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Case Nos: CA-2022-002485 and CA-2022-002456

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 14 March 2024

CA-2022-002485

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
KING'S BENCH DIVISION
JEREMY HYAM KC (SITTING AS A
DEPUTY JUDGE OF THE HIGH COURT)
[2022] EWHC 3082 (KB)

Before:

LORD JUSTICE UNDERHILL
(Vice-President of the Court of Appeal (Civil Division))
LORD JUSTICE NEWEY
and
LORD JUSTICE STUART-SMITH

Between:

(1) EMMA JANE WHITE
(2) SUSAN MARY WHITE
(3) STEPHEN THOMAS WHITE
(Executors of the estate of THOMAS ALBERT WHITE, deceased)
Claimants/Appellants

-and-

SECRETARY OF STATE FOR HEALTH AND SOCIAL CARE
Defendant/Respondent

Harry Steinberg KC and George Murray (instructed by James Murray Law)
for the Appellants
David Platt KC and Philip Turton (instructed by Clyde & Co) for the Respondent

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
KING'S BENCH DIVISION
HIS HONOUR JUDGE FREEDMAN
[2022] EWHC 3036 (KB)

Before:

LORD JUSTICE UNDERHILL
(Vice-President of the Court of Appeal (Civil Division))
LORD JUSTICE NEWBY
and
LORD JUSTICE STUART-SMITH

Between:

JENNIFER ANN CUTHBERT
(Executrix of the estate of DEREK BARRY CUTHBERT, deceased)
Claimant/Appellant

-and-

TAYLOR WOODROW CONSTRUCTION HOLDINGS
Defendant/Respondent

Michael Rawlinson KC, Max Archer and Jessica Franklin (instructed by
Boyes Turner LLP) for the **Appellant**
Michael Kent KC and Catherine Foster (instructed by **Clyde & Co**) for the **Respondent**

Hearing dates: 6-7 December 2023

Approved Judgment

This judgment was handed down remotely at 10.30am on 14 March 2024 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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Lord Justice Stuart-Smith:

Introduction

1. In these two actions the Claimants appeal from the decision of the respective Courts below, dismissing their claim for damages attributable to the contraction of mesothelioma and subsequent deaths of those whose estates they represent. I shall refer to the appeals as “the White appeal” and “the Cuthbert appeal”. Each Claimant appeals with the leave of William Davis LJ, who ordered that the appeals should be heard together. Each appeal raises the question whether the trial Judge applied the correct legal test for establishing a duty of care. In the White appeal there is no appeal against the Judge’s findings of fact. In the Cuthbert appeal, the Claimant submits that the Judge made findings of fact that were not justified; alternatively, that the Judge did not appreciate the full significance of the findings he made.
2. After a brief procedural and factual introduction, I shall summarise the most important aspects of the judgments below. In each action, the trial Judge was referred to some of the extensive literature evidencing the state of knowledge about the risks of inhaling asbestos. Each Judge referred to extracts from that literature as informing their approach to the issue of foreseeability of injury. In doing so they followed a path that is well-worn by others. That path has been extensively and thoroughly re-trodden by the parties at the hearing of these appeals, with each party making detailed submissions about the inferences to be drawn from individual documents and the aggregate effect of the literature as a whole. Since those submissions are central to the issue of foreseeability of injury, I attempt to trace the development of the literature as a separate section of this judgment. Having done so, I review the applicable principles and the main authorities to which we were referred, after which I address the appeals in each action.
3. For the reasons I set out below I would dismiss both appeals.

The White appeal: factual and procedural background

4. Mr Thomas White was born on 23 November 1932. He was in reasonably good health until he was diagnosed as suffering from mesothelioma in or about September 2019, when he was aged 86. He died on 8 April 2020, when he was aged 87. The Claimants alleged that Mr White contracted the mesothelioma because of exposure to asbestos when working at the Sefton General Hospital in Liverpool during two periods of employment. The first was between about 1949 and 1960, during which time Mr White was employed by the Defendant’s predecessor as a junior lab technician. The second was between 1973/1974 and 1991/1992 when he worked at the hospital as a senior biochemist.
5. The trial of the action was before Mr Jeremy Hyam KC sitting as a Deputy Judge of the High Court. The witness evidence consisted of a witness statement from Mr White, completed shortly before his death, and one from his daughter, the first Claimant, who was not required to attend to give her evidence orally or for cross examination. There was a joint statement from the medical experts, Dr Warburton and Dr Moore-Gillon, who were in agreement. In addition, as the trial Judge recorded:

“In respect of engineering/occupational hygiene evidence, although the Claimants identified an appropriate expert occupational hygienist in accordance with the Master’s direction, and a draft report was prepared and a conference with Counsel held, no such report was ever served by the Claimants. The consequence was that the only expert occupational hygienist evidence before the Court was that of the Defendant’s expert Mr Graeme Hughson, dated 1st July 2022. That report was accompanied by 5 lever arch files of relevant literature in respect of the developing knowledge of asbestos over time.”

6. In a judgment handed down on 2 December 2022, the trial Judge held that there had been some exposure to asbestos during the first period that was intermittent and in very low quantities, which elsewhere he described as *de minimis*. During the second period the level of any exposure was likely to be insignificant in causal terms. He then went on to find that the employer had not acted in breach of any duty of care in respect of either period. That conclusion is accepted by the Claimants in relation to the second period; but it is challenged in this appeal in relation to the first.

The Cuthbert appeal: factual and procedural background

7. Mr Derek Cuthbert was born on 14 December 1938. He was informed of the diagnosis of mesothelioma on 12 March 2021, when he was aged 82. He died on 5 April 2022, when he was aged 83. The Claimant alleged that Mr Cuthbert was exposed to asbestos dust and fibres when employed by the Defendant between about 1956 and 1959 and engaged in construction work at Queenswood School in Cheshunt.
8. The trial of the action was before HHJ Freedman sitting as a Judge of the High Court. The Claimant was called to confirm her statement. The court also had two witness statements from Mr Cuthbert, dated 10 May and 21 July 2021. Since the HMRC schedule did not cover Mr Cuthbert’s employment before 1960, the Defendant was unable to admit his employment or the capacity in which he was employed. There was no medical issue on diagnosis or causation. The only live evidence of substance was that of the occupational hygienists Ms Conroy (instructed on behalf of the Claimant) and Dr Phillips (instructed on behalf of the Defendant).
9. In a judgment handed down on 30 November 2022, the Judge found that Mr Cuthbert had had “irregular and intermittent contact” with carpenters at the site and that, at times, they were engaged in cutting up asbestos materials when he was in their vicinity. Sometimes, depending on the weather, the cutting of asbestos boards took place outside. “From time to time” he undertook sweeping up debris and on occasions this would be “a number of times per day”. Even if he were to conclude that Mr Cuthbert did sweeping up on a fairly regular basis, it was probable that it only occupied a very small portion of his working day: the Judge accepted Defence counsel’s suggestion “that, perhaps, he spent in the order of ten minutes per day sweeping up.” Overall he found Mr Cuthbert’s account in his witness statements to be implausible. He concluded that “his exposure to asbestos when employed by the defendant was of a low order, light and intermittent and, in the main, as a bystander.” After a review of the literature and relevant authorities, he expressed his conclusion as follows:

“I consider that a reasonable employer keeping abreast of the available knowledge could not reasonably have foreseen that there was a significant (i.e. more than fanciful) risk of injury as a result of the exposure to asbestos at the level to which I have found that [Mr Cuthbert] was exposed.”

10. In the light of this conclusion, he found that “there was no breach of duty where the exposure was light and intermittent.” The Claimant challenges the Judge’s description of the level of Mr Cuthbert’s exposure. In oral submissions, the Claimant placed particular emphasis on the existence of visible clouds of dust when Mr Cuthbert swept up, which the Claimant submits demonstrates direct exposure of an intensity that cannot reasonably be described as “light and intermittent”.

The judgment in the White appeal

11. The Judge identified at [6] that the central issues on the facts:

“turn on the amount of asbestos dust to which the deceased is likely to have been exposed in each period of employment and whether that level of exposure was sufficient to trigger a duty to take precautionary steps to reduce the risk of exposure, or to avoid it altogether, or at least take advice on what precautionary steps ought to be taken.”

12. An issue arose as to the extent to which the Claimants, having not served any expert occupational hygiene evidence of their own, not having asked any Part 35 questions of Dr Hughson and not having cross-examined him, could nonetheless impugn the evidence of Dr Hughson on the matters in his report. At that time, the leading authority on the issue was the decision of the Court of Appeal in *Griffiths v TUI (UK) Ltd* [2021] EWCA Civ 1442, [2022] 1 WLR 973. The majority of the Court of Appeal (Asplin and Nugee LJJ, Bean LJ dissenting) had held that there was no strict rule that the court was bound in all circumstances to accept the uncontroverted evidence of an expert witness which complied with the formal requirements of CPR Pt 35; rather, such evidence fell to be evaluated and assessed in the usual way, with the approach taken and the weight being given to such evidence depending on the circumstances of the individual case and the nature and proposed use of the evidence in question.
13. The Judge said that he would follow that approach, as he was bound to do. He regarded Mr Hughson as having very considerable expertise in assessing likely exposure to asbestos dust in claims of this type; and he accepted that “any departure from a properly reasoned opinion of his on matters of expert assessment which are within his expertise would require cogent explanation.” Since he delivered his judgment, the Supreme Court has reversed the decision of the Court of Appeal: see [2023] UKSC 48, [2023] 3 WLR 1204. Because the Judge accepted the main substance of Mr Hughson’s evidence even when applying the Court of Appeal’s approach, the decision of the Supreme Court does not materially affect the outcome of this appeal.
14. The Judge made detailed and reasoned findings of fact at [16]-[21], noting that the Defendant did not advance any positive case that steps were taken to mitigate the risks of the use of asbestos and that neither party was likely to have access to good contemporaneous documentary evidence as to the state of the employer’s premises. In

summary he found that Mr White was employed by the Defendant as a junior lab technician at Sefton hospital between 1949 and 1960: we are not concerned with later periods of employment. During that period protective mats made of asbestos millboard were used under Bunsen burners. The mats were relatively soft and friable. Abrasion of the mats by normal usage would be likely to cause small amounts of dust to be emitted. The Judge rejected a submission that the lab benches would be covered with asbestos dust or that there was a constant flow of asbestos dust and fibres from the boards into the environment. His central finding (at [19(xii)]) was:

“... I think it is likely that whenever the Bunsen burners were used, or the mats were moved around the lab, (i.e. intermittently) some dust was likely to be emitted, mostly by normal usage and occasionally by breakage of the mats. In a hospital laboratory, I consider it is likely that the lab benches would be regularly wiped down either with a wet or dry cloth, and in the course of that activity dust particles left on the benches would be likely to enter into the work environment. More so if dry rather than wet cloths were used. Occasionally, I accept the mats might break and emit larger quantities of dust but as a general rule the dispersion of dust particles into the air would have been intermittent rather than constant and probably at low quantities.”

15. Relying on the evidence of Mr Hughson, the Judge then made a finding “of the likely level of exposure (at least in general terms)” by reference to those findings of fact. The steps of his analysis based on his findings were set out at [19(xv)]. In summary:
 - i) Handling of a friable form of asbestos such as millboard would likely create an asbestos dust concentration of around 1-2 fibre/ml for short periods of time. This would have been if the Bunsen burner mats were dropped down onto bench tops, and where they tended to break apart and where the deceased was in close proximity to others who did the same, or when he wiped away dust deposits from the bench tops. When sitting on the work benches, and not being used or moved, such boards would not have released asbestos dust. Thus, although use of the mats, abrasion of their surfaces by moving them, or dropping such mats is likely to have caused asbestos dust to be emitted into the air in the locality where the deceased was working such emissions were not constant but intermittent, and probably at very low levels. The periods when such intermittent emissions occurred were cumulatively for no more than for 12 minutes in an 8-hour working day.
 - ii) In the light of those findings, Mr White was potentially exposed to an average asbestos concentration of around 0.02 to 0.05 fibre/ml (8-hr TWA) on those days when the activities took place, which the Judge found to be 75% of the time he was working. In other words, intermittent emissions as found by the Judge occurred on about 75% of Mr White’s working days and, on days when they did occur would be for no more than 12 minutes in an 8-hour working day.
 - iii) The Judge accepted 0.2 to 0.4 fibre/ml years as an “illustrative calculation” that was “not an unreasonable estimate” of Mr White’s likely cumulative asbestos exposure during the period from 1949 to 1960. He found that the likely level of

exposure during the period was modest and infrequent, and in overall terms, not more than minimal.

- iv) That level was a “marginal increased level above background” but (on the evidence of the respiratory experts) gave rise to “a medically significant increase in risk of mesothelioma attributable to his work with the Defendant.”
16. At [21] the Judge set out what he described as his “key factual” findings in relation to the period from 1949-1960 as follows:
- “[Mr White] was likely to have been exposed to asbestos dust but intermittently and in very low quantities. Mr Hughson has estimated the exposure equated to 0.02 to 0.05 fibre/ml (8-hr TWA); or 0.2 to 0.4 fibre/ml years. On the basis of the joint medical evidence and Mr Hughson’s evidence and notwithstanding this is a level which is only a “marginal increased level above background”, it is a statistically significant increase in risk, and I find ... sufficient to amount to a material increase in the risk of the deceased developing mesothelioma.”
17. At [22]-[48], the Judge addressed authorities setting out the principles to be applied when considering the alleged existence of a duty of care in this area of the law. I address those principles in detail at [112] below.
18. In the first section of his analysis, which he entitled “Duty of Care”, the Judge cited relevant passages from a good selection of the leading authorities, including the classic statements of principle from *Stokes v Guest, Keen and Nettlefold (Bolts and Nuts) Ltd* [1968] 1 WLR 1776 and *Thompson v Smiths Shiprepairers (North Shields) Ltd* [1984] QB 405. He reviewed *Jeromson v Shell Tankers (UK) Ltd* [2001] EWCA Civ 101, [2001] ICR 1223, *Maguire v Harland and Wolff plc* [2005] EWCA Civ 1, [2005] PIQR P21, *Williams v University of Birmingham* [2011] EWCA Civ 1242, [2012] PIQR 53, and *Bussey v Anglia Heating* [2018] EWCA Civ 243, [2018] ICR 1242 (and other first instance decisions).
19. The Judge at [42] placed particular emphasis upon the two-stage approach suggested by Underhill LJ in *Bussey*, first asking himself what he described as “the overall question” derived from *Jeromson* which he then subdivided into two. The “overall question” was “whether the risk of personal injury arising from his exposure to asbestos ought reasonably have been foreseen by a careful employer to the extent that the employer should have taken precautions or at the very least sought advice as to what, if any, precautions he could take.” At [43] he subdivided that question into two stages:
- “(i) Should Sefton Hospital ... have been aware that the exposure to asbestos dust which his work involved gave rise to a significant risk of asbestos-related injury. Where "significant" is meant to exclude risks which are purely fanciful: any real risk, albeit statistically small, of a fatal illness is significant.
 - (ii) If yes, did Sefton Hospital take proper precautions to reduce or eliminate that risk or at the very least seek advice as to what, if any, precautions he could take.”

20. The Judge (correctly in my view) identified a relationship between stages one and two where (as in the present case) the Defendant does not advance a case that any steps at all were taken, because, as he put it at [44]:

“It would seem to me to be odd to find the Defendant in breach of duty, if, had appropriate advice been sought, the hospital would reasonably have been advised that the risk of asbestos-related injury was sufficiently low or negligible as to be not worth troubling about. Equally, it would seem odd, not to find a breach of duty, if, had appropriate advice been sought, the hospital would have been reasonably advised to take at least some precautions to reduce the risk of asbestos related injury.”

21. In my judgment, the existence of the relationship identified by the Judge between the two stages of the approach that he was adopting arises because he had elided questions going to the existence of a duty of care (stage 1) with questions going to whether there had been a breach of duty (stage 2). However, it led him to ask at [45] the relevant question, namely whether an employer who sought appropriate advice would have been advised that precautions should be taken:

“On this issue, Mr Hughson’s evidence is helpful. He explains that throughout the 1950s and early 1960s the prevailing view was that occasional and relatively low-level exposure to asbestos even in industrial processes and the application of asbestos lagging, was not thought to be hazardous and would not have warranted precautions such as segregation of the workplace or use of respiratory protection. Thus even if it was accepted that a necessary part of the deceased’s employment included cutting asbestos sheets made of millboard or AIB, for use as protective heat mats, that activity would not have been classed as a hazardous one.”

22. The Judge then turned to the second section of his analysis, which he entitled “Breach of duty – the first period of employment.” He commenced by stating at [49] that, since the Defendant had not been measuring or monitoring asbestos levels, the actual likely level of exposure (measured quantitatively) was far less important than the question:

“whether, given the knowledge that:-

(i) Soft asbestos mats were in use as heat protective mats

(ii) Such mats were probably known to be liable to emit small amounts of asbestos dust by abrasion when used, moved or dropped.

the Defendant hospital ought to have considered that this intermittent and relatively light level of exposure to asbestos mandated at the very least seeking advice on what precautions to take.”

23. In order to answer this question, the Judge reviewed the relevant state of knowledge about asbestos risks as set out in the evidence and the authorities. He appreciated that he was re-tracing steps that had been undertaken by other judges before him, of which he found most helpful the analyses of Swift J in *Abraham v Ireson and Reynolds* [2009] EWHC 1958 (QB) and of Simon J in *Asmussen v Filtrona United Kingdom Ltd* [2011] EWHC 1734 (QB). Once again, he made reasoned findings based upon his review of the documentary evidence and the authorities and Mr Hughson's evidence.
24. The Judge started with the Annual Reports of the Chief Inspector of Factories of 1938 (which described asbestos dust in industry as "highly dangerous") and 1949 (which referred to the need to prevent "as far as possible" the inhalation of asbestos fibre and dust in relation to new uses of asbestos in manufacturing or other process). He held that it was only with the publication of the Newhouse and Thompson paper in 1965 that the link between asbestos and mesothelioma was recognised; and he went on to consider Technical Data Note 13 published in 1970 ["TDN 13"], editions of the booklet "Toxic Substances in Factory Atmospheres" from 1960, and Swift J's explanation and application of that document at [65]-[66] and [85] of *Abraham* before setting out his conclusion at [59]:

"Whether or not one accepts the soundness of the back-calculation of Mr Hughson, the fact is that the levels of exposure which the deceased was subjected to by the intermittent use of Bunsen burners and the mats which were used to protect the benches they were placed on was likely to be very low indeed. On the estimation of Mr Hughson (which in the absence of any expert evidence to the contrary I take to be reasonably reliable) this would have been for a few minutes, probably no more than 12 minutes per day. In the light of this, Mr Hughson reaches what I consider to be a reasonable conclusion that the levels of exposure implied by the deceased's evidence would have been considered to be 'trivial' by the standards of the day. It follows that, similarly to Swift J in [*Abraham*] at §86, were expert advice to have been sought by the Hospital in the period 1949 to 1960, while it is a possibility that an adviser might have advised the hospital to eliminate the use of soft asbestos mats, I consider, having regard to the fact that during that period asbestos heat mats were still being used in many other everyday settings such as schools, the response would (at least until the end of the first period of employment in 1960) on the balance of probabilities have been that there was no need for the defendants to be concerned about any risk of asbestos related injury from the continued use of those mats. That advice would necessarily have changed after 1965, and most obviously after the Department of Education and Science memo of 1967."

25. At [60], the Judge addressed the Claimant's submission that there was no known level below which there was no significant risk of injury, Mr White was working in close proximity to asbestos, the level of dust was "more than minimal" and it was incumbent on the Defendant to consider reasonably practicable ways to reduce the amount of asbestos dust in Mr White's working environment. Basing himself on the findings of

fact that he had made, the Judge answered the two questions he had previously asked himself at [66]:

“(i) Should Sefton Hospital in ... the first period of employment (1949-1960) ... have been aware that the exposure to asbestos dust which his work involved gave rise to a significant risk of asbestos-related injury? **No: in respect of ... the first ... period.** I have found that the exposure to dust was not more than minimal and certainly not at a level which would have triggered a duty on the Defendant to take precautions or seek advice on what precautions to take.

(ii) If yes, did Sefton Hospital take proper precautions to reduce or eliminate that risk or at the very least seek advice as to what, if any, precautions he could take. **Not applicable. There was insufficient exposure to trigger the duty to take precautions or seek advice.”**

26. His conclusion was given at [68]:

“For the reasons I have given, I have concluded that the Defendant did not know and cannot reasonably have been expected to have known during the period 1949 to 1960 ... that asbestos dust in the minimal quantities in which the Claimant was likely to be exposed was a risk against which they should have guarded by taking reasonable steps or by taking advice.”

The judgment in the Cuthbert appeal

27. The Judge set out the main substance of Mr Cuthbert’s two witness statements. There was a significant issue between the parties about how reliable those statements were and what findings should be made about the duration and intensity of Mr Cuthbert’s exposure to asbestos while at Queenswood School. In finding that the carpenters had used and cut up asbestos insulation boards [“AIBs”], the Judge decided that the issue was very finely balanced and that the fair approach was to give the Claimant the benefit of the doubt, noting that his finding on the issue would be of marginal importance because of his findings on the frequency and duration of exposure. On that crucial issue, he set out in some detail the competing submissions of the parties and found that there was “substantial force” in the criticisms by the Defendant of the reliability of Mr Cuthbert’s evidence. Having addressed the competing submissions in suitable detail he made his essential findings.

28. First, he rejected the description of Mr Cuthbert as a “trainee supervisor”, considering it to be much more likely that, “given his age and singular lack of experience”, his true job description was “general labourer”. As such he queried how it could be that Mr Cuthbert would have been supervising the carpenters who would have more experience having served their apprenticeships.

29. To understand the full meaning of the Judge’s factual findings, it is necessary to set out much of [34]-[40] of his judgment:

“34. Further, I struggle to see how it was that the deceased spent between one/two hours standing around the carpenters. Given the lack of any information from the deceased himself as to what he was doing during that time, in my judgment, it is improbable that the description in his witness statement is accurate. ... In this regard, I also note what was recorded on the application form for IDB, “I came into contact with asbestos while working in the building industry. On occasions, I recall working alongside carpenters cutting up asbestos sheets which were used for soffits.” ... It is of note that the deceased does not there say that he had daily contact with the carpenters or that he spent significant periods of time in close proximity, when they were cutting up asbestos sheets.

35. I also have difficulty in accepting that, over a period of two years or more, on every day, the carpenters were cutting up asbestos materials for use in soffits. It seems to me that this defies common sense, even in the context of new buildings being built. There must have been a limit to the number of asbestos materials which were being incorporated into the building or buildings. Whilst I accept that the carpenters may have spent some of their working time engaged in this activity, I do not accept that it was a daily occurrence or that this activity was continued over a period of two or three years.

36. It seems to me that, looking at the matter objectively and applying common sense, the overwhelming probability is that the deceased had no more than sporadic contact with the carpenters - perhaps, he did see them every day or most days, but I do not find that he spent anything close to one/two hours standing around them whilst they carried on with their tasks. I have already made it clear that I do not accept, in any event, that the carpenters were engaged each and every day cutting up asbestos materials. It is also questionable whether this work was being carried out over a two/three year period. Overall, it seems to me much more likely that the deceased had irregular and intermittent contact with the carpenters and that, at times, they were engaged in cutting up asbestos materials when he was in their vicinity. Moreover, on the deceased’s own account, depending upon the weather, the cutting of asbestos boards took place outside.

37. As to sweeping up, I am willing to accept that this was a task which the deceased undertook from time to time and, maybe, on occasions, a number of times per day. What I am unable to accept is that he was the person who always swept up after the carpenters, once they had cut up the asbestos materials. Experience would suggest that they probably did some of their own sweeping. Furthermore, whatever his job description, it is difficult to understand how or why he would have been allocated

the specific task of sweeping up once the carpenters had cut up the asbestos materials. Further and in any event, the sweeping up undertaken by the deceased will have involved not only asbestos dust but other types of dust.

38. The deceased himself does not give any information as to over what period of time, on each working day, he spent sweeping up dust. Even if I were to conclude that he did do sweeping up on a fairly regular basis, it seems to me probable that this would have only occupied a very small portion of his working day. Indeed, I would not disagree with the suggestion made by Miss Foster that, perhaps, he spent in the order of ten minutes per day sweeping up.

39. I do bear in mind that, in his second statement (although not in his first statement), the deceased says that there were clouds of dust when the Asbestolux was cut up. This is perhaps not surprising, but it does not follow that the deceased was thereby covered in such dust. Indeed, if there were visible clouds of dust, then I would have expected the deceased to keep his distance. There was no good reason for him to be standing so close to the carpenters that he became covered in dust. Insofar as he says that his clothes were covered in dust, again this may well have been the case, but building sites are dusty environments and it does not follow that the dust which he brushed off his clothes was asbestos.

“40. Overall, I find the account given by the deceased, particularly in his second statement, to be implausible. Rather, I am driven to the conclusion that his exposure to asbestos when employed by the defendant was of a low order, light and intermittent and, in the main, as a bystander.”

30. The Judge then turned to the expert evidence and the experts’ attempts to provide some quantitative measure of the levels of asbestos to which Mr Cuthbert was exposed where, allowing throughout that the exercise was imprecise and involved a large degree of speculation, the Judge held, at [43]:

“Assuming that the deceased was indirectly exposed to asbestos dust for one and a half hours per day as a result of the carpenters cutting up AIBs (and I have already found this to be inherently improbable) and, assuming that he spent approximately ten minutes per day sweeping up asbestos dust, Ms Conroy agreed with Dr Phillips that his average daily exposure was in the order of two fibres/ml. I stress that this is no more than an approximation and, inevitably, there would be considerable variability from day to day. Nevertheless, this measurement does provide some insight into his likely overall level of exposure to asbestos dust.”

31. The Judge was right to qualify the opening assumption in this paragraph. He had already found at [36] that Mr Cuthbert's sporadic contact with the carpenters did not involve him spending "anything close to one/two hours" standing around them: see above. The Judge had not accepted that the contact with the carpenters was daily ("perhaps he saw them every day or most days"), had rejected the suggestion that the carpenters had been cutting AIBs each and every day, and treated as "questionable" whether the work was carried out for as long as the Claimant asserted. On any view, therefore, the reference in [43] to an average daily exposure in the order of two fibres/ml also required qualification, as the Judge made clear. He was also right to note at [44] that the levels indicated by the experts were very substantially lower than the 30 fibres/ml referred to in the 1960 "Toxic Substances in Factory Atmospheres" publication, to which I will return.
32. The Judge then concluded that section of his judgment by saying at [45]:
- "I am able safely to conclude that the measurements agreed upon by the two occupational hygienists are entirely consistent with my own *impressionistic* assessment of the degree and extent of the deceased's exposure to asbestos dust when working for the defendant." [Emphasis in the original]
33. The Judge then conducted his own review of the literature, acknowledging that he was not the first to have carried out such an exercise. He prefaced his review by outlining the test laid down by *Stokes* and *Thompson*:
- "... when deciding whether pulmonary damage in this case was foreseeable, the test is the conduct of the reasonable and prudent employer taking positive thought for the safety of its workers in the light of what it knows or ought to know (actual or constructive knowledge)"
34. The Judge started with Merewether and Price (1930) and its covering letter, which he said established that there was a clear link between longstanding, heavy exposure to asbestos dust and the onset of asbestosis, making it clear that the disease was dose related. He then referred to the introduction of the Asbestos Industry Regulations 1931; to section 47 of the Factories Act 1937; to the 1943 and 1949 Annual Reports of the Chief Inspector of Factories; to Doll's 1955 paper, which established a link between lengthy and heavy asbestos exposure and the contraction of lung cancer; and to the 1960 "Toxic Substances in Factory Atmospheres" publication.
35. Turning to the literature on mesothelioma, the Judge referred to Wagner's seminal 1960 paper, which identified the possible link between asbestos exposure and the development of pleural mesothelioma, a growing body of research that by 1964 suggested that mesothelioma could be caused by "slight" exposure, and to Newhouse and Thompson's publications in the United Kingdom and the United States in 1965.
36. On the basis of this review, the Judge concluded that "it was not until the mid-1960s that it was appreciated that even light exposure to asbestos dust could cause mesothelioma"; but he prudently reminded himself that the test of foreseeability was not limited to the foreseeability of a risk of mesothelioma but of some pulmonary injury.

37. The Judge then set out the parties' respective cases on knowledge and foreseeability. The Claimant relied in particular on [51]-[52] of *Jeromson*, and on observations by Longmore LJ at [89]-[91] of *Maguire* to the effect that, from the mid-1950s, exposure should have been kept to the lowest possible level given that the threats posed by asbestos were very well known and endorsing the approach of Buxton J in *Owen v IMI Yorkshire Copper Tube* (unreported) 15 June 1995. The Claimant submitted that, where there was no way of measuring the exposure and where there was no level that was known to be safe, an employer was under a duty to reduce exposure as far as was reasonably practicable. In contrast, the Defendant submitted that, at the relevant time, there was no appreciation that intermittent, sporadic exposure (such as the Judge had found on the facts of the present case) carried with it any or any significant risk of harm: this applied to the carpenters themselves as they cut up the AIB, those such as Mr Cuthbert who were on occasions present as the carpenters did so, and to Mr Cuthbert's sweeping up after the carpenters.
38. The Judge prefaced his discussion section by setting out the classic statement of Swanwick J in *Stokes*. He reminded himself that recognised and general practice at the material time may not be the sole test, and that foreseeability of injury must not be assessed with the benefit of hindsight but by reference to the standards of the time.
39. In a paragraph, which the Claimant during oral submissions accepted as a reasonable statement of the law, the Judge said at [76]:
- “I turn to what the defendant should have known in the mid to late 1950s about exposure to asbestos dust. Undoubtedly, the message that was to be taken from the literature to which I have referred was that asbestos dust was highly dangerous and that its inhalation was to be prevented as far as possible. But it needs to be emphasised that that message was delivered in the context of the known risk of asbestosis and of occupational exposure to significant quantities of asbestos dust. As in *Abraham*, the question which needs to be asked is whether the information then available should have alerted an employer to the possibility that an employee whose exposure to asbestos was light and intermittent might have been at risk of contracting an asbestos related injury.”
40. The Judge addressed directly the Claimant's submission that the question of foreseeability was to be posed in the context that it was not known what levels of exposure were safe and what levels were not safe. The Judge agreed, but at [77]-[79] said that the judgments in *Owen* and *Jeromson* must be seen in the context of the findings in both cases that there was “significant exposure to asbestos dust”, which he contrasted with his findings in the present case, describing the findings of the Judge at first instance in *Jeromson* to be “markedly different in quantitative terms” to the exposure to which Mr Cuthbert had been subject.
41. The Judge's conclusion was provided at [83]-[84]:
- “83. After considering the relevant literature and the relevant authorities, I consider that a reasonable employer keeping abreast of the available knowledge could not reasonably have

foreseen that there was a significant (i.e more than fanciful) risk of injury as a result of the exposure to asbestos at the level to which I have found the deceased was subjected. Whilst it is correct that there was no safe level of asbestos exposure at the material time, nevertheless, even the permissible level of exposure which was set in 1970 was far in excess of the levels to which the deceased was exposed. This is not conclusive, but it points strongly in favour of the proposition that, at the material time, as a matter of Law, the defendant was not fixed with knowledge that asbestos exposures at the levels to which the deceased was subjected gave rise to the foreseeable risk of injury.

84. In view of my findings as to the levels of asbestos dust to which the deceased was exposed and my findings on reasonable foreseeability of risk, it necessarily follows that the defendant is not to be criticised for failing to give any warning or failing to take any precautions. With the benefit of hindsight, it might seem obvious that the deceased should have been afforded some protection, but the state of knowledge was such as at the late 1950s that, in my judgment, as a matter of Law, there was no breach of duty where the exposure was light and intermittent.”

The issues on appeal

42. The central contention on each appeal is that the Judge failed to apply the right test of foreseeability when deciding whether or not the employers owed a duty to their employees. It is submitted that the Judge in each case should have found that the employer owed a duty to take precautions against the risk of injury created by the exposure of their employees to asbestos. That submission is based primarily, though not exclusively, upon the observations of the Court of Appeal in *Jeromson* and *Maguire* and of Buxton J in *Owen*.
43. As I have said above, in the White appeal the Judge’s findings of fact about Mr White’s exposure are accepted. In the Cuthbert appeal they are not. It is submitted that the Judge’s finding that Mr Cuthbert’s exposure was “light and intermittent” was not open to him: he should have found that it was “substantial but intermittent” given his involvement in both sweeping and standing in proximity to those undertaking the cutting of asbestos insulation boards.

The Literature

44. We were provided with five volumes of literature as a “reference library” containing some 70 publications. Some of the documents are very well known, having been scrutinised on multiple occasions, and are important material for the issues we have to consider: others are less so. In order to maintain some sense of proportionality, we asked the parties to provide an agreed list of publications that they considered to be material to the issues in these appeals. The result was an agreed list of 28 publications which had been referred to in skeleton arguments or oral submissions. All have been read in full again even if some of the 28 are not specifically mentioned below. Some omissions from the list of 28 have also been re-read. Two are, in my judgment, essential

material, namely Wagner's 1960 paper on Diffuse Pleural Mesothelioma and Asbestos Exposure in the North Western Cape Province and Newhouse and Thompson's 1965 paper on Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area.

45. I have already referred to this being well-trodden ground. Like others before us, I would pay particular tribute and attention to the reviews carried out by Swift J in *Abraham* and by Simon J in *Asmussen*. I have also paid particular attention to the reviews carried out by Hale LJ in *Jeromson* and by Judge LJ in *Maguire*. Some of the documents cited in these four cases were not included in the list relied upon by the parties in this appeal. In carrying out the review that I set out below, I have independently read and taken into account all of the additional references which they cited other than the documents referred to at [42] of *Maguire*, whether or not I have mentioned them below. Where I have not mentioned them it is because I consider that they do not add materially to the body of information that should inform the legal questions with which we are concerned.
46. The background to Merewether and Price's 1930 report was the identification in 1928 of a case of non-tubercular fibrosis in the lungs of an asbestos worker of sufficient severity to require hospitalisation. Previously there had been two known deaths of asbestos workers where inhalation of asbestos was thought to have caused or contributed to the fatal outcome, one in 1906 and the other in 1924. In general terms it had been known that inhalation of dust could cause injury to the lungs, with fibrosis of the lungs being recognised as the most important lesion caused by inhalation. The pre-eminent cause of industrial fibrosis was thought to be free crystalline silica, but the potentiality of other dusts to produce fibrosis was neither appreciated nor fully explored. Asbestos was not a free silica dust.
47. The importance of Merewether and Price's report lay in providing compelling evidence that longstanding, heavy inhalation of asbestos was also capable of causing fibrosis. It provided that compelling evidence based on studies of workers who were constantly exposed in their daily work to the influence of pure or almost pure asbestos dust. The authors' headline finding was that "the inhalation of asbestos dust over a period of years results in the development of a serious type of fibrosis of the lungs." Table 3 showed the incidence of fibrosis relative to the length of employment; and it showed a clear temporal relationship, with no cases amongst 89 persons examined who had been employed and exposed for less than 5 years (0-4 years, incidence zero) and increasing incidence with each five year grouping thereafter (5-9 years, 25.5%; 10-14 years, 32.1%; 15-19 years, 53.6%; 20 years and over, 80.9%). The authors concluded that the risk of fibrosis fell most heavily on those longest employed and on those engaged in the more dusty processes.
48. The authors also considered that there was probably a low-end threshold of a minimum quantity of asbestos dust that was required to cause fibrosis. This can be seen from a passage that was subsequently picked up and is the source of the phrase "dust datum" that appears later:

"In fact, the history, and the medical and radiological features of the cases of fibrosis together with the results of comparison of the dust counts, all contribute in some degree to the view that with comparatively low concentration of dust in the

neighbourhood of a process, the resulting cases of fibrosis amongst the workers in that process are longer in developing and remain longer in a milder stage. It follows, therefore that in such cases the rate of accumulation of dust in the lung has not greatly exceeded the rate of elimination, and a further point of great practical importance emerges, namely, that in order to prevent the full development of the disease amongst asbestos workers within the space of an average working lifetime, it is necessary to reduce the concentration of dust in the air of the workrooms to a figure below that pertaining to spinning at the time over which these cases were exposed.”

49. Setting out their conclusions on this point, the authors said:

“To sum up, therefore, it appears probable that concentration of dust and length of exposure as factors in the production of fibrosis are interdependent within certain limits. While it seems necessary for the production of generalised fibrosis of the lungs that a definite minimal quantity of dust must be inhaled, the lower the concentration of dust in the air breathed, the longer the lapse of time before the fibrosis is fully developed, and within a certain limit, the higher the concentration of dust, the sooner the fibrosis becomes fully developed and the more intense the involvement of the lung tissue.

If this hypothesis is correct, and the evidence points to it, the practical inferences are of very great importance, since it follows that the application of measures resulting in the reduction of the concentration of dust in the air in the neighbourhood of dusty asbestos processes will cause, firstly a great increase in the length of time before workers develop a disabling fibrosis, and secondly, the almost total disappearance of the disease, as the measures for the suppression of dust are perfected.”

50. The authors’ concern and investigation were directed to those working in the asbestos industry, their summary conclusion being that “the outcome of this investigation is to establish the existence of a definite occupational risk in the asbestos industry. ... [T]he incidence rate is highest in the most dusty processes and amongst those longest employed.” The risk being addressed was the risk of fibrosis which was then thought to be a risk for those constantly exposed to asbestos in significant quantities for a duration typically measured in years. Similarly, in Part II of the report, their review of dust-producing processes and recommendations for reduction or suppression of dust were directed at the variety of processes to be found in asbestos factories and workshops.
51. Although the report spoke of the need to suppress dust, that was in the context of the asbestos processes being carried out in the factories as the report described. Thus their Summary and Recommendation section included reference to suppression of dust but in a context where spinning and weaving of asbestos was regarded as giving rise to comparatively low concentrations of asbestos dust:

“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. Very dusty processes will not fail to be recognised, but in processes such as spinning and weaving, in which other textile trades special methods for dust control are not required, due precautions are also necessary.”

52. There is nothing in the report that either contemplates or is directed to what might be described as intermittent exposure to relatively light quantities of dust. That is confirmed by the terms of the letter sent by HM Chief Inspector of Factories to the Secretary of State on 17 March 1930, which stated:

“Dr. Merewether's investigations on the medical side are of great scientific value. 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 the exposure to dust, and that susceptibility to the disease is not affected either by age or sex.

The remedy for these conditions is to be found, as in the case of so many industrial diseases, in the suppression of dust. The second part of the Report indicates that this point has only recently been appreciated. In the non-textile section of the industry, no serious difficulties arise as regards the application of exhaust ventilation. For the textile section, it is evident that a good deal of experimental work will have to be carried out before completely successful ventilating appliances are evolved effectively to remove all the dust.”

As with the report it submitted, the letter addressed the problem of inhalation of asbestos dust over years by those working in the asbestos industry.

53. Two legislative interventions followed shortly after the publication of Merewether and Price's 1930 report. First, on 30 April 1931, the Government made the Asbestos Industry (Asbestosis) Scheme 1931 [“the 1931 Scheme”]. As its name suggests, it was a scheme (made pursuant to powers under the Workmen's Compensation Acts) to provide compensation where a Medical Board certified (a) that the death of a workman had been caused by asbestosis or by asbestosis accompanied by tuberculosis; or (b) that a workman was totally disabled from asbestosis or from asbestosis accompanied by tuberculosis; or (c) that a workman, though not totally disabled, was suffering from asbestosis or from asbestosis accompanied by tuberculosis to such a degree as to make it dangerous for him to continue work in the qualifying processes, and he was for that reason suspended from employment. The qualifying processes covered a wide range of manufacturing processes involving the use of asbestos, including the sawing, grinding and turning in the dry state of articles composed wholly or partly of asbestos in the manufacture of such articles.
54. Three features of the 1931 Scheme are relevant to the present review. The first is that it applied to disabling or fatal asbestosis. The second is that it did not apply to the

employment of any workman in the process of mixing of asbestos or any admixture of asbestos or to the sawing, grinding and turning in the dry state of articles wholly or partly of asbestos in the manufacture of such articles “if such employment is occasional only and for not more than eight hours in any week.” The third is that no compensation was payable in cases where the workman had not been employed in the processes at any time within three years previous to the date of the injury; but, conversely, if the workman had been employed in the process for a period or periods amounting to not less than five years, the disease was to be deemed to be due to employment in the processes unless the employer proved otherwise. Taken together these three features may be said to reflect the view, informed and supported by Merewether and Price, that the problem which needed to be addressed was the problem of asbestosis caused by continuous and long term exposure to asbestos dust when working in the asbestos industry.

55. The second statutory intervention was the making of the Asbestos Industry Regulations 1931 on 31 December 1931 [“the 1931 Regulations”]. They applied to factories and workshops in which processes similar to those identified in the 1931 Scheme were carried on. Adopting an approach similar to that of the 1931 Scheme, the Regulations did not apply to any factory or workshop in which the process of mixing of asbestos or repair of insulating mattresses or sawing, grinding, turning, abrading and polishing, in the dry state, of articles composed wholly or partly of asbestos in the manufacture of such articles where such processes or work was carried on occasionally only and no person was employed therein for more than eight hours in any week. Where the 1931 Regulations applied, they imposed duties on the occupier of the premises to provide exhaust drafts for manufacturing and conveying machinery and other processes. The similarity in approach of the 1931 Scheme and the 1931 Regulations, targeting factories and workshops where manufacturing processes were carried on occasionally only and persons were employed there for more than eight hours a week, reflects their common concern about asbestosis caused by continuous and long term exposure to asbestos dust when working in the asbestos industry.
56. Shortly before the introduction of the 1931 Scheme and Regulations, the Chief Inspector of Factories reported on Conferences between Employers and Inspectors concerning Methods for Suppressing Dust in Asbestos Textile Factories. The conferences had been called in the light of Merewether and Price’s report and its identification that there were particular challenges to be overcome in the textile branch of the asbestos industry before decisions could be taken on the best method of providing appropriate ventilation; and they had reached complete agreement. For present purposes, the significance of the report on the conferences was its acceptance that there was a “dust datum”, albeit provisional and subject to alteration in the light of further medical experience, below which workers could be employed without injury to health. The Committee observed that the only working basis that could be adopted at present was a finding in Merewether and Price’s report that the conditions in flyer spinning carried on without exhaust could be regarded as the “dust datum”.
57. Shortly after the introduction of the 1931 Scheme, but before the 1931 Regulations were made, Dr Merewether and another colleague, Dr Middleton, were instructed to conduct an enquiry into the incidence of asbestosis in packers of manufactured asbestos articles. They responded on 7 November 1931. Of most relevance for present purposes is their opinion that

“As a result of this inquiry we have formed the opinion that certain workers whose occupation is nominally that of packer, storekeeper or warehouseman, are exposed to a definite though very variable risk of contrasting asbestosis.

The risk involved to this heterogeneous group of workers is derived from two sources. The first is from dust arising in the essential handling operations associated with packing, despatching or warehousing, the amount being dependent on the class of material handled. With some materials, for example brake linings and packings, the amount is trifling and the resultant risk negligible, with others such as insulating mixtures in bulk, insulating sections, and to a less extent cloth and mattresses, the dust evolved is considerable and the work is comparable with that in certain manufacturing processes included in the Scheme.”

58. Two observations may be made. First, the focus of the inquiry and the stated opinion was the risk of asbestosis. Second, although exposure attributable to articles such as brake-lining might add to the overall burden of exposure to which a workman was subjected, the amount was regarded as “trifling” and the risk of asbestosis “negligible”: no other risk was identified or apparently in contemplation.
59. In December 1933 Dr Merewether provided “A Memorandum on Asbestosis” for an American publication, “Tubercle”. In it he reviewed and represented much of the work that had underpinned Merewether and Price in 1930 with additional information. In *Jeromson* at [45] Hale LJ said that the publication would not have been available to most European employers but that Dr Merewether was only saying “what should have been obvious to the prudent reader of Merewether and Price.” Hale LJ relied on the fact that he rejected as “wholly untenable” an assumption or inference that so long as the period of exposure does not exceed five years the risk of contracting asbestosis is almost negligible. However, he also repeated the opinion, previously stated in the 1930 report but not referred to in *Jeromson*, that “below a certain concentration ... , development of a disabling degree of asbestosis will not occur within the space of an average working lifetime”: and he referred to the need for “a certain minimum “fibrosis-producing amount”, as it were, of asbestos” to be “trapped in the lungs in order to produce a potentially disabling or serious amount of fibrosis... .”
60. Summarising his opinion, Dr Merewether said:

“For these reasons and from examination of the varying conditions of exposure to dust amongst "spinners" in individual factories, it appeared reasonable to infer that the exposure of workers in this group to dust, as a whole, was not greatly in excess of the maximum safe limit.

One of the conclusions, therefore, of the original investigation was "that in order to prevent the full development of the disease amongst asbestos workers within the space of an average working life-time, it is necessary to reduce the concentration of

dust in the air of the workrooms to a figure below that pertaining to spinning at the time over which these cases were exposed."

This deduction was, later, accepted, in the light of the evidence available, and with the reservation that it was subject to alteration in conformity with further medical experience, as a safe basis on which it would be possible to work out appropriate dust suppression methods. For this purpose, therefore, the conditions arising from flyer spinning carried on without exhaust under good general conditions was considered as the safe criterion and was termed the "dust datum."

61. In *Jeromson Hale LJ* accepted a submission that "the message ... was that asbestos dust is harmful and that the precaution needed is to suppress it." As the extracts set out above show, the message was in fact much more nuanced than that.
62. It is material to note that the level of exposure amongst spinners would have been many times the level that is now appreciated to give rise to a risk of mesothelioma. But Dr Merewether's 1933 article supported the view, clearly stated in the 1930 report and expressly accepted here, that exposure below the "dust datum" was safe, subject of course to the caveat that further medical experience may cause the datum to be reassessed. His 1933 paper was (as had been the 1930 report) specifically addressing the risk of asbestosis and the levels of exposure that gave rise to that risk; but there is no apparent appreciation of any other risk that would arise at or below the dust datum point.
63. Section 47 of the Factories Act 1937 introduced a general obligation where "there is given off any dust ... of such a character and to such extent as to be likely to be injurious or offensive to the persons employed, or any substantial quantity of dust of any kind" to protect persons employed against inhalation of dust. The following year, the Annual Report of the Chief Inspector of Factories for the Year 1938 included a Chapter entitled Health, which commented on the newly enacted section 47:

"We are but on the threshold of knowledge of the effects on the lungs of dust generally. ... While Section 47 of the Factories Act of 1937 may be thought somewhat ambiguous in its reference to a "substantial quantity of dust of any kind," 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 recognisable pathological extent. There can be no doubt that dust if inhaled is physiologically undesirable. Moreover, dust that is thought to-day to be harmless may, following research, be viewed in another light to-morrow. It is not many years ago when the dust of Asbestos was regarded as innocuous, while to-day it is recognised as highly dangerous. On the other hand where dust from a material can be shown to be relatively harmless the substitution of such a material for a harmful one is a most valuable measure of protection."
64. Two points arise. First, "substantial" is a highly elastic word in the English language and its inclusion in section 47 does not give any guidance about what should be

regarded as a “substantial” quantity of any dust. Second, the reference to asbestos now being recognised as “highly dangerous” is, almost self-evidently, a reference to the risk of asbestosis as described in the literature including and since the Merewether and Price report. I agree with the summary provided by Judge LJ at [23] of *Maguire* that “[d]uring the 1930s it gradually became accepted that continued exposure to “heavy concentration of asbestos dust” carried “certain and grave risk.”

65. The Annual Report of the Chief Inspector of Factories for the year 1943 included a section on silicosis and asbestosis which recorded that there had been 1660 deaths from silicosis (with or without tuberculosis) and 180 deaths from asbestosis (with or without tuberculosis) since 1929. The shortest duration of employment in years for asbestosis was stated to be 0.5 years, though no further details of the circumstances or intensity of exposure was given. There is no indication of any association between exposure to asbestos and any other risk than the risk of asbestosis.
66. In a circular letter to employers concerning the use of asbestos aboard ships dated August 1945, HM Chief Inspector of Factories noted the considerable development of the use of asbestos in the ship building and ship repairing industries and the accompanying increase in the number of workers “exposed to the risk of injury to health through asbestosis.” According to the letter, experience showed that, “particularly if the workers are exposed to the dust in substantial concentrations, serious results are apt to develop later.” It therefore recommended that, even if the work was temporary, all reasonably practicable steps should be taken to reduce the risk to a minimum. The suggested steps included the provision of ventilation in confined spaces and the provision of respirators to those engaged in fitting or removing dry insulating material containing asbestos on board ships or to those spraying asbestos. Once again, the risk being addressed was exclusively the risk of asbestosis.
67. The same can be said of an extract from the Annual Report of the Chief Inspector of Factories for the year 1949:

“Asbestos Regulations

The Code of Regulations dealing with the dangers arising in the handling of asbestos has been in force since 1931, and reports show that constant vigilance is necessary in order to ensure that there is no slackening in the fulfilment of the precautionary measures laid down. In factories where processes scheduled under the Regulations are carried on, the maintenance of dust control, particularly adequate exhaust ventilation at all possible points where dust may be evolved, is of the utmost importance. Those firms which have had long experience with the product and realize how the incidence of asbestosis arises are fully alive to the many problems involved, and from the inspection point of view, 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 realizing the necessity of preventing as far as possible the inhalation of asbestos fibre and dust.”

68. Similarly, an entry in the 1953 “Factory Health Safety and Welfare Encyclopaedia” was specific to asbestosis when it said:

“It is to be realised that *asbestos dust is one of the most dangerous of all industrial poisons*. No degree of care at all stages of handling, machining, mixing, cleaning, packing or unpacking etc. of any material consisting of or containing asbestos is wasted effort.” [Emphasis in the original]

69. Chapter 15 of the Annual Report of the Chief Inspector of Factories for the year 1956 was devoted to the 1931 Regulations and steps taken to comply with them. It recorded that “the toxic nature of the dust has led to a search for a less harmful but equally effective material, but it must be admitted that for most uses a suitable alternative has not been found” and that “there is no doubt that asbestos will continue to be used extensively in industry.” One passage refers to the removal of old heat insulation lagging, to which it is said that the Regulations do not always apply: the report states that “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.” Once again, the risk being spoken of is evidently the risk of asbestosis and no other risk is identified in the chapter.
70. In 1955 Professor Doll had published a paper which evidenced a link between asbestosis and lung cancer after prolonged heavy exposure to asbestos dust. This association was picked up in Chapter III of the Annual Report of the Chief Inspector of Factories on Industrial Health for the year 1958, which included a chapter on Occupational Cancers. Under the sub-heading “Asbestos” it referred to evidence of the existence of a relationship between asbestosis and lung cancer. In 17.8% of 365 deaths from asbestosis between 1924 and 1955, there was also lung cancer. The report does not suggest or evidence a risk from exposure to a lesser degree of asbestos than would be necessary to cause asbestosis.
71. Chapter III of the Annual Report of the Chief Inspector of Factories on Industrial Health for 1959 provided a general review of dusts and their effects on the lungs which are notable for two main reasons in the present context. The first was that asbestos was described as falling within a broad group comprising “those dusts, such as silica and asbestos, which produce a pneumoconiosis which can be diagnosed by a characteristic X-ray appearance and, except in the early stages, by symptoms such as chest pain, cough and breathlessness. Varying degrees of disability result, and after death, functioning lung tissue may be found to have been replaced by fibrous tissue.” Apart from this categorisation based on the causation of asbestosis, asbestos was not identified as giving rise to a risk of injury. The second was a passage on concentration of the dust, which stated:

“(3) *Concentration of the dust*. There are many variables involved in relating exposures to different concentrations of dust and the lung response which may follow. It is necessary, however, to have some guide to which the efficiency of control measures can be related and the Department has, accordingly, recently published a booklet* containing a table based on the latest scientific knowledge showing the maximum concentrations of certain dusts, expressed as particles per cubic

centimetre, which if exceeded in factory atmospheres indicate that working conditions cannot be considered to be satisfactory.

*Toxic Substances in Factory Atmospheres.”

72. This passage marks the first mention in the materials before us of the booklet, initially called “Toxic Substances in Factory Atmospheres”, which was published by the Ministry of Labour in March 1960 and which was thereafter amended or superseded in 1961, 1965 and 1968. It is convenient to consider these four documents together before returning to a chronological survey.
73. The frontispiece to the 1960 edition said that it formed part of a series “designed to give information and advice about the best practices in the fields of safety, health and welfare” without attempting to interpret the legal requirements of the Factories Acts or the Regulations made thereunder. It said that “based on the experience of HM Factory Inspectorate, they are being prepared by the Ministry of Labour in collaboration with other Government Departments and, where appropriate, in consultation with expert bodies and with the advice and assistance of representatives of industry.” The Introduction referred to section 47(1) of the Factories Act 1937 and stated that “the first step in all cases is to know what substances are being used and the possible hazard involved.” Under the heading “Permissible Concentrations” it stated:

“Permissible Concentrations

While systems of control should be as effective as it is practicable to make them, it is desirable to have some guide to which the efficiency of the control measures can be related. In the List at the end of this booklet there are set out figures of maximum permissible concentrations of certain substances used in industry. For each substance a figure of concentration in atmosphere is given. If this concentration is exceeded, further action is necessary to achieve satisfactory working conditions. The List also serves as a general indication of the relative degrees of toxicity of these substances.”

74. The list of maximum permissible concentrations [“MCPs”] was prefaced by an acknowledgement that the concentrations given were based on those formulated by the Committee on Threshold Limits of the American Conference of Governmental Industrial Hygienists, and also used by the International Labour Office as a basis for papers published in the Model Code of Safety Regulations. The figures were said to relate to average concentrations for a normal working day. They were said to be based on the last available information at the present time, and are subject to annual review in the light of existing scientific knowledge. The figure given as the MPC for asbestos was 177 ppcc (particles per cubic centimetre of air), which broadly equates to 30 fibres/ml (fibres per millilitre).
75. The 1961 Amendment said of the MCPs:
- “The figures should not be regarded as fine lines between safe and dangerous concentrations. They are designed to be used as guides in the control of health hazards and continuing attention

is necessary to ensure that atmospheric contamination in the factory is kept as low as practicable.”

76. By the time of the 1965 edition, the Factories Act 1961 had been passed, section 63(1) of which replicated the terms of section 47(1) of the 1937 Act. The frontispiece to the 1965 edition now said that “the material is based on the wide experience of HM Factory Inspectors, and much help has been given by representatives of industry and others with special knowledge”. The Introduction stated:

“This booklet offers some guidance in methods of meeting this statutory obligation - by enclosing the process, by providing local exhaust ventilation, by using personal protective equipment and by general 'good housekeeping'. Attempts should, however, always be made in the first place to use as a substitute the least harmful material possible. In all circumstances the aim should be to reduce the concentration of dust or fume in the atmosphere to the lowest practicable level.”

77. The introduction also highlighted the fact that the list of what were now described as “threshold limit values” or “TLVs” was a list adopted by the American Conference of Governmental Industrial Hygienists at their meeting in April 1964 and that, because certain materials might be obtained from different sources and “British experience is not always the same, ... in a few cases, particularly where mineral dusts are concerned, British experts may suggest rather lower values as more appropriate.”

78. Under the heading “Basic Principles of Protection” it said:

“The first essential is to be aware that a potentially dangerous material is in use. Whenever new substances or new techniques are introduced, the factory occupier must consider possible hazards.

In all cases where there is a risk from dust and fume it is the factory occupier’s duty under the Factories Act to ensure the safest practicable conditions of work for employees.”

79. A section headed “Good Housekeeping” said:

“A certain amount of 'background' dust inevitably disperses into the air or workrooms and settles on beams, ledges, benches and floors and workers' clothing. The vibration of machinery and other movements within the workroom as well as direct draughts will cause such dust to become air borne again. It is therefore important to prevent accumulation of dust by frequent cleaning of the workroom. The method of cleaning should ensure that the dust really is collected and is not just dispersed to settle again. Dry sweeping will cause vast amounts of fine dust to be dispersed into the atmosphere. Suitable vacuum cleaning plant of a permanent or portable character should be provided and used.”

80. The Preface to the list of threshold limits now said:

“The threshold limit values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect. Because of wide variation in individual susceptibility, exposure of an occasional individual at or even below the threshold limit may not prevent discomfort, aggravation of a pre-existing condition, or occupational illness.

...

Threshold limits should be used as guides in the control of health hazards and should not be regarded as fine lines between safe and dangerous concentrations. ... The values ... refer to time-weighted average concentrations for a normal workday. The amount by which these concentrations may be exceeded for short periods without injury to health depends upon a number of factors such as the nature of the contaminant, whether very high concentrations even for short periods produce acute poisoning, whether the effects are cumulative, the frequency with which high concentrations occur, and the duration of such periods. All must be taken into consideration in arriving at a decision as to whether a hazardous situation exists. Enlightened industrial hygiene practice inclines toward controlling exposures below the limit rather than maintenance at the limit.

Threshold limits are based on the best available information from industrial experience, from experimental human and animal studies, and, when possible, from a combination of the three.”

81. The threshold limit for asbestos was expressed as 5 mppcf (million particles per cubic foot of air) which, applying the relevant conversion factors, was approximately 177 ppcc (particles per cubic centimetre of air) or 30 fibres/ml (fibres per millilitre), as in the 1960 edition.
82. The preface to the list of threshold limit values in the 1968 version was largely as it had been for the 1965 version but included the additional advice that:

“Time-weighted average concentrations permit excursions above the limit, provided they are compensated by equivalent excursions below the limit during the workday. The degree of permissible excursion is pegged to the threshold limit value of the particular substance”

83. The 1968 version’s threshold limit value for asbestos was still 5 mppcf (or 30 fibres/ml) but the document included asbestos in a list of substances where a change to the listing had been proposed. The document explained that, where a change in the recommended listing was proposed, “the proposed limits should be considered trial limits that will remain in this listing for a period of at least two years. During this time, the previously

Recommended Limit will remain in effect. If after two years no evidence comes to light that questions the appropriateness of the [proposed] values herein, the values will be placed in the Recommended list.” The proposed value for asbestos was a reduction from 5 to 2 mppcf, the equivalent being from 30 to 12 fibres/ml. I agree with the observation of Judge LJ at [40] of *Maguire* that “although the figures from the 1960 paper were repeated, the 1968 document read as a whole demonstrates a much greater perception of risk than the earlier document.”

84. On any view, the 1960s witnessed a sea-change in the appreciation of the dangers of exposure to asbestos, specifically in relation to the risk of mesothelioma. It is conventional to take as a starting point Wagner’s 1960 paper entitled “Diffuse Pleural Mesothelioma and Asbestos Exposure in the North Western Cape Province.” The paper was important because, against the background that mesothelioma was regarded as an uncommon tumour, Wagner et al reported 33 histologically proven cases over a period of four years, of which 28 had some association with the Cape asbestos field and 4 cases had been exposed to asbestos in industry. The other significant feature of the paper was that a number of the cases had not been exposed to asbestos while working in the mines: “they included housewives, domestic servants, cattle herders, farmers, a water bailiff, an insurance agent and an accountant.” Further investigation was required to discover an association with asbestos exposure. For example, one case (case 4) “could only have had a short exposure to asbestos as a child and probably a further slight exposure as a young woman.” In only one case did the relatives deny that the patient either visited the asbestos mines or was exposed to asbestos.
85. During the period from 1960-1965 research continued on a number of fronts. In a letter to the *British Medical Journal* which was published in 1962, Dr Wagner and others wrote that in a number of cases of mesothelioma exposure to asbestos appeared to be minimal; and they asked for information on any patient in whom mesothelioma had been diagnosed. A leading article in the *British Medical Journal* in July 1964 highlighted the point that some individuals who had died from mesothelioma had had only “slight” exposure and that there was little correlation between the degree of severity of asbestosis and the occurrence of pleural or peritoneal tumours. It made clear that there was little understanding of the carcinogenic action of asbestos; and it concluded:

“Until we know the answers to some of the questions posed by the recent findings all exposure to asbestos dust should be considered as hazardous, and supervision should be extended to insulation workers in ships, factories and domestic buildings, who may be intermittently but nevertheless heavily exposed to asbestos dust.”

Viewed with the benefit of 21st century hindsight, even these references to intermittent and heavy exposure appear alarmingly incautious since it is now well established that mesothelioma can and does afflict people whose exposure has been both fleeting and very light.

86. What counsel appropriately called “the watershed” came in 1965 with the publication of Newhouse and Thompson’s paper “Mesothelioma of Pleura and Peritoneum Following Exposure to Asbestos in the London Area.” A series of 83 patients from the London Hospital with a diagnosis of mesothelioma confirmed by necropsy or biopsy

was studied for possible exposure to asbestos. A high proportion gave a history of occupational or domestic (living in the same house as an asbestos worker) exposure. There was also evidence that neighbourhood exposure may be important: among those with no history of occupational or domestic exposure, a significant proportion lived within half a mile of an asbestos factory.

87. Until the publication of Newhouse and Thompson's paper, the prospect that mesothelioma might be caused by light exposure was largely if not completely to be found in medical publications. That changed with their paper. The significance of their findings was immediately appreciated and was widely publicised by a major article in the Sunday Times on 31 October 1965, which reported that "it seems that a very brief exposure to the [asbestos] dust can prove lethal in man" and that "outbreaks" of the tumour were being reported from other countries, notably the United States. The article reported that, until recently, mesothelioma had been so rare that some pathologists disputed its existence; and "the previously unrecognised risk of this particular tumour from asbestos was first driven home in 1960" by Wagner's paper.
88. The risks associated with exposure to even low concentrations of asbestos were highlighted by the Department of Education & Science's Administrative Memorandum 20/67, which was widely distributed to educational establishments. The memorandum said that, in circumstances in which asbestos was used in schools "there would seem to be little, if any, risk of creating such heavy quantities of dust as to cause either asbestosis or cancer of the lung in later years. Even so, inhalation of any form of asbestos dust by pupils and teachers should be reduced to a minimum". It went on to say that:
- "3. The occurrence of mesothelioma is associated especially with products made from one of the naturally occurring forms of asbestos, crocidolite (blue asbestos). Exposure to even low concentrations of dust may be hazardous. Present evidence suggests that the association of mesothelioma with asbestos derived from other naturally occurring forms of asbestos than crocidolite is exceptional. In view of the uncertainty about the subject it would seem proper to eliminate the use of crocidolite and crocidolite products and reduce the use of all other forms of asbestos by seeking a substitute wherever possible.
4. Where it is necessary to use an asbestos product, chrysotile asbestos or chrysotile asbestos products should be specified, and steps taken to ensure that dust is reduced to a minimum. Asbestos wool should be kept wet and not allowed to dry out; hard asbestos mats should be used in preference to soft ones (mats should be disposed of when they become frayed); any drilling or sawing of asbestos cement products should be carried out in the open air or under exhaust ventilation, ensuring that the exhaust is effectively filtered before discharge, so that serious hazard cannot arise."
89. Subsequent literature to which the parties have referred can be taken more shortly for two main reasons. First, the present appeals concern exposure in or before 1960. Second, it was implicitly accepted before us that, after 1965, reasonably well-informed employers should rapidly have appreciated the risk of mesothelioma and that it was

reasonably foreseeable that it might be caused by exposure at levels far lower than understood to be required in order to cause asbestosis or lung cancer.

90. A report on an asbestos dust survey carried out on a large building site in Glasgow in May 1967 measured concentrations of dust arising from various processes. No one was seen to damp down and sweep up Asbestolux sawdust as it was produced. One man was seen sweeping up waste material in a room immediately prior to painting, with no damping of the dust being observed. A table showed dust levels from the various processes found during the survey, with the description of the dust concentration on each process being that it was above what was considered to be the acceptable level. The dustiest operation, and the one involving most risk to health, was said to be the sweeping up of dry asbestos waste. The report considered the relative risks of different sorts of asbestos, with amosite being regarded as less dangerous (and less clearly implicated in causation) than chrysotile or crocidolite (which was considered to be the worst). The summary conclusion of the report included that “The results of the survey indicate that to some extent a health hazard to the operatives does exist though this may not be serious at all.” It is not clear how widely, if at all, this document was circulated or publicised.
91. The terms and tone of the Annual Reports of HM Chief Inspectors of Factories change from year to year after 1965. In 1966 the Report said:

“There is evidence in a considerable proportion of those cases of an exposure usually occupational in nature, to asbestos, although in many cases this has not necessarily been of very significant extent.”
92. The following year, in 1967, the report said:

“In a large proportion of the tumours currently being diagnosed the affected person does appear to have been exposed, commonly as a result of his occupation, to asbestos at some time or other. In many instances, the exposure has been of a slight degree and without evidence of asbestosis.”
93. Also in 1967 the Factory Inspectorate published a Memorandum of the Senior Medical Inspector’s Advisory Panel entitled “Problems arising from the use of Asbestos.” The covering letter sending the panel’s conclusion to the Minister of Labour said:

“The health problems associated with occupational exposure to asbestos dust have long been of considerable concern to HM Factory Inspectorate. Awareness of these health risks has become much more widespread over the last two or three years and public interest was particularly stimulated by the publication in the October 1965 issue of the British Journal of Industrial Medicine of an article by Dr. Newhouse and Dr. Thomson about the association between exposure to asbestos and mesothelioma of the pleura and peritoneum.”
94. The introduction referred to concern “in recent years” over the occurrence of “mesothelial tumours of pleura or peritoneum which appear in many instances to be

causally related to asbestos exposure”. The section dealing with mesothelioma traced “current concern that we are dealing with a specific effect of asbestos dust which is apparently unrelated to whether or not asbestosis is present” to the publication of Wagner’s 1960 paper; and it referred to the “growing evidence” linking many mesothelial tumours with exposure to asbestos “apparently of slight degree or remote in time” as one of the most serious aspects of the asbestos problem: elsewhere the emergence of mesothelioma was described as potentially “explosive”.

95. In 1968 the Committee on Hygiene Standards published standards for chrysotile formulated by a sub-committee on asbestos reinforced by representatives of the Ministry of Labour, and others including Dr Wagner. The standards concentrated overwhelmingly on asbestosis. The summary and recommendations, while recognising that “as long as there is any airborne chrysotile dust in the work environment there may be some small risk to health”, continued “nevertheless, it should be realised that exposure up to certain limits can be tolerated for a lifetime without incurring undue risks”. It expressed the view that the risk of being affected to the extent of having early clinical signs would be less than 1 per cent for accumulated exposure of 100 fibre years per cm³. Two paragraphs were devoted to cancer:

“The primary danger of inhaling asbestos dust is asbestosis. It is generally recognised that there is also significant risk of lung cancer associated with asbestosis. A risk of mesothelioma of the pleura and peritoneum exists in connection with the inhalation of crocidolite dust in particular.

There can be little doubt that these risks will be least in the lowest concentration ... , but the quantitative relationship between asbestos and cancer risk is not known, nor is it known exactly why these two are related, nor even whether all kinds of asbestos present a risk. Consequently it is not possible, at this time to specify an air concentration which is known will be free of risk in this respect.”

96. In 1970 the Department of Employment and Productivity produced a booklet entitled “Asbestos Health Precautions in Industry” shortly after the introduction of the Asbestos Regulations 1969 [“the 1969 Regulations”], which replaced the 1931 Regulations and substantially expanded the scope of statutory protection. Having referred to the recognition of asbestosis in the late 1920s and the later suspicion and confirmation of an association between exposure to asbestos and the development of lung cancer, the booklet continued:

“Still more recently a relationship has been demonstrated between exposure to certain types of asbestos and the occurrence of mesothelioma, a cancer of the pleura (the lining of the lungs) or of the peritoneum (the lining of the abdominal cavity). Whereas asbestosis and the lung cancer associated with it have only arisen in workers who have been exposed for years to heavy concentrations of the dust in asbestos factories or in processes in which asbestos is used, mesothelioma has developed in some individuals with short periods of exposure. It is still a rare tumour among the general population but not uncommon among those

exposed to asbestos dust. Crocidolite may be more dangerous in this respect than are the other forms of asbestos.”

The booklet did not offer threshold limit values. Nor did it make separate provision or give separate advice in relation to mesothelioma.

97. The following year, in March 1970, the Department of Employment and Productivity issued its Technical Data Note 13 [“TDN 13”]. Entitled “Standards for Asbestos Dust Concentration for Use with The Asbestos Regulations 1969”, TDN 13 gave guidance on how HM Inspectorate of Taxes would interpret the expression “dust consisting of or containing Asbestos to such extent as is liable to cause danger to the health of employed persons” in the 1969 Regulations. It divided types of asbestos into two:
- i) Chrysotile, amosite and fibrous anthophyllite: where the average concentration of asbestos dust over any 10 minute sampling period was less than 2 fibres/cc or 0.1 mg/m³, the inspectorate would not seek to enforce the substantive provisions of the regulations, including regulations 7 and 8. Further guidance was given for what would happen if those limits were exceeded;
 - ii) Crocidolite: the Regulations would apply in full wherever workers were engaged in processes involving crocidolite “because the concentration of this mineral, that is believed to be liable to be dangerous to health, is very small indeed.” An approved form of respirator would be required to be worn unless the concentration in the breathing zone of a worker in a crocidolite process could be maintained below 0.2 fibres/cc or 0.01 mg/m³ when measured as the average concentration over a 10 minute sampling period.
98. In 1972 the Department of Employment issued TDN 35, entitled “Control of Asbestos Dust”. As its name suggests, it dealt with the suppression of dust by engineering control. It stated that the standards which HM Factory Inspectorate would apply to determine whether the dust was adequately controlled or not would be found in TDN 13. It is also of some interest because of numerous photographs of typical industrial processes and the giving off of dust, their usefulness being limited by poor quality in reproduction.
99. The following year, a member of HM Factory Inspectorate, S.G. Luxon, published a paper explaining the development and application of threshold limit values for environmental monitoring in hazard assessment and control. In the course of the paper he said:

“For the purpose of determining what concentrations might cause injury, the TLV is now generally accepted as the yardstick. If, therefore, it can be shown that the TLV has not been exceeded, then the employers’ legal and moral obligation can be said to have been fulfilled.

Recent regulations, such as those made in 1969 for asbestos, have followed these general principles. The Regulations lay down general requirements while TDN 13 ... sets what is in effect a TLV for the different forms of asbestos.”

100. The growing appreciation of the dangers of low-level exposure to asbestos was reflected in the collapse of the levels suggested to be acceptable between 1960 and 1970, to some of which I have referred above. A helpful table (prepared by counsel but not as an agreed document) is attached to this judgment as Annex 1. In summary, between 1960 and 1966 the first three editions of the booklet Toxic Substances in Factory Atmospheres held steady with MCPs and TLVs remaining 30 fibres/ml for all asbestos. In 1968 and 1969 the TLVs for asbestos remained at 30 fibres/ml but with a recommendation for a reduction to 12 fibres/ml. In 1970 TDN 13 suggested enforcement values of 0.2 fibres/ml for crocidolite and 2 fibres/ml for chrysotile and amosite, which remained unchanged until 1983 when the current revision to Environmental Hygiene Note 10 provided for values of crocidolite and amosite to be 0.2 fibres/ml and other types of asbestos to be 0.5. Those values were changed by a subsequent revision the following year to 0.2 fibres/ml for crocidolite, 0.5 fibres/ml for amosite and 1 fibre/ml for other types of asbestos.

Overview of the literature

101. Because of the absence of people with direct personal experience of the knowledge and understanding of either the medical profession or the standards reasonably to be applied by employers and others in the discharge of their duties of care to others, the literature is the prime source of evidence on such matters. As such, it is fundamental to the outcome of these appeals, as it has been in earlier cases; which is not in any way to underplay the importance of expert evidence, to which I will return. None of the cases concerning exposure to asbestos to which I will refer below has been set up as a “test case” in the sense of creating a binding precedent for cases coming after. Nor have any of the asbestos cases achieved equivalent status in the way that could be said of Mustill J’s decision in *Thompson’s case* in relation to the date of knowledge in hearing loss cases.
102. The present appeals are the same, in that they have not been set up to be test cases in any normal sense of the word. They fall to be decided on the basis of all of the evidence that was before the courts below and that is now before us. Accordingly, the evidence to be derived from the literature has had to be reviewed again. Despite the weight of material presented to us and to the Judges below, it would be foolish to pretend that the review I have conducted is fully comprehensive of all possibly relevant material. However, some confidence can be derived from the scope of the materials presented to us directly by the parties and by virtue of the fact that the review has covered all of the papers and materials referred to by Swift J in *Abraham*, Simon J in *Asmussen*, Hale LJ in *Jeromson* and Judge LJ in *Maguire*. It is entirely possible that there are further relevant materials that have not come to light; but it seems unlikely that such materials might change the overall conclusions to be derived from the literature that is already available. If it were of major importance either in reflecting or influencing standards of proper behaviour during the period with which we are concerned, it would be strange that no one has yet identified or relied on it.
103. Subject to the caveat that no review can claim to be fully comprehensive, the literature to which I have referred above provides clear evidence in support of certain propositions.
104. First, the risks that were appreciated to arise from the inhalation of asbestos were, until the 1960s, the risk of asbestosis and (later) the risk of lung cancer. These risks were

known and appreciated by the medical establishment, government, and HM Factory Inspectorate. They were, or should have been, appreciated by employers whose business involved the use of asbestos. So much is clear from Merewether and Price, the subsequent statutory interventions in the form of the 1931 Scheme and the 1931 Regulations, and successive Annual Reports of the Chief Inspector of Factories: see [46]-[74] above.

105. Second, appreciation of those dangers was not limited to those working in the Asbestos Industry. As the use of asbestos expanded (for example, with increased use on board ships and in buildings), so an appreciation of the risks of injury through asbestosis spread: see, for example, [66], [67] above.
106. Third, the risk of asbestosis (and subsequently lung cancer) was a risk that was thought to arise on what would now be regarded as substantial exposure to asbestos. Throughout the period with which we are concerned, it was thought that there was a “dust datum” below which there was no real risk of contracting disabling asbestosis during a normal working life: see [48], [49], [50], [51], [56], [59], [60], [66].
107. Fourth, the 1960s saw a sea-change in the perception of risk after 1960 (by reason of Wagner’s paper) and, dramatically, after the publication of Newhouse and Thompson’s report in 1965: see [84]-[88] above. It was only in and from the 1960s that mesothelioma was appreciated as a foreseeable risk of asbestos inhalation at all, or that there was a foreseeable risk of mesothelioma after exposure to asbestos at levels that had previously not been thought to give rise to a risk of asbestosis or lung cancer.
108. Fifth, there is no evidence to support the proposition that employers before 1960 should have appreciated that exposure to asbestos at levels below what were thought necessary to create a risk of asbestosis (and, subsequently, lung cancer) would give rise to a foreseeable risk of pulmonary or other personal injury. The references to asbestos being dangerous during that period were referring to the danger of asbestosis (and subsequently lung cancer) and not to any perceived risk of pulmonary or other injury attributable to lesser levels of exposure.
109. Sixth, there is no evidence that any body of employers (or, for the avoidance of doubt, any significant body of medical expertise, government or HM Factory Inspectorate) appreciated before the 1960s that there was a foreseeable risk of injury after exposure to asbestos at levels significantly below those thought necessary to cause asbestosis or lung cancer.
110. Seventh, the emergence of an appreciation that exposure to lower levels of exposure than were thought to be necessary for the contraction of asbestosis or lung cancer can clearly be traced in the literature in and from the 1960s but not before: see [91]-[96].
111. Eighth, the repeated references to MCPs, TLVs, and enforcement levels, while not providing a bright line, general yardstick or universal test for determining the issue of foreseeability, are evidence that there had been and continued to be an understanding that exposure to asbestos below certain levels was safe: see [73], [74], [76], [80], [97], [100]. It is material that such publications repeatedly referred to their being designed to give advice about best practice in the fields of safety, health and welfare, or similar statements, and that they purported to give advice that could and reasonably should be applied by employers: see [73], [80]. As such these references are relevant evidence to

support the proposition that, in the period up to the end of the 1950s, it was not reasonably foreseeable by employers that exposure to asbestos at levels significantly lower than those apparently endorsed thereafter gave rise to a significant foreseeable risk of injury.

Legal principles

Established principles

112. Questions relating to the existence and discharge of a duty of care are to be answered by reference to the individual circumstances of the Claimant. As Lord Wright said of the tort of negligence in *Bourhill v Young* [1943] AC 92, 108:

“It is also relative to the particular individual affected. This raises a serious additional difficulty in the cases where it has to be determined, not merely whether the act itself is negligent against someone, but whether it is negligent vis-à-vis the plaintiff.”

113. The principles governing the need for foreseeability of injury are not in doubt and were authoritatively reiterated by Lord Mance JSC in *Baker v Quantum Clothing Group Ltd* [2011] 1 WLR 1003, [2011] UKSC 17 at [9]-[10] and [21]:

“9 The test of an employer’s liability for common law negligence is common ground. In *Stokes v Guest, Keen and Nettelfold (Bolts and Nuts) Ltd* [1968] 1 WLR 1776, 1783, Swanwick J described the position as follows:

“From these authorities I deduce the principles, that the overall test is still the conduct of the reasonable and prudent employer, taking positive thought for the safety of his workers in the light of what he knows or ought to know; where there is a recognised and general practice which has been followed for a substantial period in similar circumstances without mishap, he is entitled to follow it, unless in the light of common sense or newer knowledge it is clearly bad; but, where there is developing knowledge, he must keep reasonably abreast of it and not be too slow to apply it; and where he has in fact greater than average knowledge of the risks, he may be thereby obliged to take more than the average or standard precautions. He must weigh up the risk in terms of the likelihood of injury occurring and the potential consequences if it does; and he must balance against this the probable effectiveness of the precautions that can be taken to meet it and the expense and inconvenience they involve. If he is found to have fallen below the standard to be properly expected of a reasonable and prudent employer in these respects, he is negligent.”

10 Mustill J adopted and developed this statement in another well-known judgment in *Thompson v Smiths Shiprepairers (North Shields) Ltd* [1984] QB 405, 415-416, when he said:

“I shall direct myself in accordance with [this] succinct and helpful statement of the law, and will make only one additional comment. In the passage just cited, Swanwick J drew a distinction between a recognised practice followed without mishap, and one which in the light of common sense or increased knowledge is clearly bad. The distinction is indeed valid and sufficient for many cases. The two categories are not, however, exhaustive: as the present actions demonstrate. The practice of leaving employees unprotected against excessive noise had never been followed “without mishap.” Yet even the plaintiffs have not suggested that it was “clearly bad”, in the sense of creating a potential liability in negligence, at any time before the mid-1930s. Between the two extremes is a type of risk which is regarded at any given time (although not necessarily later) as an inescapable feature of the industry. The employer is not liable for the consequences of such risks, although subsequent changes in social awareness, or improvements in knowledge and technology, may transfer the risk into the category of those against which the employer can and should take care. It is unnecessary, and perhaps impossible, to give a comprehensive formula for identifying the line between the acceptable and the unacceptable. Nevertheless, the line does exist, and was clearly recognised in *Morris v West Hartlepool Steam Navigation Co Ltd* [1956] AC 552. The speeches in that case show, not that one employer is exonerated simply by proving that other employers are just as negligent, but that the standard of what is negligent is influenced, although not decisively, by the practice in the industry as a whole. In my judgment, this principle applies not only where the breach of duty is said to consist of a failure to take precautions known to be available as a means of combating a known danger, but also where the omission involves an absence of initiative in seeking out knowledge of facts which are not in themselves obvious. The employer must keep up to date, but the court must be slow to blame him for not ploughing a lone furrow.”

An employer following generally accepted practice will not therefore necessarily be liable for common law negligence, even if the practice involves an identifiable risk of leading to noise-induced hearing loss. There is, as Hale LJ also said succinctly in *Doherty v Rugby Joinery (UK) Ltd* [2004] ICR 1272, para 44, “a distinction between holding that a reasonable employer should have been aware of the risks and holding that certain steps should have been taken to meet that risk”.

...

21 At the level of principle, the parties' submissions take one back to Swanwick and Mustill JJ's classic statements regarding the test of negligence at common law: see paras 9 and 10 above. These statements identify two qualifications on the extent to which an employer can rely upon a recognised and established practice to exonerate itself from liability in negligence for failing to take further steps: one where the practice is "clearly bad", the other where, in the light of developing knowledge about the risks involved in some location or operation, a particular employer has acquired "greater than average knowledge of the risks". The question is not whether the employer owes any duty of care; that he (or it) certainly does. It is what performance discharges that duty of care."

114. The position was succinctly (and correctly) summarised by Simon J at [55] of *Asmussen*, a case involving employer and employee:

"... However the foreseeability of injury is to be tested against the standard of the well-informed employer who keeps abreast of the developing knowledge and applies his understanding without delay, and not by the standard of omniscient hindsight. An employer can rely upon a recognised and established practice to exonerate itself from liability in negligence for failing to take precautionary steps unless (a) the practice is clearly bad practice, or (b) in the light of developing knowledge about the risks involved in some location or operation, a particular employer acquired greater than average knowledge of the risks, It follows that the issue of foreseeability involves a consideration of the state of public knowledge about the risks of exposure to asbestos at the relevant time."

115. It is equally authoritatively established that what must be foreseeable is the type of damage suffered by a claimant. This was explained in *Czarnikow Ltd v Koufos* [1969] 1 AC 350, 385G-386C by Lord Reid:

"The modern rule of tort is quite different [from the rule in contract] and it imposes a much wider liability. The defendant will be liable for any type of damage which is reasonably foreseeable as liable to happen even in the most unusual case, unless the risk is so small that a reasonable man would in the whole circumstances feel justified in neglecting it."

116. To the same effect, Lord Upjohn said at 422C-D:

"The test in tort, ..., is that the tortfeasor is liable for any damage which he can reasonably foresee may happen as a result of the breach however unlikely it may be, unless it can be brushed aside as far fetched."

117. In *Margereson v J W Roberts Ltd* [1996] PIQR P358, 361 (another case involving the contraction of mesothelioma) Russell LJ dealt with the nature of what must be foreseen in a personal injury case:

“[L]iability only attaches to these defendants if the evidence demonstrated that they should reasonably have foreseen a risk of some pulmonary injury, not necessarily mesothelioma.”

To the same effect, Swift J said at [50]-[51] of *Abraham*, citing *Page v Smith* [1996] AC 155, 190B-D per Lord Lloyd:

“Foreseeability of damage in a personal injury claim means only that the risk of some personal injury must have been foreseeable. ... In the present case, therefore, the foreseeable risk need not be that of mesothelioma.”

These observations were soundly based and remain correct statements of the law as it presently stands.

118. Equally well established is the level or degree of foreseeability that must be present, which was reiterated by Aikens LJ (with whom Maurice Kay and Patten LJ agreed) at [34] of *Williams v University of Birmingham* [2012] EWCA Civ 1242, [2012] PIQR P4:

“The degree of foreseeability of risk of injury or harm necessary to establish a breach of duty was reconsidered in the Privy Council case of *Overseas Tankship (UK) Ltd v Miller Steamship Co Pty Ltd (The Wagon Mound)* Lord Reid put the issue of breach of duty in terms of whether someone is negligent or not:

“...a person must be regarded as negligent if he does not take steps to eliminate a risk which he knows or ought to know is a real risk and not a mere possibility which would never influence the mind of a reasonable man. What [*Bolton v Stone*] did was to recognize and give effect to the qualification that it is justifiable not to take steps to eliminate a real risk if it is small and if the circumstances are such that a reasonable man, careful of the safety of his neighbour, would think it right to neglect it.”

119. Applying this principle, Aikens LJ in *Williams* formulated the test for whether the University was negligent and in breach of duty in the following manner at [35]:

“Ought the University reasonably to have foreseen the risk of contracting mesothelioma arising from Mr Williams’ exposure to asbestos fibres by undertaking the speed of light experiments in the tunnel in the manner contemplated—and done in fact—to the extent that the University should (acting reasonably) have refused to allow the tests to be done there, or taken further precautions or at the least sought advice.”

120. As a matter of absolute generality, it may be said that the reference to “the risk of contracting mesothelioma” could and should have been expanded to refer to “the risk of suffering pulmonary or other physical injury”. But, in a field where the potential adverse outcomes are understood to be asbestosis, lung cancer and mesothelioma, it would, in my opinion, be unduly pernicky to criticise. To the contrary, it seems to me both justifiable and correct to concentrate on the risks that are recognised at the time of deciding whether there has been a breach, rather than to speculate about whether an employer should have foreseen a risk that is still not identified or recognised. The Court of Appeal’s review of the Judge’s findings (or lack of them) at [56] shows that the Court had in mind that the question of foreseeability was not limited to the adverse outcome that had eventuated:

“The judge also does not indicate whether any of the experts would have regarded the level of exposure to asbestos fibres (as found) for the length of time found (52–78 hours) *as giving rise to a reasonably foreseeable risk of asbestos related injury*, in the sense that a reasonably informed body in the place of the University in 1974 ought to have appreciated that if it had been told that Mr Williams was exposed to that level and length of exposure to asbestos fibres *it should have foreseen that it would (or even could) expose Mr Williams to an unacceptable risk of personal injury*, viz. contracting mesothelioma.” [Emphasis added]

121. At [60]-[61] of *Williams*, Aikens LJ referred again to “an acceptable risk” of asbestos related injury and said that the University was entitled to rely upon recognised and established guidelines such as those in TDN 13 and that TDN 13 provided the best guide to what was an acceptable or unacceptable level of exposure to asbestos generally. These observations were the subject of clarification in *Bussey*. First, Underhill and Moylan LJ deprecated the use of the phrase “unacceptable risk” as liable to mislead. Second, the Court of Appeal was unanimous in holding that TDN 13 was not to be treated as a general yardstick or universal test for determining the issue of foreseeability in mesothelioma cases. In *Bussey* the deceased’s exposure to asbestos was between 1965 and 1968, before the introduction of TDN 13. At [47]-[49] Jackson LJ said:

“47 In my view TDN13 does not establish a “bright line” to be applied in all cases arising out of the period 1970-1976. Still less is it a bright line to be applied to asbestos exposure in a different period whether before or after 1970-1974.

...

49 A more nuanced approach is required than that. It is necessary to look at the information which a reasonable employer in the defendant’s position at the relevant time should have acquired and then to determine what risks such an employer should have foreseen.”

122. It may be noted that this approach is similar if not identical to that adopted by Swift J at [85] of *Abraham*. Swift J treated as relevant and material the fact that the levels at

which the maximum average permissible concentration of asbestos dust over a working day were set were at a level greatly in excess of the levels to which the claimant in that case was likely to be exposed. She regarded that as relevant because it may well have encouraged the defendants to believe (if they considered it) that the levels to which the claimant was exposed gave rise to no risk of injury. Put more abstractly, that fact that an employee was exposed to levels of asbestos far lower than those set out in TDN 13 and the other documents to which I have referred from the 1960s and 1970s may be taken as relevant to what a reasonably prudent employer should have regarded as giving rise to a foreseeable risk of injury.

123. In the course of his concurring judgment, at [63], Underhill LJ adopted an approach that was consistent with what Jackson LJ had said at [49]:

“I think it is important to split out the question of the foreseeability of the risk from the question of what precautions it was reasonable to take against it. In my view the right approach in principle to the necessary inquiry is twofold:

(a) The first question is whether Anglia should at any time during Mr Bussey’s employment ... have been aware that the exposure to asbestos dust which his work involved gave rise to a significant risk of asbestos-related injury. (I say “significant” only so as to exclude risks which are purely fanciful: any real risk, albeit statistically small, of a fatal illness is significant.) That will depend on how quickly the knowledge, first widely published in 1965, of the fact that much lower exposures than had previously been thought to be dangerous could cause mesothelioma was disseminated among reasonable and prudent employers whose employees had to work with asbestos. One aspect of this question is whether, even though Anglia may have been aware of the risk in general terms, it was reasonable for it at the material time to believe that there was a level of exposure below which there was no significant risk, and that Mr Bussey’s exposure was below that level.

(b) If the answer to the first question is that Anglia should have been aware that Mr Bussey’s exposure gave rise to such a risk (including that there was no known safe limit) the second question is whether it took proper precautions to reduce or eliminate that risk.”

124. I respectfully endorse the approach suggested by Jackson and Underhill LJJ. It has the advantage of concentrating the mind on the relevant first question, namely whether the employer should have been aware that the employee’s exposure to asbestos dust which their work involved gave rise to a significant risk of asbestos-related injury. Answering that first question requires the application of the principles that I have attempted to summarise at [112]-[118] above.

125. Since both appellants rely heavily upon *Jeromson* it is necessary to look in a little detail at what it did and did not say. Hale LJ (with whom Cresswell J and Mantell LJ agreed) identified the issue in the appeal at [35]:

“The issue in this case is not one of balancing the effectiveness, expense and inconvenience of the precautions required against the extent of the risk: *the issue is whether the risk should have been identified*. With the benefit of hindsight, it is now quite clear that the exposure in these cases was sufficient to cause mesothelioma, the disease from which Mr Dawson and Mr Jeromson eventually died. But the link between asbestos and mesothelioma was not established until 1960. Until then the known risk was of lung disease, in particular asbestosis, and, in the 1950s, lung cancer associated with asbestosis. *The issue was whether the degree of exposure in this case was such that a reasonable employer should have identified a risk.*” [Emphasis added]

Provided that “the risk” being referred to is understood to be the risk of pulmonary or other personal injury, this formulation is conventional in the light of the principles and authorities to which I have referred.

126. The appeal was from the decision of Mr Raymond Machell QC sitting as a Deputy High Court Judge in two cases that arose from the deaths of Mr Jeromson and Mr Dawson. Hale LJ summarised his factual findings at [38]-[39]:

“38 Both men had been engaged as marine engineers on various ships, Mr Dawson between July 1951 and May 1957 and Mr Jeromson between June 1957 and July 1961. The engine rooms of these ships contained large quantities of asbestos insulation but this was not dangerous unless disturbed. ...

39 [The Judge] found that engineers would be exposed to dust when insulation had to be stripped away and replaced. This happened most often when leaking joints had to be repaired, but from time to time when pipes burst, and during dry docking. Three experts (Mr Browne and Mr Deary for the claimants and Mr Finch for Shell) were agreed that stripping asbestos lagging by crude methods gave rise to high concentrations of visible dust, as did mixing asbestos powder with water to form a plastic mix for new insulation and dry sweeping of asbestos debris. Cutting asbestos lagging by handsaw gave rise to less high but still significant concentrations, and handling asbestos mattresses in bad condition to moderately high concentrations. At the time, however, there was no way of measuring such concentrations and until 1960 there were no published limits. The Judge concluded that all but the last activity would have given rise to concentrations substantially above even the lower limits set in 1960 and the last to concentrations above those limits: “I am quite satisfied that these five activities would have given rise to

significant levels of visible dust. . . clearly there to be seen, if considered by any careful employer." As for frequency:

"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."

127. At [41]-[50] Hale LJ conducted a review of some of the literature to which I have previously referred. She confined herself, as had the trial Judge, to literature published before 1961 (when Mr Jeromson's employment and exposure ceased) and largely to the trial Judge's observations on that literature. The approach that she adopted was that the experts "were helpful in producing the literature but what a reasonable and prudent employer should have made of it was a matter for the court". Her analysis of the literature and the support she derived was material to the result that the Court reached. Hale LJ said of Merewether and Price that "while the headline message was that prolonged intense exposure would inevitably lead to asbestosis, it must have been apparent to any careful reader that the effect of much lower levels of exposure was quite unknown." I have already referred at [59] above, to Hale LJ's observation on Dr Merewether's 1933 Tubercle article that the effect of much lower levels of exposure was quite unknown and to the absence of any mention in *Jeromson* of Dr Merewether's opinion that there was what came to be described as a "dust datum" that was required in order to produce a potentially disabling or serious amount of fibrosis. Nor was there any mention of the fact that his opinion continued to be reflected consistently in subsequent publications. The obligations imposed by the Asbestos Regulations 1931 were taken as "a considerable warning of the dangers involved." The extract from the Annual Report of the Chief Inspector of Factories for 1938 that I have set out at [63] above was set out extensively and was characterised by the Judge and the Court of Appeal as a "potent description of asbestos dust." The extract from the 1949 Report that I have set out at [67] above was relied upon by the Judge as "stressing the dangers of exposure to asbestos dust *outside the asbestos industry*." [I note in passing that in *Maguire* at [28], Judge LJ pointed out that, in context, it was not possible to read this text as amounting to a warning against the danger of injury to health from secondary exposure: the focus of attention was the workplace.] Finally, the extracts from the 1956 Annual Report, to which I have referred at [69] above are said to be "striking in their tone".
128. What does not appear in the Court of Appeal's analysis of the literature in *Jeromson* is any acknowledgement that the risks being referred to throughout the relevant period, both in the quoted examples and in other relevant literature were asbestosis and, from about 1955, lung cancer; nor is there any reference to the understanding, subsequently proved to be quite wrong, that there were levels of exposure below which those risks did not arise or were insignificant. Nor is there any reference to literature published after 1961 despite it including much evidence that is relevant to any consideration of what was and had been prudent employers' state of knowledge, what risks were or had been reasonably foreseeable, and what levels of exposure were or had been considered to be acceptable.

129. That review provided the context for the Court's main analysis and determination of the appeal, which bears setting out in full:

"51 Having reviewed the literature, the judge referred to the different conclusions reached at first instance, by Waterhouse J in *Gunn v Wallsend Slipway & Engineering Co Ltd* (unreported) 7 November 1988, and by Buxton J in *Owen v IMI Yorkshire Copper Tubes Ltd* (unreported) 15 June 1995. He could not agree with Waterhouse J that "the literature justifies the conclusion until 1960, that asbestosis was attributable only to heavy and prolonged exposure". He preferred the formulation of Buxton J that from the beginning of Mr Owen's employment in 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."

He did so "in the context of the absence of any means of knowledge of what constituted a safe level of exposure". He accepted Mr Allan's submission 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 an uncertain state of knowledge, the risk could not (in the words of Lord Upjohn in *C Czarnikow Ltd v Koufos* [1969] 1 AC 350, 422c) be "brushed aside as far-fetched".

52 The point which impressed the judge was the certain knowledge that asbestos dust was dangerous and the absence of any knowledge, and indeed any means of knowledge, about what constituted a safe level of exposure. Mr Mackay's argument relies heavily on the explosion of knowledge which took place during the 1960s. Only then did it become apparent that mesothelioma could result from very limited exposure. In particular, it was only then that knowledge began to develop of the risks to those outside the workplace, such as the wife washing her shipyard worker husband's overalls (as in *Gunn*) or people living near to asbestos works. But just as courts must beware using such later developments to inflate the knowledge which should have been available earlier, they must beware using it to the contrary effect. The fact that other and graver risks emerged later does not detract from the power of what was already known, particularly as it affected employees such as these, working in confined spaces containing a great deal of asbestos which might have to be disturbed at any time. There is no reassurance to be found in the literature that the level of exposure found by the judge in this case was safe and much to suggest that it might well not be so. The judge was entitled to conclude that a prudent employer would have taken precautions or at the very least made inquiries about what precautions, if any, they should take.

53 If Shell had made inquiries, the judge was in little doubt what advice they would have received. The obvious place to begin was the Factory Inspectorate. In August 1945, the Chief Inspector of Factories wrote to the shipbuilding and ship repairing industry of his concerns about "Asbestos insulation aboard ships". This emphasised 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."

Interestingly, among the precautions advised on board ship was "the provision of a respirator . . . for each workman engaged in the fitting or removal of any dry insulating material containing asbestos". Similar advice was given to regional safety officers by the chief safety officer about the lagging of steam pipes in generating stations in September 1949 and to at least one power station in 1954.

54 The judge also referred to the evidence given by Mr Finch, an expert called on behalf of Shell, who had previously been employed as a factory inspector. In answer to questions from the judge, he had said that if asked for advice about employees whose activities involved substantial exposure for very short periods of time once a week, he would have advised providing a respirator. Mr Mackay rightly points out that Mr Finch would not have expected an employer to make that inquiry in the 1950s. Nevertheless, the judge was entitled to take into account his evidence as to what the advice would have been had the inquiry been made. It was for the judge to decide whether it should have been made.

55 Accordingly, the judge having correctly directed himself on the law, and having made findings of fact about the nature and extent of potential exposure to asbestos dust, was entitled to draw the conclusions he did about the foreseeability of harm flowing from such exposure at the relevant time. I would dismiss the Shell appeal."

130. On the facts as found by the trial Judge, I would accept that the decision in *Jeromson* was both justifiable and correct. The levels of exposure as found by the Judge and summarised by Hale LJ at [38]-[39] (set out above) fell comfortably within the sort of levels that were known to give rise to a risk of asbestosis or to contribute to its severity, it being a divisible disease. The citation from the Annual Report for 1949, quoted at [53] of *Jeromson*, made that clear. It fully justified the reference in [52] to "the power of what was already known, particularly as it affected employees such as these, working

in confined spaces containing a great deal of asbestos which might have to be disturbed at any time.”

131. Before considering *Jeromson* further, it is convenient to refer to *Maguire v Harland and Wolff PLC* [2005] EWCA Civ 1, [2005] PIQR P21. The deceased was exposed to asbestos from her husband’s clothing between 1961 and 1965, as a result of which she contracted mesothelioma. Harland and Wolff conceded that they were in breach of their common law duty to Mr Maguire by exposing him to asbestos dust between 1960 and 1965. The issue was whether liability could be established in a case of familial/environmental exposure. Morland J held that it could. In doing so, and based on his understanding of *Jeromson* and *Owen*, he accepted the submission that by 1961 “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.” The Court of Appeal by a majority (Mance LJ dissenting) held that liability could not be established on the facts of that case. Judge LJ recognised that different questions arose where the victim was not an employee. At the same time, he was content to apply normal tortious principles to allow for the potential existence of a duty of care owed to non-employee victims affected by familial exposure. At [56] he expressed the issue in conventional tortious terms, namely:

“whether it was, or by April 1965, should have been, apparent to those whose employees were working with asbestos, that the health of individuals whose contact with it came, so to speak, second-hand and intermittently, and whose exposure to it lasted for peak periods only, was under threat.”

132. Judge LJ’s response was expressed in equally conventional tortious terms at [58]:

“The issue remains whether Mrs Maguire has established that Harland & Wolff were negligently in breach of the duty owed to her as the wife of an employee working with and contaminated by asbestos dust. If so, liability would arise on the somewhat unusual basis that they failed to address a risk which had not yet been identified or addressed by anyone else, whether within or outside the industry. In the absence of any evidence from any source whatever of contemporaneous insight into familial risk, or any contemporaneous suggestion that the possibility of such risks should be addressed, I am unable to accept that by not later than 1960, and ahead of contemporary understanding, Harland & Wolff should have appreciated that Mrs Maguire was at risk of pulmonary or other asbestos-related injury, and that their failure to do so and to take appropriate precautions for her safety was negligent.”

I describe this as a statement in conventional tortious terms because it brings into play the principles summarised above by requiring assessment of what risks to health are foreseeable on the current state of knowledge, applying the standard of the well-informed defendant (albeit not an employer) who keeps abreast of the developing knowledge and applies his understanding without delay but is not required to act ahead of contemporary understanding.

133. Longmore LJ at [91] considered himself bound by *Jeromson* to proceed on the basis that as between employer and employee, the employer will be in breach of duty if he fails to reduce his employee's exposure "to the greatest extent possible", though he did not identify the date from which that conclusion must apply. However, he regarded it as a completely open question whether employers between 1960 and 1965 owed a duty of care to wives of employees not to subject them to exposure to asbestos dust. On that question, with some hesitation, he agreed with Judge LJ, holding that it was "not reasonably foreseeable between 1960-1965 that a wife washing the clothes of a husband who was himself exposed to asbestos to a negligent degree would herself be likely to suffer risk of personal injury." His conclusion was therefore reached by the application of conventional tortious principles.
134. It is time to return to *Jeromson* and to the Claimants' reliance on Buxton J's dictum in *Owen*, which was set out at [51] of *Jeromson*.
135. It is not, and never has been, the law that a person is obliged to take all possible steps to prevent the occurrence of a risk that is not reasonably foreseeable. A risk does not become foreseeable simply because hindsight shows that it has not been excluded; and the mere fact that a certain level of exposure to asbestos is recognised to be dangerous does not necessarily give rise to a foreseeable risk of injury in the event of different levels of exposure or different contexts.
136. It is now generally recognised that there is no safe level of exposure to asbestos. Put slightly differently, it is now generally recognised that any exposure to asbestos carries with it a significant risk of personal injury. With the benefit of hindsight and current knowledge it is therefore trite to say that an employer (or any other user of asbestos) is under a duty to reduce exposure to the greatest extent possible. That proposition, however, is dependent upon current understanding of the risk of mesothelioma. The risks from exposure to asbestos that are now reasonably foreseeable are not only asbestosis and lung cancer but also mesothelioma. Mesothelioma was not in contemplation before the 1960s because mesotheliomas were rare and, as recognised at [23] and [35] of *Jeromson*, the link between asbestos and mesothelioma was not established (even in published medical circles) until Wagner's 1960 paper: see [84]-[87] above. More fundamentally, as appears from the literature review that I have set out above, the *only* risks that were identified as foreseeable in the period before the 1960s were asbestosis and, subsequently, lung cancer, both of which were understood to be caused by substantial exposure and which, from 1930 onwards, were thought to be subject to a low-end threshold or dust datum. References to the dangers of asbestos exposure are to be seen in that context. There is no support in the literature that we have seen for an assertion that there was any appreciation that exposure to levels of asbestos significantly lower than those thought necessary to cause or contribute to asbestosis either did give rise or might give rise to a significant risk of pulmonary or other personal injury.
137. Applying conventional principles, therefore, the issue in each appeal is whether during the 1950s a reasonable and prudent employer, taking positive thought for the safety of his employees in the light of what he knew or ought to have known, should have appreciated that there was a foreseeable risk of personal injury if their employee was exposed to the levels of asbestos found by the respective judges (subject, of course, to the challenge to the Judge's findings of fact in the Cuthbert case). Adopting Underhill LJ's more concise formulation: should the employers in these appeals at any time

during Mr White and Mr Cuthbert's respective employments have been aware that the exposure to asbestos dust which their work involved gave rise to a significant risk of asbestos-related injury? That question must be answered in the context that there is no evidence in the literature to suggest that there was any appreciation during the relevant period that there was any foreseeable risk from the exposure to asbestos other than asbestosis and, later, lung cancer. The fact that the risks from lower levels of exposure had not been excluded is neither determinative nor even particularly relevant: what matters is whether there was a foreseeable risk of injury against which the employers should have protected their employees.

138. If and to the extent that Buxton J's dictum goes beyond this, I consider it to be ill-founded because Buxton J did not identify any other risk than asbestosis and lung cancer that was foreseeable so as to give rise to a duty to "reduce exposure to the greatest extent possible". It should not, in my judgment, be accepted as creating any form of precedent for other cases.
139. Nor do I consider that we are bound to apply Buxton J's dictum in the present appeals. First, for the reasons already given, it was not necessary to the determination of *Jeromson* since the levels of exposure in that case as summarised by Hale LJ at [38]-[39] fell comfortably within the levels that were recognised as giving rise to a risk of causing or contributing to asbestosis. Second, Hale LJ did not unequivocally endorse Buxton J's formulation as being of general application. Third, Hale LJ's decision rested (at [52]) on the substantial levels of exposure and "what was already known, particularly as it affected employees such as those working in confined spaces containing a great deal of asbestos which might have to be disturbed at any time"; and that there was "no reassurance to be found in the literature that the level of exposure found by the Judge was safe and much to suggest that it might well not be so." Fourth, *Jeromson* was not set up as any sort of test case or given particular status so as to bind us in our decisions on these appeals. Fifth, if and to the extent that *Jeromson* was decided on the basis of the literature review as set out in the judgment, that review was not comprehensive and omitted important aspects that should, in my respectful opinion, have been brought into account. Specifically, it omitted any reference to (a) the fact that the risks in contemplation before the 1960s were asbestosis and lung cancer and not mesothelioma; (b) the prevalent belief throughout the relevant period that there was a lower threshold that was relevant to the risk of injury; (c) the absence of support in the literature for a suggestion that reasonably prudent employers should during the relevant period reasonably have foreseen some other personal injury caused by lower levels of exposure; and (d) the evidence that even as the 1960s progressed there was ample material supporting a continued belief that there were safe levels of exposure, which was also material to the question of reasonable belief in the relevant period.
140. Finally, I consider the reasoning of Judge LJ at [58] of *Maguire* to be inconsistent with any blanket acceptance of Buxton J's dictum in *Owen*. Judge LJ did not rest his decision on a lack of proximity between Mrs Maguire and Harland and Wolff. He decided the case on the basis that the Defendant was not in breach of duty for failing to take precautions against exposing her to a risk of injury that was not reasonably foreseeable. Had Buxton J's dictum been applied in the way that the Appellants submit it should be applied in the present case, Mrs Maguire should have succeeded in her claim, as Harland and Wolff took no steps to reduce her exposure to a minimum.

141. For these reasons, I would decide the present appeals by reference to the principles established by the highest authority and by reference to the facts of the individual cases, to which I now turn, rather than any supposed principle of law or precedent fact based upon Buxton J's dictum.

The White Appeal – resolution

142. The central submission made on behalf of Mr White's executors is that the Deputy Judge failed properly to apply *Jeromson* and *Owen* and that, if he had applied it properly, he should have found in favour of the appellant. The primary basis for this submission is that *Jeromson* is binding on this court and that it is to be conclusively presumed that Mr White's employer should have reduced Mr White's exposure to the greatest extent possible.
143. I have explained why I do not consider that *Jeromson* can be regarded as binding this court: see [137]-[140] above. In my judgment, the Deputy Judge identified the correct issue and asked himself the right questions at [6] and [49] of his judgment, and he approached the issue appropriately by reference to the two stage approach suggested by Underhill LJ in *Bussey* at [43] ff of his judgment. Although his two-stage analysis may be said to differ somewhat from the course suggested by *Bussey*, he identified and addressed the central issue correctly in the light of the evidence from the literature that he had identified and the evidence of Mr Hughson, which he was entitled to accept and clearly did accept.
144. In particular, the Judge was entitled to accept the evidence of Mr Hughson that the levels of exposure that he had found would have been regarded as trivial, and that, if advice had been sought, the advice would have been that no steps needed to be taken. Those conclusions were supportable by reference to the literature and also by reference to his key findings, which I have set out at [14]-[16] above. Wisely, he did not rely upon Mr Hughson's back calculation as more than "illustrative" and a "not unreasonable estimate" of Mr White's cumulative exposure between 1949 and 1960. That said, his findings about the frequency, duration and intensity of Mr White's exposure and the illustrative calculation fully justified his description of that exposure as modest, infrequent and not more than minimal.
145. It was submitted that the Judge approached the literature "from the wrong direction" by asking himself if there was evidence that the level of exposure was hazardous, rather than whether the hospital could have been reassured that it was safe. For the reasons I have given already, I would reject this criticism. There was no need for the hospital to be reassured that Mr White's level of exposure was safe unless it should have appreciated that the level of exposure should reasonably have been foreseen to be hazardous.
146. In the second part of his analysis, the Judge rightly distinguished *Jeromson* on the facts on the basis that the exposure in that case was considerably more significant. He expressed suitable caution about the use of TDN 13 and the other documents stating MPCs or TVLs but, following the lead of Swift J in *Abraham*, drew some support from the substantial disparity between those levels and the much lower levels of exposure that he had found in the present case, as he was entitled to do.

147. Standing back, I can detect no error in the overall approach adopted by the Deputy Judge. Nor can I find any merit in the submission that, because measurements were not taken, the employer should have considered the potential maximum exposure and satisfied themselves that, in the light of that potential maximum exposure, Mr White would not be exposed to a risk that could not be ignored. The Judge's findings about the circumstances and levels of exposure, both transient and over time, were so clear that, in my judgment, the question simply did not arise. As an indicative point of comparison to illustrate the point, Mr White's exposure at a concentration of 0.02 to 0.05 fibre/ml (8-hour TWA) on those days on which he was exposed would be a tiny fraction even of the indicative levels (albeit for enforcement) set out in TDN 13 in 1970 and an even smaller fraction of the MCP of 30 fibres/ml given in the 1960 edition of "Toxic Substances in Factory Atmospheres". That is not determinative; but it is relevant.
148. I would dismiss the White appeal.

The Cuthbert Appeal – resolution

149. There are two main attacks on the judgment of the trial Judge. The first, primarily legal, challenge, in addition to submitting that the trial Judge misunderstood and misapplied *Jeromson* and *Maguire*, submits that the trial Judge adopted too demanding a standard for the level of risk that has to be foreseen in order to trigger an employer's obligation to take steps to protect their employees. In support of that submission, it is submitted that the Judge paid inappropriate and excessive attention to post-exposure publications, specifically the 1960 edition of "Toxic Substances in Factory Atmospheres" and TDN 13. Second, while accepting that the Judge was entitled to take his own view of the evidence, the Judge's findings of fact are criticised on two main grounds. First, the Judge is criticised for departing from the evidence of Mr Cuthbert as set out in his witness statements, when the Defendant had not themselves served contradictory evidence and had neither attempted to cross-examine Mr Cuthbert by way of evidence taken on commission nor asked him Part 18 questions or requested a deposition be taken before his untimely death. Second, while expressly accepting that the Judge was not bound by the content of Mr Cuthbert's witness statements and was entitled to form his own view of the evidence, it is submitted that the Judge's finding that Mr Cuthbert's exposure was "light and intermittent" was not open to him and that he should have found the exposure to be "substantial but intermittent."
150. I shall deal with these two main attacks in reverse order.

The Judge's findings of fact

151. I will first address the criticism that the Defendant had not submitted Part 18 requests for further information or attempted to cross-examine Mr Cuthbert. The original letter of claim was dated 13 April 2021. Mr Cuthbert's first witness statement was dated 10 May and was served on 13 May 2021. His supplemental witness statement was dated 21 July and served on 18 August 2021. The Claim Form was issued on 2 December 2021. The Defence was served on 6 January 2022. In the absence of any records, Mr Cuthbert was put to strict proof of his employment with the Defendant; and no admissions were made in relation to the nature, extent and type of work undertaken by Mr Cuthbert, who was required to prove the fact, extent and circumstances of his

alleged or any exposure to asbestos during his employment with the Defendant. Mr Cuthbert died three months later, on 5 April 2022.

152. It would have been possible for the Defendant to apply for Mr Cuthbert to be examined and for his evidence to be given by deposition, which is a course that is sometimes pursued, though by no means as a matter of routine. The Defendant could also have submitted requests for further information pursuant to Part 18 of the CPR. Equally, either before or after service of the Defence, it would have been open to Mr Cuthbert's legal team to provide fuller witness statements or a further supplementary witness statement if they felt that there was additional evidence that Mr Cuthbert could usefully give by way of amplification or clarification.
153. The Defendant has not disclosed the reason or reasons why it did not take the additional steps suggested by the Claimant. However, I do not accept that the Defendant should be criticised for not taking these additional steps in the circumstances of this case. The decision whether to apply for evidence to be taken on commission is seldom straightforward in the case of a person suffering from a terminal disease, and for good reason. The first reason is a natural reluctance to inflict additional burdens upon a person who is already suffering. Paragraph 1 of Mr Cuthbert's first statement said: "I am very poorly and I am in severe pain for much of the day." To my mind, that sentence alone provides reason enough for not intruding further by additional and demanding legal procedures. The second is related to the first, and is that it is not to be assumed that evidence obtained in such circumstances will add materially to the evidence that has already been given. A clear illustration of this is given in the judgment of Simon J in *Asmussen*, a case where the claimant was still alive at the date of the trial and evidence on commission had been taken some nine months earlier. As recorded by Simon J:
- "Mr Feeny (for the Defendant) initially sought to rely on some of this evidence. However, having considered the matter, I indicated my view that it would not be fair to the Claimant to rely on it. She was (and is) gravely ill and in pain; and it is clear she had great difficulty in concentrating on the questions. Mr Feeny did not try to persuade me from this view."
154. A third reason relates to the passage of time, though it may also be related to the illness of the witness, and does not imply criticism of Mr Cuthbert. By the time that he made his first statement it was over 60 years since his employment at Queenswood School. Two features stand out on comparison of the two witness statements that were served. The first is that the information in them is limited. The second is that they are not always consistent and the second witness statement includes information which, if reliable, might reasonably have been included in the first. The Judge was alive to the difficulties that this presented, exacerbated by reference to other documents: see [34] and [39] of the judgment. There would be a reasonable concern in the mind of a defendant in the position of the Defendant in this case, when weighing up whether to apply for Mr Cuthbert to be examined or required to provide further information, that it may lead to further development of the witness' evidence that was unreliable either because of the witness' illness or the lapse of time since the events in question, or both.
155. The finely balanced nature of the decision facing the Defendant in this case is highlighted by the fact that their defence, of necessity, consisted of non-admissions and

putting Mr Cuthbert to proof. That imposed significant limitations upon the manner in which the Defendant could conduct its case at trial, limitations which the judgment suggests were properly adhered to. It was, in my judgment, open to the Defendant to put Mr Cuthbert to proof and then to take the points that were properly open to it in criticism of the case and evidence those representing his estate were advancing.

156. The touchstone for me, as for Simon J in the extract from *Asmussen* that I have set out above, is fairness. The mere fact that the defendant could have applied to cross-examine Mr Cuthbert or could have submitted a Part 18 request does not demonstrate unfairness. Having scrutinised the way in which the Judge approached the Claimant's evidence and the criticisms made by the Defendant of it, particularly between [34]-[40], I reject the submission that there was any unfairness in the conduct of the defence case either before or at trial.

The Judge's finding of "light and intermittent" exposure

157. The Judge used the phrase "light and intermittent" to describe Mr Cuthbert's exposure in three places in the Judgment, namely [40], [76] and [84], which I have set out at [29], [39], and [41] above. In order to understand his meaning properly, it is essential to see each reference in context.
158. At [34]-[39] the Judge gave his reasoned assessment of Mr Cuthbert's exposure. There is no challenge to this assessment or his conclusions as there appearing. Crucially, the Judge was not satisfied that Mr Cuthbert was exposed to anything like the extent that his witness statements suggested. He rejected the suggestion that Mr Cuthbert had spent between one and two hours standing around the carpenters. He was entitled to form this view for the reasons he gave, most specifically in [34]. He also rejected the suggestion that the carpenters cut up asbestos materials for soffits as a daily occurrence for a period of two years or more, a proposition which he rightly said defied common sense: see [35]. Taking these two preparatory findings into account he gave his assessment in [36] that Mr Cuthbert's contact with them was "no more than sporadic" and that even if he *saw* the carpenters every day he did not spend anything close to one/two hours "standing around them while they carried on with their tasks." That assessment combined with the finding that he had made in [35] and repeated in [36], that (a) the carpenters had not been engaged every day cutting up asbestos materials and (b) the cutting was not carried out over a two/three year period, led to the finding that it was much more likely that the deceased "had irregular and intermittent contact with the carpenters *and that, at times, they were engaged in cutting up asbestos materials when he was in their vicinity.*" He also made the important finding that, depending on the weather, the cutting of asbestos boards took place outside. In other words, his contact with the carpenters was irregular and intermittent and, even on those occasions that he had contact with them, they were by no means always cutting up asbestos materials.
159. The other main activity relied upon both here and below was sweeping up. Once again the Judge gave reasoned findings that are not challenged. It is obvious from the findings that he had already made, that Mr Cuthbert would not have been sweeping up asbestos dust generated by the carpenters either on a daily basis or for any great length of time. At [37] he accepted that Mr Cuthbert undertook sweeping up "from time to time and, maybe, on occasions a number of times per day." This neither said nor implied that he was sweeping up after the carpenters on a daily basis; and he expressly rejected the

submission that Mr Cuthbert always swept up after them. He also found that sweeping up involved not only asbestos dust but other types of dust.

160. At [38] he found that, even if he were to conclude that Mr Cuthbert did sweeping up “on a fairly regular basis”, that sweeping (whether for the carpenters or elsewhere, and whether of asbestos or other dusts) “would have only occupied a very small portion of his working day”: see [38]. While not pinning himself to exact timings he “would not disagree” with the Defendant’s submission that he would have spent “in the order of ten minutes per day sweeping up.” Quite apart from the absence of a finding that he was sweeping up “on a fairly regular basis”, it necessarily follows from his previous findings that not all of that time would have been spent sweeping up after the carpenters when they had been cutting asbestos.
161. The Judge then gave reasoned attention at [39] to the suggestion in Mr Cuthbert’s second statement that there were clouds of dust when Asbestolux was cut up. The Judge regarded this as “perhaps not surprising”, but he gave reasons which amounted to a rejection of the submission that Mr Cuthbert and his clothes became covered in such dust. Those reasons were open to the Judge.
162. This process of reasoning led the Judge at [40] to the qualitative, descriptive, conclusion that Mr Cuthbert’s “exposure to asbestos when employed by the defendant was of a low order, light and intermittent and, in the main as a bystander.” Given the elasticity of language, it is plain that the word “light” in this context is relative and is intended to be descriptive of the exposure that the Judge had described in the preceding paragraphs. The Judge used it in contrast to “significant” exposure in a way that makes plain his meaning.
163. At [76], the Judge turned to what was known about exposure to asbestos dust in the mid to late 1950s: see [39] above. He started by taking the message that asbestos dust was highly dangerous and that its inhalation was to be prevented as far as possible. Importantly, however, he said that this message was delivered “in the context of the known risk of asbestosis and of occupational exposure to *significant* quantities of asbestos dust.” He then formulated the question he had to answer as “whether the information when available should have alerted an employer to the possibility that an employee whose exposure to asbestos was *light and intermittent* might have been at risk of contracting an asbestos related injury.” The context demonstrates that the Judge was using the phrase “light and intermittent” to mean exposure at a level that would not have given rise to a foreseeable risk of asbestosis. That meaning is confirmed by [77]-[79] where (a) at [77] he contrasts the findings of “significant” exposure to asbestos dust in both *Owen* and *Jeromson* with his finding in the present case; and (b) at [78]-[79] where he contrasts the “substantial amounts of dust” produced in *Owen* and the “intense concentrations of asbestos dust, on a regular basis” with the level of exposure to which Mr Cuthbert was subject.
164. This meaning is carried through to the Judge’s conclusion of his discussions section where, at [83]-[84], he again refers to “exposure at the level to which I have found [Mr Cuthbert] was exposed” and finds that asbestos exposures at those levels did not give rise to a foreseeable risk of injury. His final reference in [84] to exposure that was light and intermittent bears the same meaning. What matters is that he found a level of exposure which was markedly less (though not expressed in quantitative terms) and to be contrasted with the levels of exposure found in *Owen* and *Jeromson* and the levels

giving rise to a foreseeable risk of asbestosis to be deduced from a fair and comprehensive reading of the literature.

165. The Appellant submits that the Judge paid inadequate attention to evidence of clouds of dust being generated by the cutting of Asbestolux and when sweeping up. In support of this submission the Appellant relies upon the finding in the 1997 Glasgow survey which recorded the dry sweeping of asbestos waste to be the dustiest and most hazardous operation identified in the survey. It is submitted that, where there may be peaks or spikes in the level of exposure, it is the peaks that should be considered rather than the general level of exposure. That is not controversial provided that it is recognised that the peaks need to be of sufficient intensity and duration to give rise to a foreseeable risk of injury. During the period of Mr Cuthbert's exposure it was not possible to measure the precise levels to which a person in his form of employment would have been exposed. Any assessment was bound to be impressionistic at best. What can be said with confidence is that the Judge considered the exposure generated by the carpenters cutting the Asbestolux and sweeping up in reaching his impressionistic and qualitative assessment of the levels of Mr Cuthbert's exposure.
166. Turning to the expert evidence, the Appellant also criticises the Judge's use of the back-calculation recorded at [43] of the judgment: see [30] above. In my judgment this criticism is misplaced. The Judge stressed that the figure of two fibres/ml agreed by the experts on the assumptions there set out was "no more than an approximation" which provided "some insight into his likely overall level of exposure to asbestos dust." That was an appropriate approach to adopt, as was his conclusion that the experts' agreed figures were entirely consistent with what he described as his own "impressionistic assessment of the degree and extent" of Mr Cuthbert's exposure. He did not treat them as determinative of the level of exposure or of the issue he had to decide.
167. Nor can the Judge validly be criticised for his references to the 1960 "Toxic Substances in Factory Atmospheres" publication or TDN 13. The Judge was entitled and right to hold that "on any view of the evidence, ... the deceased's exposure was very substantially below the limits set by the 1960 publication, both in the short term and over the daily average levels which have to be calculated to make meaningful comparison with the 1960 limits." Similarly, his treatment of TDN 13 at [83] of the Judgment was legitimate and appropriate: see [41] above. He did not treat either publication as determinative or as providing a bright line or test (universal or otherwise). What he did, and was entitled to do, was to treat the disparity between the experts' figures and the figures offered by the 1960 publication or TDN 13 and the fact that the levels of exposure referenced in TDN 13 were "far in excess of the levels to which [Mr Cuthbert] was exposed" as supportive evidence for his conclusion that the levels to which Mr Cuthbert was exposed did not give rise to a foreseeable risk of injury. The disparity was all the greater given that the figure of 2 fibres/ml was the appropriate figure on the basis of hypothetical assumptions set out at [43] of the judgment which assumed greater levels of exposure than the Judge had found: see [31] above. Given his findings about the levels of exposure, and in the absence of other evidence or findings about the frequency, intensity and duration of any "peaks" of exposure, the Judge was entitled to conclude overall that the levels of exposure did not give rise to a foreseeable risk of injury.

168. The Appellant's submissions analysed in detail concessions said to have been made by Dr Phillips in the course of his evidence. What cannot be shown, however, is any concession that prevented the Judge from accepting his evidence either about the indicative back-calculation or that the levels of exposure found by the Judge would not have given rise to a foreseeable risk of injury at the time of Mr Cuthbert's employment and exposure. His evidence, supported as it was by the literature, was to the effect that exposure to asbestos at this intermittent and (on any view) comparatively low level in the construction industry in the late 1950s would not have provoked any action on the part of employers.
169. For these reasons I consider that the Judge was entitled to reach the conclusion that he did on the evidence he had and to describe Mr Cuthbert's exposure as he did. There is no sound basis upon which this Court can or should interfere on this ground.

Assessment of foreseeability of risk of injury

170. The Appellant's primary submission is that the Judge erred in finding that only exposure to "significant quantities" of asbestos carried a reasonably foreseeable risk of harm in the mid- to late 1950s. I have attempted to explain above that this was not the Judge's approach. What he did was to distinguish between (a) the levels of exposure that were sufficient to give rise to a foreseeable risk of asbestosis and (b) what he found to be the much lower levels of exposure to which Mr Cuthbert was exposed. As I have explained, his use of the word "significant" was simply a comparative label used to distinguish between exposure falling within category (a) above, and those levels which he found in the present case. He did not make the mistake of attempting a spurious precision by reference to numerically specific levels; nor did he treat the various publications from 1960 onwards as providing either a bright line or a universal test showing when there was a foreseeable risk of injury and when there was not. To the contrary, the evidential use he made of the 1960 Toxic Substances in Factory Atmospheres publication and TDN 13 was permissible and appropriate.
171. For the reasons I have given earlier, the Judge was entitled to take the view (as was the Deputy Judge in the White Appeal) that *Owen* and *Jeromson* were distinguishable on their facts and did not create a binding precedent that required him to adopt Buxton J's dictum. It was not a question of brushing off a foreseeable risk as far fetched. Rather, the Judge was entitled to find (in the light of the evidence from the literature and the experts and his assessment of the extent of Mr Cuthbert's exposure) that, on the facts of this case, there was no foreseeable risk of injury against which the employers were obliged to protect Mr Cuthbert.
172. I am unable to detect any error of law or approach that vitiates the Judge's conclusion in this case. On the evidence that he had and the findings he made, he was entitled to reach the conclusion he did for the reasons he gave.
173. I would dismiss the Cuthbert appeal.

Lord Justice Newey

174. I agree.

Lord Justice Underhill

175. I agree that both appeals should be dismissed for the reasons given by Stuart-Smith LJ. There may nevertheless be some value in my stating shortly my approach to the issue of general relevance which is common to both appeals.
176. The starting-point is that these are both cases where the exposures on which the Claimants now rely occurred in the 1950s, prior to the identification of the development of mesothelioma as a foreseeable risk of exposure to asbestos dust. The fact that the risk specifically of mesothelioma was not foreseeable is not in itself important, because a duty of care would arise if any kind of personal injury were foreseeable as a result of such exposure: see the authorities cited by Stuart-Smith LJ at para. 117 of his judgment. But its importance lies in the fact that, whereas previously, as Stuart-Smith LJ's thorough and illuminating examination of the literature confirms, it had been understood that there was no significant risk of injury from (to put it broadly) low or occasional levels of exposure to asbestos dust (see para. 106 above), the evidence was that mesothelioma could be caused by even very slight exposure (see para. 107); with the consequence that the level of precautions against exposure required once the risk of mesothelioma was appreciated was higher than that required earlier.
177. It follows that I agree with Stuart-Smith LJ that the evidence reviewed by him does not support Buxton J's statement in *Owen v IMI* that from at least 1951 the risks of 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" (see para. 129 above): specifically, I do not think that the evidence supports the view that the uncertainty which there admittedly (and indeed inevitably) was about exactly what level of exposure could be regarded as safe meant that there was a duty to eliminate all exposure so far as possible. I also agree with Stuart-Smith LJ that this Court's judgment in *Jeromson* cannot be read as endorsing what Buxton J had said and that his proposition did not form part of its reasoning. Of the reasons that he gives for that conclusion at para. 139 above, the most significant appear to me to be the first and third: Hale LJ clearly proceeded on the basis of the facts of that case, which involved levels of exposure far in excess of what the Claimants in these cases were found to have encountered. I also agree that Buxton J's approach would be inconsistent with the reasoning in *Maguire*.
178. The question thus becomes whether the employers in both these cases should have been aware that the exposure to asbestos dust which the work of Mr White and Mr Cuthbert entailed gave rise to a significant risk of injury. In practice that depends on how substantial that exposure was. That required the Judge in each case to make findings of fact about the level and frequency of exposure – based, inevitably, on very unspecific evidence. I agree with Stuart-Smith LJ, for the reasons that he gives, that there was no error in the approach taken by either Judge and no basis for impugning their findings.

ANNEX 1
SCHEDULE OF MAXIMUM PERMISSIBLE CONCENTRATIONS AND
THRESHOLD LIMIT VALUES IN THE PERIOD FROM 1960 – 1984

Date	Publication	Limit (MPC/TLV/Guidance)	Conversion
1960	Toxic Substances in Factory Atmospheres, 1st Edition	177 ppcc MPC	30 fibres/ml
1965	Dust and Fumes in Factory Atmospheres, 2nd Edition	5 mppcf TLV	30 fibres/ml
1966	Dust and Fumes in Factory Atmospheres, 3rd Edition	5 mppcf TLV	30 fibres/ml
1968	Threshold Limit Values of Airborne Contaminants for 1968	5 mppcf TLV Recommendation for reduction to 12 fibres/ml	30 fibres/ml (12 fibres/ml)
1969	Threshold Limit Values of Airborne Contaminants for 1969; Technical Data Note 2/69	5 mppcf TLV Recommendation for reduction to 12 fibres/ml	30 fibres/ml (12 fibres/ml)
1970	Standards for Asbestos Dust Concentration for use with the Asbestos Regulations 1969; Technical Data Note 13	Chrysotile/Amosite: 2 fibres/cm ³ ; Crocidolite: 0.2 fibres/cm ³ ; Guidance on how HM Factory Inspectorate would interpret a level of dust “ <i>liable to cause danger</i> ” in the Asbestos Regulations.	Chrysotile/Amosite: 2 fibres/cm ³ ; Crocidolite: 0.2 fibres/cm ³

1976	Asbestos Hygiene Standards and Measurement of Airborne Dust Concentrations; EH10	Crocidolite: 0.2 fibres/ml; Other types of Asbestos: 2 fibres/ml; Replaces Technical Data Note 13.	Crocidolite: 0.2 fibres/ml Other types of Asbestos: 2 fibres/ml;
1983	Asbestos Control Limits and Measurement of Airborne Dust Concentrations; EH10 Revised 1983	Crocidolite & Amosite: 0.2 fibres/ml; Other types of Asbestos: 0.5 fibres/ml;	Crocidolite & Amosite: 0.2 fibres/ml; Other types of Asbestos: 0.5 fibres/ml;
1984	Asbestos Control Limits and Measurement of Airborne Dust Concentrations; EH10 Revised 1984	Crocidolite: 0.2 fibres/ml; Amosite: 0.5 fibres/ml Other types of Asbestos: 1 fibre/ml;	Crocidolite: 0.2 fibres/ml; Amosite: 0.5 fibres/ml Other types of Asbestos: 1 fibre/ml;

Note:

MPC = Maximum Permissible Concentration

TLV = Threshold Limit Value

ppcc = Particles per cubic centimetre of air

mppcf = Million particles per cubic foot of air

f/cc = Fibres per cubic centimetre

f/ml = Fibres per millilitre

f/cc = f/ml

177 ppcc = 5mppcf = (with minor qualification) 30 fibres/cm³ = 30 f/ml

From 1970, references to guideline measurements are generally by reference to sampling over a four hour period.