

1997 J No. 09554

IN THE HIGH COURT OF JUSTICE
QUEENS BENCH DIVISION
MANCHESTER DISTRICT REGISTRY
B E T W E E N

BERRY IRENE JEROMSON
(Widow & Administratrix of the Estate of
James Miller Jeromson, Deceased)

Claimant

and

SHELL TANKERS UK LTD.

Defendants

1998 D 03818

IN THE HIGH COURT OF JUSTICE
QUEENS BENCH DIVISION
MANCHESTER DISTRICT REGISTRY
B E T W E E N

RUTH MARY DAWSON
(Widow and Executrix of the Estate of
Peter Hayward Trussler Dawson, Deceased)

Claimant

and

THE CHERRY TREE MACHINE CO.LTD.

First Defendants

and

SHELL TANKERS (UK) LTD.

Second Defendants

JUDGMENT

INTRODUCTION

Mr Jeromson, a citizen of New Zealand, was born on the 30th November 1935. At the age of 60, on the 6th June 1996, he died, after having developed malignant

mesothelioma. He had been employed by Shell Tankers UK Limited or their predecessors (see below), as a marine engineer, for periods between June 1957 and July 1961.

Mr Dawson was born on the 5th November 1929. At the age of 68, on the 24th January 1998, he died, having also developed malignant mesothelioma. He had been employed by The Cherry Tree Machine Company Limited ("Cherry Tree") as an apprentice fitter, between 1945 and August 1949. He had also been employed by Shell Tankers UK Limited or their predecessors, as a marine engineer, for periods between July 1951 and May 1957.

It is not in issue that, in the course of each of these employments, Mr Jeromson and Mr Dawson had some exposure to asbestos. It is further conceded that the likely level of such exposure would have been capable of giving rise to the disease of mesothelioma, which caused the death of both. In the course of other employments, Mr. Jeromson had other, but minimal, exposure to asbestos.

The Claimants in these actions are the widows of Mr Jeromson and Mr Dawson, respectively. They each claim damages on behalf of the Estate of their late husband, pursuant to the provisions of the Law Reform (Miscellaneous Provisions) Act 1934, and on behalf of themselves, as dependants, pursuant to the provisions of the Fatal Accidents Act 1976 (as Amended). The claims against Shell Tankers UK Limited are based upon common law negligence. The claim against Cherry Tree is based additionally upon breach of statutory duty. Limitation was pleaded as a defence in both actions but (unsurprisingly) was not pursued at trial. In the case of Mr Jeromson,

he first suffered symptoms in about November 1995, and in the case of Mr Dawson, the first symptoms were experienced in about December 1996.

At the end of the trial, I was informed that the parties had agreed damages, in the case of Jeromson, in the sum of £157,794, and in the case of Dawson, in the sum of £113,356. I am grateful to the parties and their representatives for this agreement.

Thus, the only issue is that of liability, and that issue depends largely (especially in the case against Shell Tankers UK Limited) on the extent of exposure or potential exposure to asbestos. Was exposure sufficient to give rise to a foreseeable risk of injury at the material time? The known risk was not mesothelioma, but asbestosis. That issue is simple to state, but difficult to determine after a time lapse of 40/50 years. In the case against Cherry Tree, there is also a major issue, partly of construction and partly of fact, as to breach of statutory duty.

THE CASE AGAINST SHELL

The bulk of the evidence at trial (6 of the 8 days) related to the claims against Shell Tankers UK Limited. This judgment will, therefore, commence with a consideration of that claim. In that context, it is to be recorded that Mr Colin McKay QC, on Shell's behalf, sensibly and helpfully, raised no issue as to the proper identity of the Defendant. The company structure and history is conveniently set out in paragraph 5 of the Witness Statement of Philip Basil Owen (A175) and thus I need not repeat it. I shall now refer to this Defendant as "*Shell*".

Chronologically, the engagements of the two men were as follows:

Mr Dawson:

NAME OF SHIP	ENGINE TYPE	DATES OF SERVICE	POSITION
(i) Verena (1950 - 1971)	Steam Turbine	13.07.51 - 14.05.52	Fifth Engineer
(ii) Tectus (1945 - 1961)	Turbo Electric	18.07.52 - 03.12.52	Fifth Engineer
		04.12.52 - 05.07.53	Fourth Engineer
(iii) Hastrum (1954 - 1975)	Steam Turbine	10.12.53 - 22.09.54	Third Engineer
(iv) Hadriana (1954 - 1975)	Steam Turbine	18.10.54 - 09.02.56	Second Engineer
(v) Hyalina (1948 - 1961)	Turbo Electric	26.10.56 - 08.12.56	Second Engineer
(vi) Trochisus (1944 - 1960)	Turbo Electric	12.12.56 - 21.05.57	Second Engineer

Mr Jeromson:

NAME OF SHIP	ENGINE TYPE	DATES OF SERVICE	POSITION
(i) Hyria (1954 - 1975)	Steam Turbine	01.06.57 - 23.10.57	Fifth Engineer
		18.11.57 - 03.10.58	Fifth Engineer
(ii) Nassa (1942 - 1964)	Diesel	05.06.59 - 29.06.59	Third Engineer
(iii) Tomogerus (1947 - 1961)	Turbo Electric	17.07.59 - 01.09.59	Third Engineer
		01.09.59 - 14.09.59	Second Engineer
(iv) Hadriana (1954 - 1975)	Steam Turbine	15.09.59 - 17.11.59	Third Engineer
		18.11.59 - 18.06.60	Second Engineer
(v) Rita (1935 - 1976)	Steam	06.10.60 - 22.07.61	Second Engineer

(The dates in parentheses after the name of each ship represents the approximate life of the vessel).

There is no overlap in the service of the two men, which covers a period of almost exactly 10 years. The Hadriana was, by chance, the only ship common to the two men. It is uncontroversial that, at the material time, the engine room of these ships contained large quantities of asbestos, by way of insulation. I accept and adopt as broadly accurate, the summary set out in the report of Mr Browne, of Strange, Strange & Gardner, dated the 12th October 1998, in the final paragraph on page 5 (A196). There would have been less asbestos in diesel powered vessels. In fact, the contribution of a diesel vessel in these histories is de minimis. However, the mere presence of asbestos does not equate with exposure, which requires some disturbance of that asbestos. The extent of the disturbance represents the major issue of fact in these cases.

Evidence

Direct evidence from the men involved is understandably limited. Mr Jeromson swore an Affidavit only 3 days before his death. On the second page (A46) he stated:

"During the period of employment with Shell Tankers Limited I was frequently in close touch with asbestos, often in extremely dusty and hot conditions as was necessary to maintain ship machinery. This was particularly so on STS Hyria, HTS Hadriana and TES Tomogerus. Aboard the latter I was responsible for 'mothballing' the vessel at Lock Swilley, County Donegal,

during which process, a lot of stripping and draining of machinery was undertaken. I actually assisted with removing asbestos from the machinery. My responsibilities were for marine engineering involving the maintenance of ships, engines and auxiliary machinery. As a junior or senior engineer we were generally equally involved in this work. I frequently carried out actual hands-on labor work with asbestos. As demand dictated, however, the jobbing nature of ship work meant that I sometimes delegated asbestos work to others, as others did to me, not knowing of the dangers involved at the time. I was in close touch with asbestos rope, asbestos sheeting, and asbestos of the compressed fibre variety.

As all but one of the vessels I sailed on (with the exception of the MV Nassa) were steam powered vessels, there was a far greater likelihood of fatal exposure to asbestos as is in my case. Further examples of cases of high likelihood of this danger were the removal of asbestos insulation that then had to be made good and work done on boiler tops in extreme temperature conditions in confined draughty spaces to service high pressure steam leaks which frequently developed on boilers. Without this maintenance, serious damage to the plant did transpire".

Further, in an unrelated private letter (undated) there appears the following passage:

"[My retired family physician] told me that as a student in 1951 a British specialist lectured his year on the dangers of asbestos, nobody told us as we laboured in extreme Persian Gulf heat on 450 PSI boiler tops repairing steam leaks with asbestos gloves, and tossing asbestos lagging aside" (A65).

I was also provided with several chapters of an autobiography which Mr Jeromson was writing, before his death, covering his marine experience, but it is of limited assistance to the issues, although insightful to the man.

Mr Dawson provided a Witness Statement, signed only 3 weeks before his death, but based upon an interview some 6 months earlier. After referring to running repairs as "*a frequent occurrence*" he went on (A89):

"9. *I remember that on one particular ship, we had to shut down 3 out of 4 cargo pump turbines because of manufacturing faults and that job took a couple of weeks. It entailed taking all the asbestos lagging off and of course we had to replace it afterwards.*

11. *Many running repairs on board ship in the boiler room or engine room would entail disturbance or removal of asbestos lagging in order to get at the relevant parts. Jackets containing asbestos would have to be removed and replaced or alternatively asbestos cement chipped away. I therefore had frequent contact with asbestos throughout the whole of my period of employment with Shell Tankers. Work was often carried out in confined spaces under high temperature conditions".*

It is quite impossible, from these brief statements, to form any clear judgment as to the extent and frequency of exposure to asbestos save to observe that both men independently use the adjective or adverb "*frequent(ly)*" in relation to such exposure. I do not believe that these two dying men would have sought deliberately to mislead

the court, but I can do no more than form a general impression from their statements. In particular, it is relevant to note that neither man made any reference to exposure in the course of dry docking work and this is particularly striking, in the case of Mr Jeromson, because he did isolate the episode of "mothballing".

To complete the details, the parties called and/or invited me to read much further evidence. The live evidence was from Needham, Blakey, King, Spargo and Price, on behalf of the Claimants, and from Barnard, Duguid and Owen, on behalf of Shell. Additionally, Shell called Mr Stanley, purportedly as an expert, but in effect his evidence was largely factual. The paper evidence consisted of a statement from Mr Fenton (A103) who himself contracted mesothelioma and died on the 13th May 1999. His statement was signed about a month before his death, in connection with his own claim for damages against Shell, which remains outstanding. His description of exposure (at paragraphs 18 to 34) is much more detailed than that of Mr Jeromson or Mr Dawson. In assessing his evidence, however, I do take into account the somewhat more modest description of exposure which he gave to his expert, Mr Deary, of T.L. Holden & Co, as related in the latter's report dated the 19th April 1999 (at A211 - 212).

On behalf of Shell, there was put the Witness Statement of a Mr Peters (A147), which had originally been prepared on behalf of the Claimants. Reliance was placed upon the moderate terminology of parts of this statement relating to exposure. In common with the version given by the late Mr Fenton to Mr Deary, Mr Peters' statement uses the word "sometimes" when describing the occasions when insulation had to be stripped or knocked off pipe work.

It would unduly lengthen this Judgment to summarise all the evidence. It is not surprising that different pictures emerge as to the extent of asbestos exposure because:

- (a) the witnesses were recalling events which occurred up to half a century ago;
- (b) at the material time, none of the witnesses were alive to the dangers of asbestos; and
- (c) the witnesses worked on different ships (many not Shell tankers) at different times.

In general, I am satisfied that most of the witnesses were attempting to give a fair and honest account of their recollection of events. I do, however, have some misgivings as to the evidence of Mr Needham, which seemed to me somewhat extreme and partial. Similarly, I have some doubts as to the reliability of the evidence of Mr Owen, in relation to dry dock work, and I find that he must have been very fortunate in his experiences at sea. I shall have to deal with the evidence of Mr Barnard at greater length. Otherwise, I am satisfied that the broad thrust of the recollection of the other witnesses is generally reliable, and that the differences can be accounted for by differing experiences, on different types of ship, of different ages.

The evidence of Mr Barnard merits separate consideration. He was called as a witness for Shell. He had long service with Shell, and direct relevant seagoing

experience between May 1957 and July 1964 (as well as later, less relevant, sea service between 1966 and 1971).

In his Witness Statement, he denied ever having seen clouds of asbestos dust. He stated (A156):

"I accept that on occasions they would have worked with asbestos lagging materials, and other lagging materials, but this would have been on rare occasions and was certainly not a regular feature of their work".

He described occasional repairs to leaking valve seats, gland packing and flange joints of auxiliary steam systems, requiring the removal of a two part (usually asbestos) muff, but went on (A157):

"It was a rare occurrence for a failure of this type to occur and it would be most unlikely for such a repair to be undertaken more than once in 3 months".

Thus, it was a surprise, in the course of his oral evidence, to hear that major leaks, involving actual removal of asbestos occurred up to four times per month; and even more surprising to learn that minor leaks, requiring the removal of the muff occurred two to three times per week. Moreover, in cross-examination, he conceded that the removal of asbestos on major leaks entailed cutting into asbestos or removing asbestos rope, and that these instances constituted the work of any one man of the three on duty, so that, in addition, each man might be in the vicinity of other men

carrying out similar work on a similar number of occasions. A greater contrast between written and oral evidence would be difficult to envisage.

The contrast did not, however, end there. I permitted there to be put to Mr Barnard, in cross-examination, a statement which he had prepared in another case against Shell by a Mrs Ridges. It is noteworthy that such claim was on behalf of a deck officer, rather than a marine engineer. The statement contained the following passage:

"Common running repairs consisted of removal of lagging mats wrapped round steam pipe joints to enable the jointing material to be replaced. Those mats were usually made in the form of an asbestos cloth stuffed with loose asbestos then wrapped around the joint flange and secured with wire to hooks sewn into the cloth. These mats were quite often old and the stuffing leaked from the material. The pre-formed pipe lagging was made of a solid asbestos and sometimes had to be cut back with a saw to allow removal of the nuts and bolts. Lagging on valves and boiler mountings was often made into a solid form by mixing a powdered asbestos with water and spreading the resulting paste around the valve mounting to form a solid block." (emphasis added).

These features of Mr Barnard's evidence have caused me great difficulty in determining the weight which I should attach. Taking into account that he was Shell's own witness, and my own appraisal of him, I judge that his oral evidence, and the description in the Ridges' statement represent by far the more reliable account of Mr Barnard's experience at sea.

Findings of fact

In the light of all the evidence, I must make the best finding that I can as to the frequency and nature of the potential exposure of marine engineers during the relevant period. I was at first attracted by the argument of Mr McKay Q.C., on behalf of Shell, that I should assess average exposure, but ultimately I have been persuaded by the arguments of Mr David Allen Q.C., on behalf of the Claimants, that it is more appropriate for me to address my findings to the question of potential exposure. Mr Allen based this argument upon the great variety of experience of individual engineers, which was such that, in determining what precautions he ought to take, a careful employer ought to have regard to the exposure which an engineer could experience. It would be impossible, in advance, to determine an average for any given seaman. The evidence in this case demonstrates that fact.

I find that the potential exposure of marine engineers at the relevant time was as follows. The most common exposure was likely to have been in the repairs of leaks at joints/flanges. This usually (but not always) involved the removal of jackets or muffs. Even if a muff was in position, the probability (as I find) was that beneath the muff there was asbestos compound which (at least on the first occasion of repair to that joint) would require removal to gain access to the bolts. There was no specified procedure for removing this compound: although some engineers might choose to saw it, more often than not, it would be removed by crude means, such as a hammer or chisel. Thereafter, some engineers would choose to have the compound replaced by mixing an asbestos paste with water. The latter would be done by a rating, but the engineer might well be in close proximity to this operation. The same would apply to the necessary dry sweeping up of the asbestos material which had been knocked off: it

would be done by a rating, but the engineer could well be in close proximity. The replacement of the compound would usually (but not always) be executed so as to afford access to the bolt on a future occasion, without further disturbing the lagging.

I find that this operation was liable to be carried out by any single engineer up to two to three times per week, and that he might come into the vicinity of another engineer carrying out a similar task on other occasions. If I am wrong in deciding the question with relation to potential exposure, but should approach the question as an average, my assessment of the average for this type of work would be once per week.

Usually (but not always) it would only be necessary to remove asbestos compound on the first occasion of a leak at any given joint. I accept the evidence, in general, that there were troublesome joints which tended to leak repeatedly so that on later occasions, only the muff would require to be removed and replaced. However, the very fact of frequent attention to troublesome joints would tend to cause those asbestos muffs to deteriorate more rapidly. After about three removals and replacements, the muff would be likely to begin visibly to deteriorate.

It is extremely difficult, on the evidence, to determine how often it would be sufficient simply to remove a muff, as opposed to also removing asbestos compound beneath. Doing my best, I would estimate that the removal of asbestos compound would be necessary in about 25% of cases. It is quite impossible, on the evidence, to determine how often there would be mixing of asbestos paste to replace lagging which had been removed, but I do not think it likely to have occurred on every occasion.

Depending upon the condition of the muff, its removal and replacement could take anything between five and fifteen minutes. Removal of asbestos compound would take longer, up to a maximum of half an hour. Replacement (including mixing) would take a similar period.

Dry sweeping would occur only:

- (a) when asbestos compound was removed by crude methods; or
- (b) (to a lesser extent) when muffs were removed and replaced for about the third time.

These assessments should not be taken as anything other than a broad estimation of the relative frequency and duration of each activity.

In addition, there would be ad hoc (but more substantial) exposures to asbestos which were quite unpredictable, but relatively rare. Such exposures would be for hours, rather than minutes. For instance, on rare occasions, there might be burst pipes: I refer here to fractures within the body of a pipe, rather than at a joint. Such instances constituted an emergency, and required much greater removal of lagging, both from the burst pipe itself, and from adjacent pipes affected by the burst. The probability is that any necessary removal of lagging would be quite extensive, and would be undertaken by crude methods. I note that Mr Stanley experienced this sort of emergency on four occasions in the course of 9 years service, two of which involved burst pipes. On these occasions, he confessed to having been covered in asbestos, so that it looked as though he was wearing a white boiler suit.

Because of the unpredictability of these events, it is difficult to determine either the potential or the average exposure. Doing my best, I would assess the potential at once or twice per year, and the average at every couple of years. Examples in the employment histories of Mr. Jeromson and Mr. Dawson are the "mothballing", and the shutdown of cargo pump turbines.

I do not accept that the asbestos lagging was so friable as to be liable to break up, whether by the effect of heat or vibration, or by personnel brushing against piping as they walked past. In my judgment, actual physical disturbance was necessary. Insofar as witnesses describe exposure by this means, I do not regard their memories as reliable. Similarly, if and insofar as witnesses describe conditions generally as "dusty", I have difficulty in accepting that evidence. I find that, generally, conditions are likely to have been humid rather than dusty. Furthermore, any general dust was more likely to be soot than asbestos. I find that the exposures to asbestos were specific, as I have attempted to describe.

Such were the seagoing exposures to asbestos. However, there also fall to be considered the dry docking operations. At the relevant time, these were an annual event for each vessel although the evidence indicates that the more extensive dry docking operations might occur only every two, or even four years. Presumably, this explains why neither Mr Jeromson, nor Mr Dawson specifically mention dry docking in their statements.

The evidence of the extent of exposure to asbestos in the course of dry docking operations was contradictory. I discount Mr Owen's minimalistic recollection. All three expert consulting engineers had reported on cases in which exposures, in the course of dry docking had been very high (joint statement: A353B). The important point is that lagging contractors would be brought in; by general agreement, at the material time, such contractors were likely to have adopted an extremely cavalier approach to the stripping of asbestos lagging. The second engineer would be responsible for supervision, but all the engineers would remain on duty throughout the dry docking period. Mr Barnard accepted that such activities could involve considerable disturbance of lagging, and Mr Duguid accepted that a lot of asbestos would be removed, although he did not recall clouds of dust.

I find there was the potential for marine engineers, during the relevant period, to be exposed, albeit at a distance, to the effects of the removal of substantial quantities of lagging by lagging contractors, during dry docking work. Dry docking lasted, on average, about two weeks, but any exposure to asbestos in this manner is unlikely to have exceeded one week. Although vessels were subject to annual dry docking only, any individual might work in dry dock more frequently, if he had changed ships. Generally, however, the potential was in the order of once per year, and bearing in mind that not every dry docking involved significant asbestos removal, the average exposure, I find, would be in the order of once every couple of years. Despite the fact that the engineers were not directly involved, the potential exposure to asbestos dust was very substantial.

Expert evidence: intensity of exposure

I heard expert evidence, in the cases involving Shell, from four witnesses. I have already said that I did not regard Mr Stanley as an expert. Moreover, I was singularly unimpressed by Captain Parker, who reported on behalf of Shell. He sought to rely upon documents relating to hazards from handling cargoes of asbestos, which were plainly discredited by the judgment of Tucker J, in Walker v Port of London Authority and Others (unreported, 4th March 1988). Captain Parker had been a witness in that case, but, strangely, presented his report without reference to the findings in Walker. Moreover, the statement at paragraph 5.2.1 of his report (A268) that medical/government enquiries between 1965 and 1970 "*appeared to conclude that it needed heavy concentration of asbestos dust to produce health hazard*" flew in the face of the fact that, during this period, the risk of mesothelioma from slight contact with asbestos dust had become notorious. For these reasons, I largely discount the evidence of Captain Parker.

The other experts, Mr Browne and Mr Deary, for the Claimants, and Mr Finch, for Shell did, however, assist my task considerably. In particular, after the conclusion of the lay evidence, they met and prepared a joint statement concerning exposures to asbestos, which had been canvassed in the evidence (A353A). Helpfully, in paragraph 9 they prepared a "league table", in order of decreasing magnitude of airborne asbestos dust. They were agreed that only five items potentially gave rise to danger, by the standards of the day, depending upon the magnitude, frequency and duration of exposure. In order of magnitude, those exposures were:-

(1) Stripping of Asbestos Lagging

It was agreed that, using crude methods, this operation gave rise to "*high airborne concentrations of visible dust*".

(2) Mixing of Powders with Water to form Plastic Mix

It was agreed that this gave rise to "*high concentrations of airborne visible dust*" until mixed with water.

(3) Dry Sweeping of Asbestos Debris

It was agreed that this gave rise to "*high airborne concentrations of visible dust*".

(4) Cutting Asbestos Lagging with Hands

It was agreed that this gave rise to "*less high, but still significant, airborne concentrations of visible dust than the use of crude methods*".

(5) Handling of Asbestos Mattresses in Bad Condition

It was agreed that this would give rise to "*moderately high airborne concentrations of visible dust, depending on condition and handling methods*".

It was further agreed, in relation to dry dock work, that it incorporated all these activities, but that the total quantity of airborne dust was "*a function of the range and scale of the activities*". I have already recorded that each had experienced reports of very high exposures in the course of other cases.

This joint statement was a very valuable contribution to the case, but its limits must be recognised. Mr Deary, for instance, believed that even "*moderately high airborne concentrations of visible dust*" equated to a substantial exposure, whereas Mr Finch excluded "*less high*" and "*moderately high*" from the substantial category. The difficulty facing the experts was that there were no available technologies/equipment, for measuring concentrations of asbestos dust at the material time; and further that, until 1960, there were no published limits for asbestos dust and that such limits as were then set were drastically reduced in 1970 (see generally the report of Mr Browne dated 12th October 1998 (at page 11: B74). The only guide to the intensity of exposure was the amount of visible dust liberated (inevitably accompanied by invisible dust).

I was referred to several documents, of more recent vintage, measuring concentrations of asbestos dust, in the course of similar activities. I refer to the paper by Harries in 1971 (C252), Technical Data Note 35 in 1972 (C265A) and two letters in November 1973, relating to sampling for asbestos dust at Shell Chemicals UK Limited, Carrington (A225H-1). I have also seen a video, demonstrating the emission of asbestos dust, but in enhanced lighting. The point of the latter was to demonstrate that the visible dust created by any activity is merely the tip of the iceberg, because it is accompanied by tiny particles invisible to the naked eye, which penetrate the alveoli and begin the process of pathological damage.

I caution myself against reading too much into these sampling examples, because of the difference of scale and of circumstance. However, having listened to the expert

evidence, and read the documents, I am satisfied that activities 1 to 4 (above), such as were likely to have been encountered in engine rooms, would probably have given rise to concentrations substantially above even the lower limits ultimately set in 1960. There is no direct comparison with item 5, but bearing in mind the engineers' league table, and their verbal description ("moderately high"), I am satisfied that this activity also is likely substantially to have exceeded the limits set in 1960. Further, and importantly, bearing in mind that there were no objective limits at the material time, I am quite satisfied that these five activities would have given rise to significant levels of visible dust (I note the use of this term in the experts' joint statement) clearly there to be seen, if considered by any careful employer.

Exposure: summary

In summary, I find that, at the material time, marine engineers employed by Shell were liable and likely to encounter intense concentrations of asbestos dust, on a regular basis. In the most part, these exposures would be for minutes rather than hours, but on occasion, both at sea and in dry dock, the exposures would be for hours and at even higher intensity. I have reached these conclusions upon the basis of the evidence before me, but I am encouraged as to the broad accuracy of my findings by a 1990 paper by Selikoff and others (C270A) demonstrating the extent of absestotic changes in the long term seamen, especially those serving in the engine department. [For completeness, I add that I have disregarded, as too partisan a contribution, a chapter by Jacques at C272].

State of knowledge

I turn, therefore, to the state of knowledge, for which purpose a brief survey of the literature is necessary.

The literature

Something had been known of the harmful nature of asbestos dust since the end of the 19th Century. However, the publication of the Merewether and Price Report (C29), in 1930, was a major landmark in the understanding of the dangers posed by the inhalation of asbestos dust. In a covering letter, the Chief Inspector of Factories summarised the investigations:

"They establish the facts that the inhalation of asbestos dust over a period of years results in the development of a serious type of fibrosis of the lungs, that the development of the disease varies in direct proportion to the length of exposure to the dust, and that susceptibility to the disease is not affected either by age or sex".

The letter went on to propose that the remedy was *"the suppression of dust"*.

The report itself is so well known, and so widely discussed in the expert reports in these cases, as not to require extensive citation. The two important factors stressed were (a) length of employment and (b) concentration of dust, which were regarded as interdependent. Although there is reference (at page 13) to *"certain low and high limits"*, these were undefined, and the inability to define them was apparent in a sentence in the Summary and Recommendations (at page 31):

"The appropriate methods for suppression of dust may only be fully determined when the harmful effects of comparatively low concentrations of asbestos dust are duly appreciated".

Dr Merewether's investigations had been confined to work that involved asbestos manufacturing processes, and he found that the average length of employment for the development of fibrosis was 13.5 years. There can be no doubt that the focus of suspicion, at that time, was the asbestosis industry itself.

As a result of this report, the Asbestos Industry Regulations 1931 (C107) were promulgated, imposing strict obligations, but including an exemption in certain cases:

"...so long as:

- (a) such process of work is carried on occasionally only and no person is employed therein for more than 8 hours in any week...."*

I shall have to consider the construction of these Regulations, in greater detail, when dealing with the case against Cherry Tree. Suffice it to say, at present, that I do not regard such exemption as offering a green light to exposure, provided that it was less than 8 hours per week, nor do I regard the fact that these Regulations were intended primarily for the asbestos industry itself as undermining the general message, in the Merewether report, to the effect that the inhalation of asbestos dust was dangerous, and was liable to result in fibrosis of the lung, depending upon length of employment and concentration of dust.

It is worth noting that, in a memorandum published in a medical journal (and thus not available to most employers) in 1931, Dr Merewether described as "*wholly untenable*" the inference that "*...so long as the period of exposure does not exceed five years, the risk of contracting asbestosis is almost negligible*" (C122).

In 1937, the Factories Act enacted, at Section 47, an obligation, within the limits of practicability, to protect employees not only against dusts "*likely to be injurious*" but also against dust "*of any substantial quantity*". This new provision was commented upon in the 1938 Annual Report of the Chief Inspector of Factories (C140), published in July 1939. The passage is sufficiently important to merit citation:

"..We are but on the threshold of knowledge of the effects on the lungs of dust generally.... Whilst Section 47 of the Factories Act of 1937 may be thought to be somewhat ambiguous.... it is, I consider, an admirable one in that it requires precautions even before it is possible to say specifically that the dust in question is harmful to a recognised pathological extent. There can be no doubt that dust, if inhaled, is physiologically undesirable. Moreover, dust that is thought today to be harmless may, following research, be viewed in another light tomorrow. It is not many years ago when the dust of asbestos was regarded as innocuous, while today it is recognised as highly dangerous" (emphasis added).

In my judgment, a reasonable employer would and should have read this passage and noted the potent description of asbestos dust.

In the 1943 Annual Report (C142), published in October 1944, there was reference to fatalities, as a result of asbestosis. The average duration of employment, resulting in death, was 15.1 years, but a case was noted of employment of as little as 0.5 years. The latter case is probably rogue, in that it has not been repeated, but it was some indication to employers, at the time, that exposure over a relatively short period could be harmful.

After the war, the focus of suspicion widened to include asbestos consumer industries. In August 1945, the Chief Inspector of Factories wrote a letter, dealing explicitly with asbestos insulation aboard ships (C146). The letter was despatched to those involved in shipbuilding and ship repairing, and thus would not have come to the attention of Shell. It is nevertheless of some significance, as indicating the thinking of the Factory Inspectorate at the material time. It contains the following passage:

"I would, however, emphasise that, while asbestos dust may not have any apparent effects at first, experience shows that, particularly if the workers are exposed to the dust in substantial concentrations, serious results are apt to develop later. It is therefore important that, even if the work will only be temporary, all reasonably practicable steps should be taken to reduce the risk to a minimum".

Similar advice was given to power stations in 1949 (C151) and again in 1954 (C155A). It must be appreciated that the exposure to asbestos dust, both in shipbuilding and repair, and in power stations, was likely to be of greater magnitude than in the ordinary course of the employment of a marine engineer, but it is

nevertheless noteworthy that the Factory Inspectorate regarded protection as important, even for short-term exposure.

This advice was not directly available to Shell, but in the Annual Report for 1949 (C152), published in February 1951, in a section headed "*Asbestos Regulations*", the dangers of exposure to asbestos dust, outside the asbestos industry, were stressed:

"It is very necessary to keep an ever watchful eye for the new use of asbestos in some manufacturing or other process, for example, on ships or buildings where the work may be undertaken by someone not fully realising the necessity of preventing as far as possible the inhalation of asbestos fibre and dust".

A similar message was emphasised in the 1956 Annual Report (C162), published in January 1958:

"One very hazardous process, to which the Regulations do not always apply, is the removal of old heat insulation lagging. The handling of this very dry and dusty material presents a serious health hazard, which is all the more serious because the work is often done in confined spaces. Much of this work is done in premises not subject to the Factories Act, and in any case the operation does not take long. The persons who do it are, however, regularly engaged on it and are constantly exposed to risk".

By this time, it had become apparent that there was a further potential grim consequence of exposure to asbestos dust, namely lung cancer. Professor Doll published a paper on this subject in 1955 (C156).

So far as concerns the state of knowledge, available to Shell, at the material time, there is no further relevant literature to which I was referred. However, it is important to go on to summarise certain important developments thereafter. In 1960, in a landmark paper by Wagner, and others (C171), there was identified another potentially lethal consequence of exposure to asbestos dust, namely, diffuse pleural mesothelioma. The danger of this disease was, however, highlighted most particularly in the famous paper by Newhouse and Thompson (C187), published in 1965. This demonstrated the risk of neighbourhood exposure. Albeit published in a medical journal, the message was widely publicised by the Sunday Times, in an article on the 31st October 1965 (C183). For the first time, it began to be appreciated that slight or only minimal exposure to asbestos dust could kill. I need hardly add that Shell are not fixed with that knowledge.

The law

In the context of this remark, I turn to the relevant law. I gratefully adopt a passage in the judgment of Russell LJ in *Margerison v Roberts* 1996 PIQR P356 at p361:

"...liability only attaches to these defendants if the evidence demonstrated that they should reasonably have foreseen a risk of some pulmonary injury, not necessarily mesothelioma. The key issue in these cases is that of foreseeability of risk of injury".

The same remark is apposite to Shell in these cases.

The general principles as to foreseeability, in the context of state of knowledge, are classically stated by Swanwick J in Stokes v Guest, 1968 1WLR, 1776 at 1783. This passage was considered and amplified by Mustill J in Thompson v Smith, 1984 1QB, 405 at 415-6. In particular, Mr McKay QC, for Shell, emphasised the statement by Mustill J:

"the employer must keep up to date, but the court must be slow to blame him for not ploughing a lone furrow".

There is a further relevant passage at page 423:

"In the light of all these factors, one must answer this question. From what date would a reasonable employer, with proper but not extraordinary solicitude for the welfare of his workers, have identified the problem of excessive noise in his yard, recognised that it was capable of solution, found a possible solution, weighed up the potential advantages and disadvantages of that solution, decided to adopt it, acquired a supply of the protectors, set in train the program of education necessary to persuade the men and their representatives that the system was useful and not potentially deleterious, experimented with the system, and finally put it into full effect?"

Mr McKay rightfully emphasised the need for time to react, relying upon this passage,

but on the other hand, if the risk should have been appreciated, the necessary precautions, on the facts of this case, were relatively straightforward and well known. As to foreseeability generally, Mr Allen QC relies upon two passages from Czarnikow Limited v Koufos, 1961 AC350. A tortfeasor is liable for:

Per Lord Reid (at page 385G), "*any type of damage which is reasonably foreseeable and liable to happen even in the most unusual case unless the risk is so small that a reasonable man would in the circumstances feel justified in neglecting it*".

Per Lord Upjohn (at page 422C), "*any damage which he can reasonably foresee may happen.... however unlikely it may be unless it can be brushed aside as far fetched*".

The passage was elucidated upon by Lord Ackner in Page v Smith, 1995 2WLR, 664 at 650 E-G.

Mr Allen finally referred me to a short passage in the Wagon Mound No. 2, 1967 AC617 at 642 E-F.

Should Shell have foreseen a risk of injury?

I direct myself to these propositions of law, in analysing the facts of the cases against Shell. I do so in the context of the agreement of the engineers (A353) that "*the state of knowledge of the defendants concerning asbestos ought to be regarded as no greater, nor less, than any other major land-based employers*". As a starting point, I adopt the proposition that such employer would give due consideration to the content of the Annual Reports of the Chief Inspector of Factories. I am conscious that the

passages which I have cited form only a small part of a lengthy Report, but that does not, in my judgment, minimise their importance.

There has been a difference of judicial interpretation of the relevant state of knowledge. For instance, in Gunn v Wallsend Slipway & Engineering Company Limited (unreported, 7th November 1988), Waterhouse J implicitly accepted the formulation of counsel for the defendant that:

"Until 1960 the known hazard associated with exposure to asbestos was asbestosis, a form of lung fibrosis, which is quite different from mesothelioma, and is attributed to heavy and prolonged exposure" (page 25) and

"None of the Annual Reports of the Chief Inspector... to the end of 1965 drew attention adequately or at all to any risk of injury from asbestos to an employee from light or intermittent exposure to asbestos dust...."

On the other hand, Buxton J in Owen v IMI Yorkshire Copper Tube (unreported, 15th June 1995) concluded (at page 41):

"I find that a reasonably informed employer would have been aware from at least 1949 that care should be taken with asbestos; that he would have known from the middle of 1950 that exposure to asbestos should be kept at the lowest possible level; and from 1965 he should have known that there was a new and uncertain hazard, in the shape of mesothelioma, that made reduction in exposure levels imperative".

Further (at page 59):

"...from the start of Mr Owen's employment [September 1951] the difficulties related to and the threats posed by asbestos were sufficiently well known, and sufficiently uncertain in their extent and effect, for employers to be under a duty to reduce exposure to the greatest extent possible".

With the greatest diffidence and respect, I cannot agree with Waterhouse J that the literature justifies the conclusion until 1960, that asbestosis was attributable only to heavy and prolonged exposure. As early as 1930, Dr Merewether was emphasising the two factors, namely (a) concentration and (b) length of exposure, as being interdependent. However, he was unable to identify safe limits of exposure, and such remained the position throughout the material period. Having applied my independent analysis to the documents, I prefer the formulation of Buxton J, that the dangers posed by asbestos were *"sufficiently uncertain in their extent and effect, in the 1950's, for employers to be under a duty to minimise exposure"*. I have particularly in mind the description of asbestos as *"highly dangerous"* in the 1938 Annual Report, and the reference in the 1949 Annual Report to *"the necessity of preventing as far as possible the inhalation of asbestos fibre and dust"*, all in the context of the absence of any means of knowledge of what constituted a safe level of exposure. (I note that, in the Cherry Tree case, the Defendant's expert thought it "significant" that Mr. Dawson had left before publication of the 1949 Annual Report: paragraph 5.3, B86).

If the exposure had indeed been "*limited, intermittent or occasional*" (to adopt the terminology of the Defence: A22) then a different conclusion would have been justified. However, on my findings, the exposures, or potential exposures, in these cases, albeit relatively brief, were substantial, and regular. Although it might have been anticipated that, with these levels of exposure, the development of asbestosis would take years to develop (if at all), I accept the submission of Mr Allen that a reasonable employer, being necessarily ignorant of any future potential asbestos exposure, cannot safely assume that there will never be sufficient cumulative exposure. In the words of Lord Upjohn, previously cited, in the uncertain state of knowledge, the risk could not be "*brushed aside as far-fetched*".

I am reinforced in my conclusion by the facts that:

- (a) the potential consequences were of serious disease (asbestosis) or even death (including, in the latter part of the period, lung cancer); and
- (b) the necessary precautions were simple and inexpensive: essentially, they would have included warning employees, the provision of an approved respirator (available in lightweight form from 1952) (C155), the provision of local exhaust ventilation, and the damping down of asbestos in the course of removal and/or brushing. This is not a case in which any extensive "*time to react*" was required.

In short, the potential risks (even if judged to be small over the actual period of employment of these two men) far outweighed any expense or difficulty of undertaking necessary precautions. In my judgment, therefore, Shell should, between

1951 and 1961, have itself appreciated the risk, and taken the simple steps necessary to guard against it, having regard to the potential extent of exposure of their marine engineers to asbestos dust. Such is my primary finding.

However, if I am mistaken in this conclusion, I am more than satisfied that, at the very least, in the then state of knowledge, given my findings as to the extent of potential exposure, Shell were under a duty to seek advice from an authoritative body, the obvious source being the Factory Inspectorate. In my judgment, a careful employer would have thought it necessary to seek advice at least following the comments in the 1949 Annual Report. Further, on the particular facts of this matter, (although only relevant to the Jeromson case, and not essential to my conclusion) I consider that Shell should have been prompted to seek advice when, in 1954 (D20) or 1955 (A402 F-G) one of their Dutch doctors, Dr Becking, had recommended that the use of blue asbestos should cease at Shell's Pernis Refinery. This recommendation ought to have put Shell on enquiry, even if they had not properly considered the Annual Reports of the Chief Inspector of Factories.

If such advice had been sought, then I am in little doubt that the advice which would have been tendered would be to take precautions such as those outlined above. In reaching that conclusion, I have in mind the advice given to shipbuilders and repairers in 1945, and to power stations in 1949 and 1954. In addition, I note that the Defendants' expert, Mr Finch (himself a former Factory Inspector) in the course of his evidence, accepted that if he had been consulted, at the material time, concerning hypothetical substantial exposure for five minutes per week, he would himself have advised protection. In his words "*prudence would dictate*" precautions, even though

he doubted whether there was any actual risk, on the state of knowledge at the time. It is true that Mr Finch, in re-examination, stated that he would not have thought it necessary for Shell to have sought advice, but in my judgment, he was wrong in that conclusion. I note, in parenthesis, that Mr Clark, the expert called by Cherry Tree, agreed with Mr Finch, that the prudent course would have been to take precautions in such hypothetical circumstances.

SHELL: CONCLUSION

Accordingly, in their failure themselves to initiate precautions, or alternatively in failing to seek advice, I conclude that Shell were negligent. It is difficult to exclude hindsight from any such judgment, but I have directed myself rigorously to apply my mind solely to the knowledge available in the 1950's. It may well be that, if they had taken precautions during that period, Shell would have been "*ploughing a lone furrow*" but in my judgment that is a criticism of industry as a whole, during the relevant period. If proper care had been taken in considering the potential circumstances of a marine engineer's work, in the context of the available literature, these exposures would not have continued unprotected. In reality, Shell (in common with many employers) did not give a second thought to their marine engineers' potential exposure to asbestos dust.

In the course of evidence and submissions, Mr McKay QC took me through subsequent documentation, leading to the publication of Shell's own Code of Practice in 1970 (E2/14). He also relied upon the fact that it was not until July 1976 that asbestos was added to the list of dangerous substances under the Merchant Shipping legislation (E2/20), and not until 1977 that an 'M' Notice was issued (E2/22). I hope

that I will be forgiven for not prolonging this Judgment by considering such submissions and documents in detail. To an extent, they are undermined by the decision of Tucker J in Walker, but generally, I do not consider that a reasonable employer is entitled to await a statutory obligation before taking reasonable precautions. Moreover, some of the documents in the 1960's, to which I was referred, contained more wishful thinking than rigorous analysis. Indeed, even after publication of Shell's own Code, its advice to its seamen (E2/15) was remarkably complacent. Suffice it to say that I have taken into account all these documents, and Mr McKay's arguments, in reaching my conclusions.

In summary, Shell should have foreseen the risk of asbestosis in the normal course of employment with them as a marine engineer. As a consequence, they should have taken straightforward precautions. They failed to do so, and such failure constituted negligence. I have no doubt that such negligence contributed significantly to the contractment of mesothelioma by both Mr. Jeromson and Mr. Dawson. Accordingly, the claims against Shell succeed in full.

THE CASE AGAINST CHERRY TREE

I turn finally, to the claim against Cherry Tree.

Evidence

The evidence as to working conditions derives solely from Mr Dawson's statement:

"For the first 6 months I was not exposed to asbestos but thereafter, part of my job did bring me into contact with asbestos. The dry cleaners' presses (something like a trouser press) had a perforated metal plate in both the top

and bottom platens. Around the edges of each plate there was a groove which was sealed with asbestos to stop the steam escaping through the sides. The asbestos was a fibrous floc and it came in a brown paper sack rather like a cement bag.

I would take a couple of handfuls of this stuff, put it in a bucket and mix it with water and then spread it into the grooves using my fingers. Once wet, it was rather like a greasy sort of mud.

When handling the dry asbestos, fibres could be seen floating in the air against the sunlight and it got on to my overalls. When it was wet it did not appear to emit any fibres. I did that job about once a week and as we made the machines in batches of about 6 at a time, I would do all six at once and applying the asbestos to those six would take about one hour, and I did that job frequently from 1946 to about 1948".

It is worth recording that, whilst alive, Mr Dawson saw Dr Barber in September 1997 (B188). A noteworthy sentence is:

"The asbestos in dry form generated a moderate amount of dust". (emphasis added)

There was some dispute, between the experts (Mr Browne, for the Claimant, and Mr Clark, for Cherry Tree) as how many mixes would be necessary, on each occasion, to deal with a batch of six. Depending upon the dimensions, it is possible that more than one mix was involved. However, Mr Dawson refers only to a single mix, and "a

couple of handfuls", and thus, on the balance of probabilities, I find that there was only a single mix.

There was a further dispute as to whether the mix was asbestos flock or a composition lagging, such as 85% magnesia and 15% asbestos fibres. As Mr Dawson used the word flock, I find, on the balance of probabilities, that it was the former. I accept the evidence of Mr Clark that the flock would be fairly cohesive, creating less dust than the compound, although, of course, any dust created would be pure asbestos. I further accept the evidence of Mr Clark that any visible dust would be present for a maximum of 2/3 minutes (although invisible dust might persist longer).

The claim is brought for breach of statutory duty, and for common law negligence. The alleged breach of statutory duty is twofold.

Asbestos Industry Regulations 1931

Firstly, it is alleged that there is a breach of Regulation 2(a) of the Asbestos Industry Regulations 1931:

"mixing or blending by hand of asbestos shall not be carried on except with an exhaust draught effected by mechanical means so designed and maintained as to ensure as far as practicable the suppression of dust during the processes".

Mr Feeny, for Cherry Tree, submitted that:

- (i) the Regulations are inapplicable;
- (ii) if applicable, Mr Dawson's work is excluded by the exemption; and
- (iii) if applicable and not excluded, practicable measures had been taken.

At first blush, it is a surprising contention that this operation was covered by these Regulations, and indeed, in his written opening, Mr Allen QC made no reference to this breach (albeit contained in the pleadings). It is true that the title of the Regulations, and the background (the Merewether and Price report) might give the impression that the Regulations were confined to the asbestos industry. However, the preamble makes it clear that the Regulations apply "*to all factories and workshops... in which the following processes.....are carried on*". The relevant process is (i) which includes "*the mixing....of asbestos*".

Mr Feeny submitted that the Regulations contemplated the mixing of asbestos with asbestos, rather than with water. In my judgment, the plain meaning of the word "*mixing*" cannot be so restricted. I conclude that the Regulations did indeed apply to the mixing of asbestos with water, which was the operation undertaken by Mr Dawson.

I have already cited the exemption. Mr Feeny submitted that the use of the word "*and*" was not intended to be conjunctive and that curious results would ensue if Mr. Allen were correct. Once again, however, in my judgment, the plain meaning of the word requires, in order for the exemption to apply, both that the work is carried on

occasionally only, and that no person is employed for 8 hours or more in any week. To find otherwise would render otiose the use of the words "*occasionally only*". I note (although I have reached my decision quite independently) that the Factory Inspectorate came to a similar conclusion (C112A)

The work undertaken by Mr Dawson was carried out regularly, approximately once per week, and, in my judgment, cannot be regarded as being carried on occasionally only. Thus, although Mr Dawson was engaged for less than eight hours each week, the exemption does not apply.

Finally, in the context of the use of the words "*as far as practicable*" in Regulation 2(a), I agree with Boreham J in *Brooks v Coates*, 1984, 1 ALL ER, 702, at 718:

"I take practicable in this context to mean a precaution which could be taken or undertaken without practical difficulty".

There would have been no practical difficulty in providing an exhaust draught to suppress the dust to which Mr Dawson was exposed. In my judgment, the Claimant has established a breach of Regulation 2.

Factories Act 1937: Section 47

I must next consider the alleged breach of Section 47 of the Factories' Act 1937. In order to succeed, the Claimant must establish that Mr Dawson was exposed to "*any dust... of such a character and to such an extent as to be likely to be injurious or offensive.... or of any substantial quantity of dust of any kind*".

The former depends upon state of knowledge, which is also relevant to common law negligence. On the authorities, the words "*likely to*" mean no more than "*might well*". Thus, the question is whether this exposure, by the standards of 1946/8, might well have injured Mr Dawson. Mr Allen QC relied particularly upon the passage, at page 28 of Technical Data Note 35 (C265A). Mixing by hand in a bucket of water was said to release "*relatively large quantities of dust*", but it was further stated that "*some methods give rise to much less dust than others*".

In this context, I have particular regard to the description given by Mr Dawson to Dr Barber to the effect that the asbestos generated "*a moderate amount of dust*". In my judgment, the explanation is probably that the use of asbestos flock, rather than composition, positively restricted the emission of visible dust (which was, at the material time, the only viable means of assessment). I am unable to find, on the balance of probabilities, that, judged by the state of knowledge at the time, such dust was likely to be injurious within the meaning of Section 47. I am reinforced in that view by the fact that this employment pre-dated the publication of the 1949 Annual Report (see the report of Mr Clark: B36).

However, I must consider, nevertheless, whether the dust created was "*of any substantial quantity*" within the meaning of Section 47. In my judgment, with reference to the description by Mr Dawson to Dr Barber, the dust was not "*substantial*" within its ordinary meaning. Therefore, no breach of Section 47 has been established.

Negligence

Finally, I must consider common law negligence. By parity of reasoning with my consideration of the question of "*likely to be injurious*" in relation to the alleged breach of Section 47, albeit with some hesitation, I have concluded that common law negligence has not been established, based upon the knowledge available during the relevant period (i.e. before the publication of the 1949 Annual Report). In particular, I find that the level of exposure was significantly less than that to which Mr Dawson was later exposed, in the course of his employment with Shell. This quantitative difference tilts the balance against a finding of negligence.

CHERRY TREE: CONCLUSIONS

The claim against Cherry Tree fails under Section 47 and at common law, but succeeds under Regulation 2 of the Asbestos Industry Regulations. However, a breach of Regulation 2 is sufficient to establish liability on the part of Cherry Tree. Again, I do not doubt that this exposure (which would have been prevented by compliance with the Regulations) made more than a minimal contribution to the contraction of mesothelioma by Mr. Dawson. Accordingly, the claim of Mr Dawson also succeeds against Cherry Tree.

CONTRIBUTION AS BETWEEN DEFENDANTS

Finally, I must consider the question of contribution, as between Cherry Tree and Shell, in respect of Mr Dawson. It was conceded, by Counsel for both parties, that, if I were to find in the Claimant's favour, blameworthiness would be difficult to distinguish between the two parties. However, on the question of causation, the

exposure to asbestos dust, in the course of employment with Shell, was much greater, both in dose, and in period. Taking these factors into account, I judge that the contribution of Cherry Tree should be assessed at 20%, and that of Shell at 80%.

ORDERS

In conclusion, therefore, the claims in both actions succeed. Mrs Jeromson is entitled to Judgment against Shell, in the agreed sum of £157,794. Mrs Dawson is entitled to Judgment against both Cherry Tree and Shell, in the agreed sum of £113,356. As between Cherry Tree and Shell, I assess the contribution at 20%/80% respectively.

I will hear the parties, so far as necessary, on the question of costs, and any ancillary orders. I would only conclude by thanking all Counsel for their considerable assistance in this difficult matter.

R. D. MACHELL QC

1 February, 2000