs had been affected by dust during his period in the mill (T7731). Brown said that Broadhurst related that Saint said there was no evidence that Tolson's years in the mill had affected his lungs (T7298).

4.267 There is scope for doubting that the conversations ever occurred. However, on the basis that Brown's recollections are accepted, it highlights that as of December 1949 Broadhurst was alert to the risk of lung fibrosis occurring in a person who spent time in the dusty environment of the mill. Given that individuals have different susceptibility to asbestos disease (Murray T8218), the absence of fibrosis would not be significant.

(e) CSR library materials

4.268 The CSR technical library acquired the index Chemical Abstracts (Batt report - ex 567, appendix 10A; and Vernon T6070 and 6506); Brown T7678). At relevant times this contained abstracts of significant articles relating to asbestos disease (see ex 567 appendix 8). Vernon used the index (T6070).

4.269 The library appears to have received a copy of the annual report of the Chief Inspector of Factories for 1947, published in January 1949 (ex 155). The discovered copy bears stamps indicating it was held by the library. The particular copy appears to have been circulated to CSR officers named Carver and Young. AGT Carver was a senior officer who was head of the sugar milling division and as at 1951 was a senior general executive officer and one of the five senior managerial officers of CSR (Vernon T6064). His name is mentioned in CSR board minutes in connection with an ILO conference to be held in 1950 (ex 643 - minutes of 4 January 1950). The high significance of the 1947 report in relation to the association of lung cancer and asbestos is considered above (para 4.75 et seq).

Also: Dreaker + Hatch
Dust a Dangerous - Davies (ex 189)

(4) GENERAL WARNINGS OF HEALTH HAZARDS

(a) AWU April-May 1948 complaints

4.270 By letter dated 19 April 1948 (part of ex 527) C T Oliver as Secretary of the Australian Workers' Union Westralian Branch - Mining Division advised the State Mining Engineer :

> "2. The process of extracting asbestos from quartzite rock is a dry process which is the cause of excessive dust. No adequate provision has been made by the management to effectively control the dust in the treatment plant. The result is that heavy clouds of dust are drifting through the plant, including the engine room, fitting shop and offices, in fact the whole atmosphere in the vicinity of the treatment plant, when in operation is dust laden. There can be no doubt that employees occupied in the process are exposed to serious danger from a health point of view."

4.271 The State Mining Engineer, Foxall, called on Wallace, ABA Perth engineer, on 7 May 1948 specifically to discuss Oliver's letter and Wallace obtained a copy of it. In relation to the matter cited, Wallace by letter of 7 May 1948 (also part of ex 527; and separately ex 710) forwarded a copy of Oliver's letter to the Wittenoom Mine Manager, Humphries, and advised him :

> "It was pointed out to Mr Foxall that a great interest in the control of the dust and that a considerable amount of research had been done in the past ... and is continuing."

Wallace noted that he was sure Foxall appreciated that "we are doing all possible to comply with his requirements".

4.272 It seems that Oliver was not satisfied. On the ABC State news on radio station 6WF at 7.45 am on 13 May 1948 there was a report broadcast :

"Complaints about working conditions at the Wittenoom Gorge Asbestos Mines have been made to the State Mining Engineer, Mr Foxall, by the Australian Workers' Union. The Union's Divisional Secretary (Mr Oliver) said in Kalgoorlie yesterday, that everything about the mill was laden with thick dust, and the Union was concerned over the danger to the health of workers."

Wallace obtained a copy of the script and by letter dated 14 May 1948 forwarded a copy to the Mine Manager (part of ex 527). He indicated that both he and the ABA Secretary had advised the ABC "no comment".

4.273 On the day of the news broadcast, 13 May 1948, the "Kalgoorlie Miner" carried an article based on complaints by Oliver (ex 611). The headline read :

"A.W.U. ASKS FOR DEPARTMENTAL INSPECTION AT WITTENOOM

Says Workers' Health Endangered by Dust in Asbestos Mill

FIBRE CAUSES POWER UNIT TO FAIL; MEN NOT COVERED BY COMPENSATION"

The article recorded that the Mining Division of the Union had asked the State Mining Engineer to have an inspection of the mill and that in announcing this Oliver had said the union was concerned with the danger to the health of the workers.

4.274 Under a column heading "No Dust Counts Taken" Oliver was reported as saying that he was aware that the ventilation inspector Lloyd had made an inspection in January last (as to which see exs 68 and 69), but that the union believed

that at that time the mill was closed and under repair and for this reason dust counts could not be taken. Oliver was quoted in the article as saying :

> "... the union feels it is not necessary to have the mill in operation for a proper appreciation of the amount of dust created during milling operations ...
>
> "Everything about the mill is laden with a thick coating of dust.
>
> "A large power unit failed because fine asbestos fibres were breathed into the engine and blocked the oil screen. I saw evidence of this and I feel it adequately emphasises the dangers to which the mill workers are subjected.
>
> "When the mill is operating, heavy clouds of dust drift through the plant, including the engine-room, fitting shop and offices. The whole atmosphere about the plant is dust-laden. There is no doubt that the health of the workers in this section is exposed to serious danger."

4.275 There is no direct evidence of any communication by Wallace or Humphries to Sydney of any of the complaints by the AWU to Sydney. However, Brown was aware of the AWU complaints (T7603) and recalled also a question being asked in Parliament (T7602-3). Brown was also apprised at the time of the matters raised in Oliver's letter of 19 April 1948 to Foxall (T7607). In addition it appears that not long after this Powell made a visit to Perth in connection with ABA (see ex 370, CSR board minute of 28 July 1948) and King was sent by Brown to Wittenoom for three months from about July 1948 (King T9083 and 9390-9391).

(b) Lloyd, Adams and Hunter - inspection of September 1948

4.276 On 10 September 1948 Lloyd, Adams and Hunter inspected the mill and Lloyd took dust counts, half of which were 1000+ ppcc. Lloyd, who wrote from Kalgoorlie, records in his report (ex 70, p2) :

> "On completion of the inspection, in company with Inspector Adams, an interview was held with the Manager, during the course of which attention was drawn to the unsatisfactory set up of the dust exhausting system and danger to the health of the men."

The manager, Lloyd reported, stated that the present plant would in the near future be discarded. Brown said that a new plant was never contemplated and could give no explanation of the reply attributed to the manager (T7511). Adams, writing from Cue to Hunter in Marble Bar on 15 November 1948, was also under the apprehension that there would be a new plant and expressly refers to Broadhurst having stated that a new mill was to be erected with adequate provision for dust prevention. (Lloyd's report (ex 70) was tendered in evidence in Arbitration Court proceedings in the following year (see para 4.305 below).

(c) Boyland inspection - early 1950

4.277 As the result of communications in late 1949 and early 1950 from the Minister for Public Health, based on reports by Saint as to the unsatisfactory precautions taken in the mill in relation to dust (see, in order, ex 285, 721, 722, 723 and 724) the Mines Department arranged for Boyland to make an inspection in early 1950. His letter to the ABA manager at Wittenoom (ex 63) apparently dated 14 February 1950 (see ex 26) states :

> "As a result of observations and investigations made, concerning dust in your Milling Section, I find that the continual dusty conditions are detrimental to the health of employees. By virtue of Section 22 of the Mines Regulations Act No 34 of 1946, I now request that the Milling Section be totally enclosed by walls and that suitable dust extractors be placed on the roof to draw all dust out of the working spaces of the mill."

The statutory provision Boyland refers to sets out the procedure to be followed "where an inspector ... finds any machine plant ... or practice in or connected therewith to be dangerous or defective, so as, in his opinion, to threaten or tend to the bodily injury of any person". The letter is on that basis clearly a statutory requisition. Brown, who was acting manager at the time, responded by letter dated 17 February 1950, setting out steps ABA was taking (ex 26).

4.278 Despite Boyland and Foxall being satisfied in June 1950 as to management action in relation to the mill (exs 64 and 268), Boyland returned on 17 September 1950 with a firm intention to stop the mill until his February requisition had been complied with. The only reason he did not implement his intention was because Lloyd had visited a few days earlier (ex 65).

(d) Lloyd inspection of September 1950

4.279 The visit of Lloyd which prevented Boyland from closing the mill took place on 13 September 1950. Lloyd reported that, from a dust point of view, conditions in the mill had definitely worsened since his previous visit (said to be November 1948 but in fact September 1948) (ex 71). Dust samples taken by Lloyd can only be described as dreadful. Of 15 counts, nine were 1000+ ppcc and one of those was taken in the dining room "while men were having crib" (ex 71, p3). No specific reference is made in the

report to health hazards. However, Lloyd reported (ex 71, p4), that all samples were viewed through the microscope, presumably the konimeter microscope, "by the Management" (ex 71, p4). Lloyd also reported that it was the ABA intention "that in future, control of dust will be done under the wet process" (ibid). It is a reasonable inference that the management were well aware of the dust hazard the dust samples indicated or that Lloyd, as ventilation inspector, apprised the management of that hazard. (Assuming that the reference to the wet process is to Field dust collectors (see ex 71 p2), see para 2.154 above as to implementation of the intention.)

4.280 Although Brown could not recall seeing Lloyd's report specifically, he said that it was the practice of Mines Department inspectors to have a report and even to post it up and that he expected the manager or mine manager would have brought it to his attention (T7600). He would not have been happy with the 1000+ ppcc counts if he had been there (T7584).

(e) Faichney inspection of August 1951

4.281 Faichney discussed the points recorded in his report dated 21 August 1951 with the mine manager, Thomas (ex 114, p1). Although he noted his results were better than those of Lloyd in September 1951 (ex 71), he made suggestions designed to "in some measure eliminate the dust nuisance" (ex 114, p2).

4.282 As noted below (Chapter V.J) this report generated extensive correspondence between the Mines Department and the Health Department. Within the Mines Department, the report prompted Boyland to write to ABA requesting "that continued attention be given to laying dust in all underground places by the use of water." He stated that

the dust counts were "relatively high and must be brought to a minimum" and added that he knew of the ABA desire to keep fibre as dry as possible, "however this consideration must be given low priority regarding the health of workers." He then gave instructions relating to the wetting of underground working places (ex 67).

4.283 The significance of these comments starts with dust counts. The average of 12 samples in the mine was 324 ppcc. The average of 13 samples in the mill was 291 ppcc. While, in Boyland's opinion, the mine counts were high, warranting an instruction in the interests of the health of workers, the counts in the mill were not much different. The view of the Health Department was certainly consistent with that.

(f) Ibbotson inspections of June 1954 and June 1955

4.284 Ibbotson first visited the Wittenoom mill in June 1954 (Ibbotson T567-568, 573 and 585). He gave evidence that he saw the manager, Broadhurst, and indicated that he was "horrified with the mill" but because he hadn't visited before and it had been under the control of his predecessor, now superior, and the Kalgoorlie ventilation officers, he would enquire how Broadhurst "got a license for it to operate in that way" (T585).

4.285 Ibbotson visited the mill on 1 June 1955 and by his own account he laid down the law (ex 20). He drew attention to the very unsatisfactory working conditions in the milling section; pointed out that no effective modifications aimed at the eradication of the dust had been achieved during the 11 months since his initial inspection; and requested a written statement of how and when improvements could be expected. He indicated that

he required the information by the end of June 1955, otherwise he might be compelled to order closure of the mill. He made the point in his report that in his consideration "the economic aspect of any mining venture must take into consideration the cost of safe and healthy working conditions".

4.286 In a response dated 21 June 1955 (ex 21) Thomas as ABA manager indicated that a number of steps had been taken; greatly improving conditions in the mill, and that engineering staff were "investigating all possible avenues of improvement". Thomas added, in what the plaintiffs submit are highly significant terms :

> "Should the tariff enquiry prove favourable, we should be in a position to proceed with a wet milling circuit, in which case the dust hazard should become a thing of the past."

That indicates, it is submitted, that whether or not money would be spent on dust control measures was at all times an economic decision in which economics and not health were the prime consideration. This is supported by the very modest expenditure on dust control equipment (see para 2.57 above). Reply : ex.28. 24th June '55

(g) Mines Department inspections generally

4.287 The inspections made by Mines Department officers are referred to in other sections of these submissions. There is an air of unreality in identifying for particular mention only those written reports on inspections where there is an express mention made of a health hazard. It is evident from the earliest reports on Wittenoom operations that Mines Department inspectors were concerned with dust because it represented a menace to health. In the report of Adams dated 17 September 1946 (ex 60), he stated (p11) :

> "The mill at Wittenoom is quite well designed and its construction in the face of many war time difficulties was well done. One of its chief faults has been that insufficient attention has been given to the eradication of dust, which has been treated as an after-thought. When there is no flow of air in the gorge, which does not occur very often, dust conditions in the vicinity of the plant have been terrific ... in any dry crushing plant the dust menace must be accepted as a major principle of design, and not as an afterthought."

4.288 Whether or not Adams' design principle is accepted, it is plain that for him "the dust menace" is a health menace. Having regard to his vivid recollection of his first view of the mill "with all the dust pouring out of it" (T1477) and his awareness of the danger to health asbestos represented (T1479), it is unrealistic to contemplate that he did not have discussions with the management at Wittenoom in the course of his inspections.

4.289 Equally, it is submitted, it ought to be assumed, whether or not reports so record, that the Mines Department inspectors did during the course of their inspections convey their views and concerns as to health dangers the high levels of dust represented. In the case of inspections by Ibbotson, such assumption is unnecessary. He gave direct evidence that under the Mines Regulation Act "it was essential for an inspector of mines to make a record in the mine record book of those parts of the mine which he inspected and the conditions or shortcomings he may have noted in those." Ibbotson said that in his case he always wrote out in his field note book and then discussed them with a responsible person, usually the manager or underground manager, so that anything contentious was sorted out before being entered in the mine record book (T580-581). As mentioned above (para 4.280) Brown acknowledged that the Mines Department

inspectors left a report behind and "even posted one up somewhere" (T7600). The inspector had an obligation to record the results of his inspection in the mine record book (Mines Regulation Act s18). There is a review of Mines Department inspections in Chapter V below.

(5) SPECIFIC WARNINGS AS TO ASBESTOS DISEASE

4.290 Apart from general indications of the health hazards of dust in the Wittenoom mill given to the management at the time, quite specific warnings as to the health hazards of asbestos-bearing dust were conveyed to the Wittenoom management, and beyond, to Sydney, in 1948 and 1949.

(a) Saint's warnings

(i) Saint's observations

4.291 Saint's background is related above (see paras 4.182 et seq). It is plain that when he went to Port Hedland as the Health Department resident medical officer in March 1948 (T1197) he was exceptionally experienced in industrial chest disease. While working in the Nuffield Department of Industrial Health in the University of Durham immediately before coming to Australia Saint had given a seminar on industrial chest disease, including asbestosis (T1184). He was aware at the time of evidence in medical literature of an increased risk involved in exposure to asbestos of acquiring lung cancer (T1191).

4.292 Soon after arrival at Port Hedland Saint visited Wittenoom and was shown over the mine and mill. He was concerned very deeply about the huge cloud of dust that hung over the mill. His account was (at T1197) :

> "... it seemed to me perfectly obvious that here was an admixture of possibly siliceous rock and a very, very high concentration of asbestos fibre, both long and short fibres, and with my knowledge of the very dangerous properties of an asbestos fibre it caused me to express my concern to everybody."

His main concern was with exposure to asbestos rather than silica because it was known at the time that of the two asbestos was the much more dangerous particle causing damage to the lungs. He anticipated at the time that the time between exposure and development of fibrosis would be fairly short (T1204).

(ii) Saint reports to Health Department

4.293 Saint expressed his concerns to the Commissioner of Public Health in a letter dated 20 March 1948 written only two weeks after arriving at Port Hedland (ex 44). He stated :

> "In the mine itself it is perhaps fortunate that men do not work extended spells for I shudder to think of the ravages - asbestosis and TB may develop. Soon I want to collect some spits for asbestos bodies and some chest radiograms."

He considered at the time that unless steps were taken to control exposure there would unquestionably be a large number of cases where frank asbestosis would develop in a period of two to five years or more (T1204).

4.294 Later in 1948 Saint again expressed his concern - writing to the Commissioner (ex 45). In a letter dated 6 June 1948 he commented that the mill operated without dust extraction equipment and since the incubation period of asbestos is so much less than silica he expected that in a year or two ABA would produce the richest and most lethal crop of cases of asbestosis in the world's

literature. He reported he had found asbestos bodies in two spits, which he stated did not indicate fibrosis was actually present but clearly proved the absorption of the toxic agent.

(iii) Saint's discussions at Wittenoom

4.295 Saint also expressed his concerns in conversations with the Commissioner of Public Health, Dr Cooke, when he visited Port Hedland in about September 1948 (T1204-1205) and with Cooke's successor Henzell when he visited Port Hedland in early 1949 (T1205-1207; compare Henzell in ex 41 ("I was up in Wittenoom Gorge at the end of 1948").) Saint also had discussions with Dr Davidson, Henzell's deputy, in Port Hedland later in 1949 (T1207-1208).

4.296 Saint recollected speaking to Broadhurst of his concerns following his first visit to Wittenoom and inspection of the mill. He put it in these terms (T1209) :

> "Look, I am very concerned about this. Do you realise the risk that these workers -- the risk of exposure to asbestos and the longterm consequences this might have?"

He saw Broadhurst fairly frequently in the first instance and on those occasions Saint said he said to Broadhurst (T1208-9) :

> "... my knowledge tells me, my understanding of what I am seeing tells me, that the workers in the mill are at a high risk of acquiring asbestosis."

Cross examined on his recollections of his discussions with Broadhurst, Saint said (T1298) :

> "... I explained that I had some experience in Britain of industrial health disease, that the observations I had had, superficial as they might have been, of conditions particularly relating to the mill -- my prediction was that there would be a concentration of fibre which, in my knowledge, was injurious to health."

He said he was thinking in terms of two to five years of regular exposure to that sort of air (T1298-9; and see similarly T1314, 1316). While not recollecting other particular discussions with Broadhurst, Saint was pretty certain of continuing to express concern about the situation within the first three or four months.

4.297 Saint did express his concerns to others. Although he had no precise recollection of persons, he would, knowing his feelings and convictions on the matter, have spoken in similar terms to other senior staff (T1300). He recalled speaking to Allardice whom he recalled as a foreman or minor official or engineer. He also spoke to workers when he saw them on sick parades. He recalled specifically a miner named Wally (T1210 and see T1300). He spoke to others away from Wittenoom, to colleagues and friends in Port Hedland (T1210 and 1310). He saw Broadhurst socially and indicated he continued to be worried about the situation and that he hoped something might be done about it (T1210-1211). Cross-examined on his statement that what he saw on the occasion of his first visit caused him to express his concern "to everybody" (T1197), he referred to the Health Department, the responsible officials in ABA and the few responsible people and friends and acquaintances he had in Port Hedland (T1311). Barrow gave evidence that Saint told him and others in the single men's dining room that the dust was dangerous (T354-7 and 385-6). Wilson also said Saint told him to get out (T686) or more specifically told him and his wife to get his kid out (T692 and see T710-712).

4.298 Broadhurst's response, as Saint recollected, to his first suggestion that exposure to asbestos was dangerous was (T1300) :

> "fairly negative. He listened - just listened."

On later occasions Broadhurst "listened but made no comment" (T1211). Saint received no response to his expressions of concern from any other person in a managerial position at Wittenoom and was unaware of any action taken by the management (T1211).

4.299 Saint's warnings, in unequivocal terms, specified the danger and the need to alleviate it. At the very least it gave the person in charge of Wittenoom operations notice that the dangers should be inquired into. At a higher level it gave the person charged by CSR and ABA with responsibility for management at Wittenoom express notice of the actual dangers. The likelihood is, it is submitted, that other senior staff at Wittenoom were also made aware of Saint's concern. That concern was expressed almost contemporaneously with the public campaign conducted by the AWU (see paras 4.270-4.275 above).

4.300 Brown stated (T7701 and see also 7742) :

> "If you're working in fields such as this, whether it's asbestosor any of these silicosis things, you expect the medical people of the day to be keeping an eye on these things. A layman can't go investigating all those things; you depend on what emerges - health departments; mines departments etc etc."

It is ironic that when a health department medical officer in the form of Saint did come knocking on the door, he was ignored.

(b) Warnings in 1949 Arbitration Court proceedings

4.301 In 1949 there were proceedings under the Industrial Arbitration Act 1921 in the Court of Arbitration between the Australian Workers Union and other unions as applicants and ABA as respondent. The applicants were represented by Oliver, who in April-May 1948 had conducted a public campaign on behalf of the AWU against ABA in respect of the dust conditions in the mill (see paras 4.270-4.275 above). A transcript of part of the proceedings heard in Perth (ex 714) was forwarded by Broadhurst to the managing director with a letter dated 14 June 1949 (ex 528). By then further evidence had been taken at Wittenoom. The transcript relates only to part of the applicants' case, the respondent's case being heard in July (ex 528; ex 714 p91).

4.302 The letter forwarding the transcript (ex 528) is stamped as having been received in the BMD on 17 June 1949. Endorsements on the letter indicate it, and presumably, therefore, the transcript, were seen by Powell, Brown, Baird and Brennan. Brown agreed that the proceedings raised, in relation to conditions in the mill, matters of concern such that "we" asked for the transcripts (T7602). King recollected having been aware of the proceedings (T9382-9382a and contrast 9197).

4.303 The significance of the proceedings is that in the proceedings the AWU produced material of three different types designed to demonstrate that conditions in the mill were hazardous to the health of the workers. It also sought by different means to show that the risks of asbestos exposure were greater than the risk of exposure

to dust in other metalliferous mines and mills. It is evident from the transcript that Broadhurst was present in court during the hearing (ex 714, p10).

4.304 First, Oliver representing the AWU produced extracts from a bulletin issued by the US Department of the Interior and Bureau of Mines (ex 714 p19). Copies of the passages read by Oliver are ex 714a. He first read definitions of silicosis and asbestosis and then a definition of asbestosis by Collis as follows :

> "Collis defines asbestosis as a pneumoconiosis that advances to a fatal end without the supervention of any characteristic infection. It is a simple dust condition, just as is simple silicosis; but it is more distressing in life and more rapid in its progress than silicosis. It contrasts even more strongly with pulmonary mycosis, which is due to living infection upon otherwise healthy lungs."

As Oliver commented (ex 714 p19) - "Not a very pretty picture!" Oliver also referred to an ILO industrial hygiene study or report.

4.305 Secondly, Oliver informed the court that he had obtained a sample of Wittenoom ore from the mill and it had been examined and found to contain 15% crocidolite and 85% quartzite. He had conveyed the analysis to the Mines medical officer in Kalgoorlie, Dr Oughtred (ex 714 pp19-21). He read from Oughtred's report on the analysis. Oughtred explained the effect of breathing the silica dust would be to produce silicosis after 15-20 years work if the konimeter counts at nose level were consistently over 200 ppcc. Oughtred's opinion was that the presence of 15% asbestos is likely to accelerate the development of silicosis and lead to some cases of a mixed condition of silicosis and asbestosis. His view was that cases of simple asbestosis were "unlikely to be found

except in men employed in the packing process, where the pure material is being handled. Likelihood of its occurrence in these men will likewise depend on working conditions" (ex 714 p21).

4.306 The third type of material produced by the AWU was mines inspectors' reports. Having explained in lay terms the operation of a konimeter, Oliver tendered Lloyd's report dated 23 February 1948 on his inspection of the mill (ex 69) and read extracts from it where Lloyd noted that the mill was idle and there was still sufficient evidence of dust in the mess-room adjacent to the mill to justify a request that a new dining room be made available (ex 714 pp 23 and 24). He also tendered Lloyd's report (ex 70 dated 26 November 1948) on his next inspection with Adams and Hunter on 10 September 1948 (see para 4.276 above). Lloyd read a passage where Lloyd described conditions in the mill from the dust point of view being most unsatisfactory and then read the dust counts, three out of six of which were 1000+. Oliver particularly referred to the 1000+ ppcc dust counts recorded by Lloyd and explained that that meant the slide was not counted; it was impossible to count, being completely coated, which meant in effect that the air was full of dust (p24-25).

4.307 Oliver explained to the court that what he was trying to do was to point out what he thought was a lack of appreciation of the danger existing at Wittenoom Gorge (p24). He said (p23) that "... from our point of view, we want the dust cleaned out of the mill. We do not want our people breathing this dust."

4.308 The AWU evidently failed in its attempt to heighten the appreciation by the Wittenoom and Sydney management of the dangers posed by the mill dust. Broadhurst's comment in forwarding the first part of the transcript was (ex 528) :

> "It will be noted that a good deal has been made of the possible effects of dust and fibre on health of employees, but except as a general disability, it has little direct bearing on any of the specific claims made by the Unions and although calling for improvements in working conditions in this regard, should not influence the Court's decisions."

There is no evidence that any action on the part of the Sydney officers who saw the letter was prompted by anything said in the transcript.

4.309 A reading of Oliver's submissions and the treatment of the material produced by him to the court reveals some confusion on his part. But it must have been evident to ABA and the court by his production of the material and his arguments to the court in the context of award proceedings that the AWU had a genuine concern. A careful reading of the US Bureau of Mines material and the Oughtred letter should also have revealed that asbestosis was a disease distinctly different from silicosis. With hindsight Oughtred's advice is somewhat lacking. However, he pointed out that the risk of contracting asbestosis depended on working conditions or, in other words, exposure. He specifically sounded a warning about risks faced by the baggers.

4.310 It is pertinent to note that an award, to which ABA was a party and dealing with engineering workers in the blue asbestos industry (no 12 of 1949 and dated June 1949 - ex 726) provided :

> "28. - Dry Crushing Plant
>
> No dry crushing plant shall be operated unless under such conditions as obviate dust as far as is reasonably practicable ..."

The 1000+ ppcc dust counts referred to by Oliver are not consistent with a compliance by ABA with its obligations under the clause.

(6) BROWN'S KNOWLEDGE OF ASBESTOS HEALTH HAZARDS

(a) Asbestosis

4.311 Brown's general thesis was that during the period 1943-1955 he regarded asbestosis as being the equivalent of silicosis. There were some minor refinements.

4.312 By 1944, when he made his first visit to Wittenoom -

(a) he was aware of the disease asbestosis (T7264a and 7266-7);

(b) he understood it to result from exposure to asbestos fibres (T7267); and

(c) he believed it was similar to silicosis in that -

(i) it caused a fibrosis of the lungs which diminished the capacity of the lungs;

(ii) long periods of exposure of 10-20 years were required to contract it;

(iii) even then not everybody so exposed did contract it;

(iv) it resulted from chemical action (T7267-8); and

(v) if fibrosis went far enough it would produce incapacity and death (T7718).

4.313 During the 1940s he held the beliefs that -

(a) chest x-rays would give an early indication of asbestosis (T7301 and 7726);

(b) if a "dusted" person was removed from exposure at an early stage the person could not be cured but the disease would remain dormant and the diminution in lung capacity would remain (T7269).

4.314 In the period up to 1955 Brown continued to adhere to the views that -

(a) silicosis and asbestosis had a similar effect on the lungs (T7275/6);

(b) exposure of 10-20 years was required and then only for some people (T7301 and 7358; and see 7543);

(c) chest x-rays would enable the disease to be picked up early; and

(d) removal of the "dusted" person from exposure would mean the condition would remain the same, getting neither worse nor better (T7301).

His view as to the effect of asbestos on the lungs causing fibrosis and reduced lung capacity, in the same way as silica caused silicosis and reduced lung capacity, remained the same up to 1955 (T7271). However, in the mid-1950s, and it may have been later than 1955, he became aware that the effect of asbestos on the lungs might be mechanical rather than chemical (T7268). As of 1955 he said that he did not know asbestosis developed and was picked up radiologically more quickly than silicosis (T7732a).

(b) Lung cancer

4.315 Brown said in evidence that he did not think that in the period 1943-1955 he heard of any association between lung cancer and asbestos (T7354). Cross-examined, he at first contradicted that and said he had heard of a possible association but then corrected himself to say he was thinking of asbestosis and lung cancer (T7705).

4.316 His recollection and belief was that prior to 1955 he had heard of a possible but not proven relationship between asbestosis and lung cancer, such that lung cancer was only contracted if asbestosis was contracted first (T7705-6). He recalled that in the annual report of the Chief Inspector of Factories there was some speculation as to whether lung cancer could follow on both from silicosis and from asbestosis but that the reports said there was no conclusive evidence one way or the other (T7696a).

4.317 Brown thought he had read about asbestosis as early as 1944 and 1945 in a report of the Chief Inspector of Factories. He saw those reports regularly because they seemed to him to be rather sensible documents. The first he recalled reading was the 1939 report which he saw in 1944 or 1945 (T7266-7266a). Apart from comments about asbestos in textile factories and the need to have air changes, they had tables, he recalled, showing the incidence of silicosis and asbestosis, lung complaints from coal, complaints in the general community and so on (T7271). Shown extracts from the 1938 annual report of the Chief Inspector published in 1939 (ex 142) he was unable to identify it as the one he saw, the form of the reports being much the same from year to year (T7332 and 7334).

4.318 Having had an opportunity of reading the extract of the 1938 report (ex 142) he indicated that he recalled reading the sort of remark as appeared in it (p80) to the effect :

> "In recent years the suggestion has been made in medical publications that there is some relationship between silicosis or asbestosis and cancer of the lung."

Pointing out that the passage continued to state that it was a difficult question and not proven, he had thought the possible connection had been brought to his attention in about 1944 when he first read the material (T7697). He saw subsequent updates of such information but was unable to recall a stage being reached in reading the reports where there was any more definitive statement (T7698). Dr Gandevia was "staggered" that CSR had obtained a copy of ex 142 or a document to similar effect which had been read by Brown in about 1944 (T8059).

4.319 Shown a part of the 1947 annual report of the Chief Inspector, published in 1949 (ex 155), Brown agreed that at about that time he saw in this report or a report to similar effect a statement under the heading "Asbestosis and Carcinoma of the Lung" :

> "Cancer of the lungs or pleura was found to be present either as a cause of death or as a concomitant in 13.2 per cent of 235 cases."

It appeared to him from that that the relationship still appeared speculative and that "if there is a relationship then one has to believe that you get asbestosis or silicosis before you get lung cancer." This led him to believe, he said, that precautions against asbestosis and silicosis should be adequate as precautions against something that followed up after them (T7699). He regarded the lung cancer connection as speculative and "also regarded the whole matter as warnings of danger"

(T7701). Dr Gandevia was "very surprised" that CSR had received a copy of the report and asked whether they hadn't got it later (T8061).

(c) Brown's sources of knowledge

4.320 Brown's knowledge as to the association of asbestosis and lung cancer derived from the reports of the Chief Inspector of Factories stands in stark contrast to what he knew at the same time as to asbestosis. There is material in the 1947 reports (ex 155) which indicates plainly that asbestos exposure can result in death much more quickly than silica exposure (see at p81). A regular reader of the reports would have been exposed to much better information than Brown said he had as to asbestosis.

4.321 In the course of his evidence Brown indicated, in addition to factories inspectors' reports, as his positive sources of knowledge as to asbestos diseases only that he had come across the term asbestosis while generally reading concerning asbestos. He asked the CSR technical library to provide him with information concerning asbestos generally. He had read a mass of information and was not able to pinpoint particular sources (T7264a, 7267, 7271, 7273, 7321-7321a and see 7687). He agreed that the CSR technical library had at relevant times a body of literature comprising articles in industrial and scientific journals which warned of the dangers of asbestos and asbestos dust in the atmosphere. But he was unable to identify any particular articles in which any such warning was given (T7364). The library was not a medical library (T7689). He said that in his instruction to the library to provide him with information concerning asbestos he did not ask specifically for any work dealing with the health hazards of asbestos exposure. The general instruction as to material relating to asbestos should have embraced asbestos-related disease (T7688). Although

he saw Chemical Abstracts from time to time (T7678), he specifically did not recall seeing any relevant abstracts from Chemical Abstracts (T7711).

4.322 The only other sources of knowledge relating to dust disease mentioned by Brown related to silicosis. He referred to having held the view at the time that texts spoke in terms of low, medium and high silica risk (T7273-7274). He mentioned in this context a number of engineering texts (T7275/6-7277). However, with one exception, no particular part of any text was identified by him as referring to the silica hazard in those terms. The exception was Kent's Mechanical Engineers' Handbook (MFI589; see at T7285). As it happens that text which on examination appeared to be a 1969 reprint of a 1950 edition (see T7304-5 and 7318), while referring to high, medium and low silica risks, specifically identified the risk of asbestos dust in the same context (see ex 590,p27-99).

4.323 Brown gave evidence of having made no enquiries as to asbestos health hazards or related matters of the overseas asbestos mines, mills and factories which he visited in 1937-1938, 1947 and 1952 (T6283, 7263-7264, 7716, 7717, 7741). CSR had access to medical opinion, but Brown was not aware of any enquiry as to asbestos dangers made by anybody on behalf of CSR (T7681a-7682, 7741). Similarly, no enquiry was made of the New South Wales Director General of Public Health (see T7628) or the West Australian Commissioner of Public Health (see T7630 and 7742). It is evident that Brown recognized no obligation on his part or on the part of CSR or ABA to make any enquiries as to health hazards. On the contrary, his expectation was that either medical opinion would come to him or if conditions were dangerous from a health point of view the mill would be shut down (T7701, 7742).

(7) KING'S KNOWLEDGE OF ASBESTOS HEALTH HAZARDS

4.324 In examination-in-chief King asserted that he first heard of the disease asbestosis after 1960 and that prior to 1952 he had no understanding that the milling of asbestos-bearing rock was dangerous (T9144). Asked whether he had any belief as to the likelihood of dust produced in the process of milling asbestos-bearing rock causing any disease, he said no, except that "if silicosis is regarded as a disease, because asbestos-bearing rock is a silicate, that was a possibility". He thought that prior to 1952 exposure of something like 20 years was required (T9145; and see 9198).

4.325 In cross-examination King effectively accepted that in 1945 he was familiar with the term "asbestosis" and that he took it then to be something similar to silicosis (T9372). He claimed that the evidence-in-chief and the cross-examination answers were compatible on the basis that in the former he was asserting that he knew of no distinction between asbestosis and silicosis (T9374). He added that at a later stage asbestosis meant something different to him (T9374a). King accepted in cross-examination also that, as at 1948, he worked on the basis that exposure to any siliceous material should be kept to a minimum and that some years of exposure would be necessary before there was any development of silicosis (T9378). By "some years" he meant a considerable period of years (T9379). In cross-examination he also agreed that in the late 1940s he regarded dust disease, whether silicosis or asbestosis, once established as capable of causing incapacity and, if there were continuing exposure, death. He believed that removal from exposure arrested the problem (T9381-2).

4.326 King was unaware before the end of 1955 of any connection between lung cancer and asbestosis and he had no

recollection of Brown drawing his attention to any such link (T9145 and 9380).

4.327 King did not identify any particular source of his limited knowledge. He did use the CSR library and the New South Wales State Library (T9144). He did not read any articles in medical journals and was unaware of the Victorian 1945 regulations on harmful dusts (see T9189-9190). He made no reference to having learned anything of the health hazards of asbestos on his overseas trips to visit asbestos mines, mills and factories (as to 1945 T9080a, 9081; as to 1948 T9110) and he could not recall whether such knowledge as he had as at 1948 was based on any investigation of conditions in asbestos mines, mills or factories either in Australia or overseas. However, he expected he would have had such discussions (T9379). He appears to have relied solely on the general knowledge he had from the time he became involved in the industry that inhalation of any kind of dust is undesirable (T9080a).

H. ADVICE IF ENQUIRY MADE

(1) OCCASIONS WHICH SHOULD HAVE PROMPTED ENQUIRY

4.328 Between 1943 and 1955 there was a number of events or factors which should have prompted CSR/ABA to enquire into the nature of the risks of asbestos exposure to which their employees at Wittenoom would be and were subject. As it turned out, none of those factors or events did result in any enquiry and nothing else, it seems, catalysed any investigation. The failure to enquire is, in the plaintiffs' submission, a significant breach of duty.

4.329 The defendants assert that the asbestos industry was established in war-time as part of the war effort. The plaintiffs submit that should not be accepted. The evidence plainly suggests that CSR entered the asbestos industry as part of a broader scheme to expand into the building materials field. Such evidence as relates to war effort is as consistent with CSR taking advantage of war-time regulations to advance that scheme as it is with anticipation of a real contribution to war effort (see Chapters VII and XIII.B below).

4.330 Whether or not that is correct, the fact remains that between the establishment of the mine and mill at Wittenoom in 1943-1944 and the entry of Barrow into employment at Wittenoom in either March-April 1948 or early 1949 (see para 3.21 above), there was not only the time but there were the occasions for review of the enterprise. In fact it is common ground that in 1946-1947 there was a major reappraisal of the entire venture. Any enquiries omitted or overlooked in war-time could certainly have been undertaken in the several intervening years. There is no evidence any was undertaken.

4.331 There were, as indicated above, several events or factors which should have resulted in CSR/ABA examining the risks of asbestos exposure. They include the following.

4.332 First, CSR had decided to enter a new industry. It is effectively common ground that CSR had no hardrock mining or metallurgical experience and nobody, from the CSR board down, with any expertise in those fields. Before or during the establishment of the Wittenoom mine and mill CSR/ABA staff involved had the experience of seeing the dust generated by asbestos milling operations at Zeehan (ex 90) and Yampire Gorge (ex 91).

4.333 Before, during and after the establishment of the Wittenoom operation CSR officers - Powell, Brown, King and possibly Gilmour - visited overseas asbestos mills and observed such dust control measures as were taken and had the opportunity to enquire into the health hazards those dust control measures were designed to avoid.

4.334 Thirdly, there was available within Australia and specifically within each relevant State (NSW, Victoria and Western Australia) a substantial body of materials in libraries (see Chapter IV.E above). Even the CSR library held significant material indicating the nature of the dangers of asbestos exposure. Although Brown had a standing instruction to the CSR library to provide him with material relating to asbestos, which should have covered asbestos-related disease (T7688), his evidence is that no such material was presented to him. It may have been the case that his instructions were not as he claims, or that the instructions were not carried out or that material was produced which he overlooked or rejected or has forgotten. One possibility - that proper enquiry would not have unearthed material either providing answers or prompting further enquiry - is not open.

4.335 Of particular relevance in the context of CSR's library materials are the annual reports of the United Kingdom Chief Inspector of Factories. These reports in themselves provide a fourth reason why CSR/ABA should have undertaken a careful enquiry into health hazards. Brown's evidence (see paras 4.315-4.319 above) as to what he read to the same effect as passages in the 1938 report (ex 142) and the 1947 report (ex 155) relating to the possible asbestosis/lung cancer link provided a most compelling catalyst to enquire further, which regrettably resulted in no reaction. In this connection, the discovery of the copy of the 1947 report (ex 155) as being within the CSR library and as being seen by a very senior executive (see para 4.269 above) provides a further reason why investigations should have followed.

4.336 The fifth occasion which should have resulted in enlightenment was when the mill foreman Dignam was found in 1946, within a period of not more than three years work in the mill, to be suffering from asbestosis (see paras 4.261-4.263 above). To have an employee even "showing signs" of asbestosis within such a short period, given that Brown believed long periods of 10-20 years exposure were required, must have raised questions to which a reasonable employer would require answers.

4.337 The AWU provided, as a sixth example, cogent reasons why CSR/ABA should have made a thorough investigation into the health risks of asbestos-bearing dust exposure. The union did not make flippant or short-lived criticisms of the mill conditions. The public campaign of April-May 1948 (see paras 4.270-4.275 above) extended into the Arbitration Court proceedings more than a year later (see paras 4.301-4.310 above). The AWU also presented palpable evidence which warranted a proper examination of the Wittenoom employees' health risks.

4.338 Probably the most substantial and most consistent form of warning of health hazards which the Wittenoom management received were the warnings of Mines Department inspectors. They extended from Adams in 1944 through to 1955. In the years 1948 to 1955 with which the proceedings are most closely concerned the warnings were given in one form or another in every one of those years (see Chapters V.B and V.J below). On some occasions they were in the most explicit terms, such as Boyland's 1950 requisition under the Mines Regulation Act (ex 63) and Ibbotson's confrontation with Broadhurst in 1954 when he queried how ABA obtained a licence to operate the mill as it did (para 4.284 above).

4.339 Eighthly, there are the Saint warnings. From his evidence it can be seen that on a number of occasions Saint was able, from experience, to pinpoint the then known risks (paras 4.292 and 4.296-4.297). However the Wittenoom management regarded him, it was not at liberty, it is submitted, to ignore his warnings. Even if his advice was not accepted, it could not reasonably be rejected without further enquiry. That enquiry was, in the relevant period, never undertaken.

(2) ADVICE IF SOUGHT

4.340 If each catalyst to CSR/ABA were successful in prompting enquiry, the resulting enquiries might not necessarily have been the same and the results of the enquiries might not necessarily have been the same. However, they would, it is submitted, have been substantially the same.

(a) Librarian's bibliography

4.341 Possibly the most effective means of determining quickly the nature of the health hazards of exposure to asbestos-bearing dust CSR/ABA could have undertaken would have been to have commissioned a librarian to undertake a literature search. A commission in such terms could not have been confined to engineering and technical literature. Once the enquirer were pointed in the direction of medical literature, the door would have been opened. On the evidence outlined in Chapter IV.E above (paras 4.109-4.157), it is submitted that in the period 1948-1955 a librarian undertaking such a commission in New South Wales or Victoria could have compiled a bibliography which was complete enough to reveal virtually all then known information on asbestos related disease. A librarian in Western Australia undertaking such a commission at that time would not have been able to be so thorough, relying only on Western Australian sources, but would have had ready access to the library resources in other States and even overseas.

(b) Medical literature review

4.342 An alternative to a comprehensive bibliography would be a review of medical literature done presumably by a relevantly experienced medical practitioner. A reasonable review would not, it is submitted, be conducted as Dr Gandevia prepared his review (see paras 4.43-4.45 above). It would be done as Dr Musk directed himself (see para 4.85). Such a review would have enabled the researcher to reach the conclusions reached by Dr Musk in his historical review (para 4.86 above).

4.343 There were at relevant times medical practitioners competent and experienced to conduct such a medical literature review. Two such doctors gave evidence, namely Drs Joseph and Minty. Their advice (Joseph - paras

4.159-4.165 above; and Minty - paras 4.168-4.171) are substantially consistent with the retrospective review of Dr Gandevia giving evidence for CSR (see paras 4.174-4.181).

(c) Enquiry of State Health Departments

4.344 A formal genuine enquiry of the State Health Department made by CSR/ABA in the period 1948-1955 would have produced very positive results in Western Australia, New South Wales and Victoria.

4.345 In Western Australia, apart from advice based on the exceptional knowledge of a flying doctor based in Port Hedland (see para 4.186 above) which advice was actually given at Wittenoom (paras 4.191 and 4.296-4.297 above), Dr Henzell was eminently qualified to give sound advice in Perth. He was also the person to whom such an enquiry would have been directed (paras 4.194-4.196). His advice would have been consistent with the sound advice given to the Mines Department (para 4.199 above).

4.346 In Western Australia, apart from the Public Health Department, some useful advice as to health hazards could have been obtained from the Department of Labour which as early as 1935 was applying the lessons of the Merewether & Price report (paras 4.232-4.234) and the Mines Department which had the benefit of Public Health Department instruction (paras 4.226-4.231).

4.347 In New South Wales a close interest in pneumoconiosis was maintained, first, through Dr Badham and then through Dr Smith. Their publications, particularly Dr Smith's publications in relation to the 1950 ILO Pneumoconiosis

Conference, indicate the nature of their advice (see paras 4.214-4.220).

4.348 The Victorian Public Health Department also had a significant interest in occupational disease. Quite apart from the promulgation of the Victorian regulations relating to harmful dusts in 1945, the activities of the department and the advice likely to have been offered is revealed in the publication of Dr Shiels (paras 4.222-4.225).

(d) Overseas enquiries

4.349 A logical place to enquire, given its leadership in epidemiological research in the 1930s and 1940s, would have been the Factories Inspectorate in the United Kingdom. Such enquiry would have resulted in identification of all relevant annual reports. It may also have produced personal advice from Dr Merewether (see paras 4.237-4.238) or Dr Murray (4.239-4.255).

(e) Engineering literature review

4.350 Perhaps the form of enquiry least likely at relevant times to have been productive would have been a review in engineering literature of comments on the health hazards of exposure to asbestos-bearing dust. However, a properly conducted review would have produced references to Drinker & Hatch : Industrial Dust, 1st Ed, 1936, pp32ff and 2nd Ed, 1954, pp45ff and Davies : Dust is Dangerous, 1954, Ch 1 (ex 189). Reference to the first edition of Drinker & Hatch would have revealed a reasonable account of asbestosis. The second edition and Davies would have alerted the reader to the lung cancer risk. An engineering literature review could not by any account,

however, have been regarded as a proper enquiry into health hazards.

(f) Summary of advice if enquiry made

4.351 A reasonable formal enquiry as to the health hazards of inhalation of asbestos-containing dust conducted at any time between 1943 and 1951 (perhaps excluding an enquiry in the form of a review of engineering literature only) would have produced the same basic information. The enquiry itself would have prompted further enquiry as the wealth of available information unfolded.

4.352 The minimum information that would have been revealed even as early as 1943, it is submitted, would have been :

(a) Inhalation of asbestos produced a discrete disease called asbestosis.

(b) The risk of contracting the disease was directly related to the extent and duration of exposure.

(c) The disease was incurable and progressive and led to incapacity and eventually death.

(d) The disease was generally reported as occurring as the result of shorter periods of exposure to asbestos-containing dust than in the case of silica exposure causing silicosis.

(e) There was a possible connection between asbestosis and lung cancer.

(f) Asbestosis being incurable, prevention of the disease was by elimination of exposure.

(g) A tentative safe limit of exposure was 5 mppcf of asbestos-containing dust.

Even recognition of that limited information would have resulted in a completely different attitude on the part of CSR/ABA management as to the operation of the Wittenoom mill.

* Rowland J: Brown ended up admitting that if he had made enquiry of the CSR library, he would have been given all the information.